Economic Impact Analysis on the National Standard for Plant

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Foreword

The National Occupational Health and Safety Commission is a tripartite body established by the Commonwealth Government to develop, facilitate and implement a national occupational health and safety strategy.

This strategy includes standards development, the development of hazards-specific and industry-based preventive strategies, research, training, information collection and dissemination and the development of common approaches to OHS legislation.

The National Commission comprises representatives of peak employee and employer bodies—the Australian Chamber of Commerce and Industry (ACCI) and the Australian Council of Trade Unions (ACTU)—as well as the Commonwealth, State and Territory governments.

Contents

Executive summary

This report sets out the results of an economic impact assessment of the *National Standard for Plant* [NOHSC:1010(1994)]. The report was undertaken on behalf of the National Occupational Health and Safety Commission (National Commission).

The report assesses the impact of compliance with the *National Standard for Plant* in quantitative terms on employers and in qualitative terms on other affected parties—designers, manufacturers, importers, suppliers, erectors, self-employed people and business owners.

Costs of compliance for employers with the National Standard over a 10-year period are assessed as:

	Undiscounted	*Discounted (8%)*
Hazard identification/risk assessment	$303.2m	$212.9m
Risk control	$3,357.9m	$2,379.7m
Training	$903.0m	$705.3m
Record keeping	$123.1m	$83.7m
Total	**$4,687.9m**	**$3,381.5m**

These estimates ignore any costs of compliance for the 'Other Plant' category which includes items such as manually powered hand-held tools and furniture. Employers were not able to provide any data on this category of plant.

The benefits of the National Standard were described principally in terms of the reduced number of fatalities and accidents. It was estimated that compliance with the National Standard would lead to:

- a 24.0 per cent decrease in the number of fatalities and accidents; and
- reduced compensation payouts of $1,468.7 million (undiscounted) or $876.1 million (discounted at eight per cent).

The net present value varies considerably according to the indirect to direct cost ratio together with the discount rate selected. Under various assumptions for both the indirect to direct ratio and discount rate, the net present values ranges are as follows:

	Indirect to direct ratio			
Discount rate	***1:1***	***2.5:1***	***4:1***	***6:1***
8%	-$1,629.3m	-$494.5m	$640.3m	$2,153.4m
6%	-$1,662.2m	-$380.0m	$902.2m	$2,611.8m
4%	-$1,694.0m	-$238.6m	$1,216.8m	$3,157.2m

Estimates of costs of compliance for other parties affected by the National Standard—designers, manufacturers, importers, suppliers, owners or self-employers—were not quantified for the economic impact assessment.

Discussions with representatives of a number of other parties indicated that there was already a significant degree of *de facto* compliance with the National Standard. As a result, no substantial additional costs of compliance are expected.

In terms of benefits, uniform plant regulations would:

- eliminate unnecessary costs of complying with differing State and Territory regulations;
- remove restrictions on competition between firms based in different States and Territories;
- reduce inefficiencies in important inputs to production, such as the movement of plant, labour and capital between the States and Territories;
- reduce the need for unnecessary firm structures based on State and Territory jurisdictions; and
- enhance technological innovation.

It is concluded that the benefits for other parties would outweigh any additional costs of compliance.

The outcome of any economic impact statement is a function of the quality of data and assumptions which underpin it. This study made a series of assumptions in the absence of definitive data. It is based on the fundamental assumption that all States and Territories adopt the *National Standard for Plant* in its entirety and that all parties fully comply with it.

On this basis, taking into account both quantifiable and non-quantifiable benefits and costs, the introduction of the *National Standard for Plant* will have a positive impact on the Australian economy and lead to an improvement in social welfare provision.

1 Introduction

1.1 Background

Plant is a major cause of workplace accidents in Australia. At present, there are 65,000–70,000 plant-related workers' compensation claims costing approximately $550 million in workers' compensation payments each year. In addition, there are over 200 plant-related fatalities every year. Because of the risk of injury associated with the use of plant, State and Territory governments over the years have enacted many measures in order to reduce both the incidence and severity of accidents.

Uniformity in OHS standards between the States has become a national priority since the November 1991 Premiers' and Chief Ministers' Meeting where it was agreed that national uniformity in this area should be achieved by the end of 1993.

1.2 Development of the National Standard for Plant

In recognition of the desire for a more effective and flexible approach to plant safety together with the requirement for national uniformity in the area of OHS regulations, reviews of provisions governing plant were undertaken in all States and Territories over the period 1992–93. The agencies involved in the various reviews in New South Wales, Victoria and Queensland agreed that a position paper should be developed outlining a set of general principles to assist the development of uniform standards for plant safety. A representative of the Australian Capital Territory regulatory authority attended the initial meeting of the three-state group and indicated support for the work to be done. The *Position Paper on*

the Common Essential Requirements for Health and Safety Standards for Plant was completed in April 1992 and the regulatory agencies in the three States endorsed it on 21 May, 1992. It is intended that the position paper serve as an interim guide for these three States to finalise their new plant standards.

The position paper was presented to the Chairperson of the National Commission with the request that it be referred to the National Commission's National Uniformity Taskforce for a national review process.

The fiftieth meeting of the Labour Minister's Conference (MOLAC50), held on 22 April 1992, requested the National Commission to develop the requirements of a national standard for plant to enable the adoption of consistent principles for the regulation of plant by the States and Territories. Further, it was agreed that the National Commission take account of the work already undertaken by Victoria, New South Wales and Queensland and the Australian Capital Territory on general requirements for plant. The *National Standard for Plant* is the outcome of the processes.

1.3 The economic impact assessment

In 1993, the National Commission directed that economic impact assessments were to be undertaken on national standards. This report is in response to the National Commission request for such an assessment to be undertaken on the *National Standard for Plant.*

1.3.1 Terms of reference

The objective of the study is to perform an economic impact assessment which will measure the net economic benefit to Australia of adopting the National Standard. The terms of reference were set out in a consultancy brief. Among its key terms of reference are:

- to identify best estimates of the value of all direct and indirect costs and benefits of the National Standard in such a manner that:
  - all assumptions are clearly specified and justified,
  - direct OHS costs and benefits are differentiated from indirect costs and benefits,
  - costs and benefits are identified and valued over a range of industries and over a range of enterprises within each,
  - benefits and costs to the community are identified and valued including the long term effects of disabilities, and
  - where a market value to costs and benefits must be imputed, the assumptions and methods used to assign that value are specified;
- where costs and benefits can be identified but cannot be valued, assess the impact and significance of the costs and benefits, if necessary by interviewing union and employer organisations and other organisations representative of groups affected by the National Standard;
- review existing data nationally and from States and Territories, industries and enterprises to provide an overall national view; and
- express all costs and benefits as a present value calculated on the basis of real and constant prices of 1993–94.

1.3.2 Scope and study process

This economic impact assessment was undertaken by Pacific Information Systems Pty Ltd and Donovan Pty Ltd in conjunction with Worksafe Australia.

The consultants had overall responsibility for data collection, including questionnaire design and data analysis of the employer survey undertaken for the project, as well as model development. Worksafe Australia administered the project. The study was overseen by a steering committee with support provided by a reference group.

The steering committee comprised representatives of the National Commission, the ACCI, ACTU and representatives from a number of State and Territory OHS agencies.

The purpose of the reference group was to provide advice on technical issues associated with the economic impact assessment. The reference group comprised an independent health economist, representatives of State regulatory agencies and an economist from the Commonwealth Bureau of Industry Economics.

At the commencement of the study, it was agreed that both groups would meet together for all meetings. In this report, the term 'Steering Committee' includes the reference group. Members of both groups, together with Worksafe Australia project members, are listed in Appendix 1.

The terms of reference required the impact assessment to be undertaken on both industries and enterprises. The National Standard affects a wide range of parties—designers, manufacturers, importers, suppliers, erectors, employers, self-employed people and owners of business. A survey of employers, stratified by industry sector and employment size, was proposed in order to collect data about current employer practices and estimated effect of the National Standard. It was initially agreed that it would not be possible to include other affected in this survey as there are no data available which would permit them to be appropriately sampled. As a consequence, it was decided that all parties, other than employers, would be treated in a qualitative manner. This qualitative assessment would be undertaken by way of interviews with representative firms and organisations of these other affected parties.

The consultants and Steering Committee met regularly during the study. After initial development of the model by the consultants, the two groups met and agreed on the final range of data, assumptions and sensitivity testing.

2 The need for a national standard

2.1 Introduction

The *National Standard for Plant* should be viewed in the context of recent developments in OHS regulation.

Health and safety regulations intended to reduce risks of death illness or injury to people is one of the fastest growing areas of regulation in member countries of the Organisation for Economic Cooperation and Development (OECD).* This type of regulation is concerned with risks that arise from the full range of human activities and environments including the workplace, transportation, air, water, medicines, food, recreation and consumption of goods and services of all kinds. The benefits of such regulations if well targeted, and well designed, are potentially large, as too are the costs.

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* OECD, *Common Principles of Decision Making for Risk Regulation*, Paris, 1992.

2.2 Developments in government regulation of risk

There has been a steady change in how government regulation is used to reduce the incidence of injury and illness. The statutory requirements have traditionally been prescriptive in nature. The traditional legislation sets minimum standards of OHS. Additional measures are at the employers and employees discretion. This type of legislation does not allow for alternative strategies and thereby does not encourage employers and others to create safe workplaces. To prescribe and prohibit in detail leaves the possibility of loop holes being sought and argued and thereby the fundamental purpose of the legislation being avoided. There are a number of effects of such a regulatory approach:

- Fewer deaths, injuries and illness are prevented than could be. Regulations often target low probability risks and ignore far more important risks that may not have enjoyed attention.
- Governments impose far higher regulatory costs than needed by pursuing risks that are expensive to reduce rather than those that are less costly.
- Decision-making processes on risk are often poorly defined and informal which reduces the ability of citizens to understand and participate in risk decisions.*

Subsequently there has been a move away from prescriptive legislation towards performance-based legislation with a principal Act containing a general description of the duties of parties and regulations covering specific tasks to be done in particular areas. Statutory requirements framed in a general liability manner impose obligations on employees, employers and others to put their mind to identify hazards, undertake risk assessments and introduce hazard reduction measures designed around the particular situation.

In recent years a number of major accidents have made it clear that considerable potential hazards are associated with modern technology. It is impossible for hazards to not exist. Therefore, authorities and industries have to face the task of regulating these activities effectively. A central question is: how can a hazard that cannot be eliminated be best reduced in the light of societal and economic factors?† It has been suggested that to answer this problem requires four sequential steps:

- identification of the hazards to people and the environment;
- quantification of the extent of these hazards;
- decision about the acceptability of the risk of the activity and about the risk, producing measures that have to be taken; and
- control to maintain a situation of acceptable risk.‡

As B. J. Ale§ states:

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* OECD, *Product Safety Developing and Implementing Measures*, Paris, 1987, p. 3.

† Ale, B.J., *Risk Analysis and Risk Policy in the Netherlands*, Ministry of Housing, Physical Planning and Environment, Directorate of Chemicals and Risk Management, Netherlands, January 1990.

‡ Ale, B.J., *Risk Analysis and Risk Policy in the Netherlands*, Ministry of Housing, Physical Planning and Environment, Directorate of Chemicals and Risk Management, Netherlands, January 1990, p. 4.

§ *Ibid*, p. 8.

> It is becoming increasingly difficult to improve the safety of industrial installations by prescriptive hardware measures. The risks that are remaining can be largely attributed to human failure.

This is meant in the sense that no single person makes a mistake thereby causing an incident or a disaster, but that the organisational framework in which the person operates can lead to accidents. This has been described as resident pathogens of the organisational system.* Increasing importance is being given to reducing the accident proneness of an organisation as a whole. Performance-based risk regulation intends to stimulate organisations to investigate their ability to detect accident-promoting structures within themselves and remedy them when detected. This can only be done from within the organisation. It is felt that the role of public authorities in the field is to support the development of tools and performance-based regulations which insist that companies look at their own operational structure and install procedures to detect and eliminate the roads to failure.†

In establishing such a performance-based regulatory framework for managing risk, criticism is sometimes levelled that superior risk assessment does not necessarily lead to superior outcomes. Superior risk assessment may be a necessary condition of a superior outcome but it is sometimes questioned that it is a sufficient condition. Because risk cannot generally be eliminated completely, absolute certainty about the outcomes is not possible. However superior risk assessment and management does increase the probability of the occurrence of a superior outcome. Therefore, it is reasonable to expect that superior risk assessment decreases the likelihood of the occurrence of detrimental outcomes. It is not that a performance-based regulatory system will work perfectly but that it will work better. There will be an optimal mix of performance and specifications standards in any particular regulatory domain.‡

The United States *Mines Safety and Health Act* is an example of a statutory approach to performance based regulation. Roof supports are a key issue because roof falls are a major cause of death and injury in modern underground coal mines in the United States. The US *Mines Safety and Health Act* meets this challenge by declining to mandate generally applicable specifications for the roof control of mines. Instead it requires mine operators to devise their own roof control plans that satisfy certain statutory criteria. This allows operators to come up with their own plan tailor made with the unique geological conditions they confront in their particular mine. Responsibility for finding the least cost strategy including safety objectives is therefore passed to where that responsibility is likely to be taken most seriously—to the mine itself. To reduce the administrative burden of approving so many different types of roof control plan the US *Mines Safety and Health Act* takes the simplifying step of setting out standards for several different types of routes or techniques. The attitude is: "you don't have to choose any of these standard seven ways; you can come up with your own approach so long as you can convince the regulatory authority that it's no less safe than one of the standard methods".§

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* Reason, J., 'Resident Pathogens and Risk Management', World Bank Conference on Risk Management, October 1988.

† Ale, *op cit*, p. 9.

‡ Ayres, Braithwaite, *Responsive Regulation Transcending the Deregulation Debate*, Oxford University Press, Oxford, 1992, chapter 4.

§ Ayres, Braithwaite, *Responsive Regulation Transcending the Deregulation Debate*, Oxford University Press, Oxford, 1992, chapter 4.

2.3 Requirements for effective regulation

Important prerequisites for the success of any regulatory system are that people:

- know that there are regulatory requirements;
- can understand what the regulations require of them; and
- have a commitment to comply with the requirements.

2.3.1 Knowledge

Requirements which are outlined in a single Act and set of regulations are more transparent and accessible to affected parties than requirements which are dispersed throughout a variety of Acts and regulations. Requirements for plant which are dispersed throughout a variety of Acts and regulations, as is currently the case in some Australian jurisdictions, makes it more difficult for a person to be sure that all requirements have been identified.

2.3.2 Understanding

Understanding of the requirements is likely to be higher when rules are written by the people who have to make them work. The purpose of the requirements can then be better understood. This framework of privately written and publicly ratified rules has been referred to in a number of regulation reports.*

2.3.3 Compliance

Dedication to compliance is more probable when the rules are written to make maximum sense within the context of the unique environmental contingencies confronting a particular organisation. It has been argued that regulations relying on prescribed standards results in ritualistic compliance with firms getting the standards right but neglecting outcomes.† Indeed, as reported elsewhere, prescribed regulations can lead to searching for legal loopholes to avoid compliance.

Therefore, it is usually assumed that there has to be a trade off between the cost of complying with regulations and how much the regulations will achieve in regulatory objectives. However, recent reports indicate that performance-based regulations can produce lower cost regulation that is more effective. Research suggests that regulations need to be as outcome oriented as practicable, leaving it to the firm to meet the challenge of designing the least cost inputs that deliver the required outcomes. This strategy encourages firms to do better than a mandated outcome. This is part of the appeal of the *National Standard for Plant.*

2.4 The need for uniformity

In addition to its direct implications for OHS, the National Standard has the potential to remove differences between existing State and Territory regulatory frameworks and requirements affecting plant. The lack of uniformity in the various regulatory requirements imposes a high and unnecessary burden on business and hinders the free movement of occupational groups, capital and goods and

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* *Ibid.*

† Braithwaite, J., *The Nursing Home Crime and Justice, A Review of Research*, vol 5, University of Chicago Press, Chicago.

services which are important for Australia's economic efficiency. The OECD has reported on the effect which government regulation can have on the competitive advantage of countries in highly regulated societies and markets.* As a result, uniformity between the States has become a national priority since the November 1991 Premiers' and Chief Ministers' Meeting where it was agreed that the States would be directed to achieve uniformity in OHS standards.

2.5 Sources of non-uniformity

The Commonwealth Constitution provides for specific powers which can be exercised by the Commonwealth Government. All other powers reside with the States and Territories. OHS is one area primarily regulated at the State and Territory level. Over the years different approaches to OHS and, in particular, the regulation of plant in the workplace has led to similarities and differences between the jurisdictions in the various Acts and regulations affecting plant.

Differences are often supported by claims that a particular jurisdiction's regulations will be more effective than the regulations currently in place in other States. It is certainly an argument that competition in regulatory regimes can be as important as competition in any other market. New concepts can be tried by one State without the need to obtain the approval of all States and Territories to any change. Therefore, over time the most effective regulation emerges and is adopted in more States as and when the time arises. However, the benefit of flexible performance based regulations, as in the *National Standard for Plant,* is that it expands the number of regulatory regimes. Individual firms can innovate and establish processes and plant which reduce risks below that previously achieved. The more effective strategies will then be adopted by other firms without the need to alter legislation or regulation. It can also be reasonably expected that individual firms will be able to adopt effective strategies more quickly than government regulators could be expected to agree to alter Acts and regulations. Another justification often raised to support a non-uniform position of a particular regulatory regime is that the difference is necessary because of different factors existing in that jurisdiction. The *National Standard for Plant* will minimise such differences.

2.6 Benefits of uniformity

Differences between State requirements hinder the movement of goods and services, labour and capital. Worksafe Australia has reported that the major costs of inconsistent OHS regulation are:

- inhibited mobility of labour and capital, the mobility of which is essential to both micro-economic reform and to the improvement of Australia's competitive position in the international economy;
- inconsistencies in standards which may be detrimental to workplace health and safety, thus contributing to the costs of workplace injury and disease;

* OECD, *Regulation and Innovation,* 17 November 1992.

- costs which may be imposed on the private sector as employers and manufacturers are faced with dissimilar and complex requirements in different States and Territories to meet similar health and safety objectives; and
- costs for meeting the different standards in each State or Territory may discourage investment.*

It is considered that uniform plant regulations would:

- Eliminate unnecessary costs of complying with differing State regulations. There are direct and indirect costs incurred in complying with different State and Territory regulations. Direct costs include modifications to plant in order to comply with different State and Territory regulations. For operators, movable plant such as cranes are particularly affected by costs of non-uniform regulations. For designers, design modifications needed to comply with different regulations are a direct cost. Indirect costs include the cost of needing to obtain and maintain external advice on the regulations of each jurisdiction separately and the cost of duplicating personnel within an organisation to manage plant regulations and compliance within each jurisdiction.
- Remove restrictions on competition between firms based in different States. The first level of competition is between designers and suppliers of plant. With non-uniformity, designers and suppliers within each jurisdiction design or procure plant to comply with the specific regulations of the State in which the designer or supplier resides. The second layer of competition is between firms which use the plant. Firms located in some States may face unnecessary costs of different compliance. For example, it has been reported that requirements for lifts in Victoria can require more expensive lifts to be installed in buildings than in other jurisdictions. The additional costs in the construction and installation of lifts are passed on to the firms resident in the buildings. It is unlikely that persons from other jurisdictions consider themselves safer in lifts when in Victoria and conversely Victorians are unlikely to be concerned when using lifts in Sydney that they are facing greater risks even though the regulations may be different.
- Reduce inefficiencies in important inputs to production such as the movement of plant, labour and capital between States and Territories. The cost can be in restricting the movement of plant which a firm would prefer to relocate, at least without modification. One confectionery firm has reported that, when deciding on the location for a new manufacturing plant, it determined that different regulations would inhibit their ability to relocate existing plant interstate. Another firm supplying plant and labour in the engineering industry has found that it may have breached regulations in one jurisdiction when it used its plant and labour from another jurisdiction and is currently faced with the possibility of prosecution for breaches of the regulations.
- Reduce the need for unnecessary firm structures based on individual jurisdiction's regulations. Where there are different regulations, firms may tend to establish organisational structures to accommodate the knowledge of and management within the different jurisdictions. These costs of complying with non-uniform regulations may not be readily apparent to a firm established and operating along these lines. The structure may result in unnecessary duplication and overlap of functions and even restrict the adoption of more efficient national structures. Firms can incur

* Worksafe Australia, *National Uniformity and Regulatory Reform*, Occasional Paper No. 4, May 1993, p. 5.

unnecessary salary costs where there is duplication and overlap. In addition, the differing regulations may inhibit the adoption of more efficient organisational structures.

- Enhance technological innovation. One aspect of a country's competitiveness is its ability to adopt new technologies. Technological development is sometimes regulated to provide protection and income transfer to incumbent producers. But more commonly it is regulated for social purposes the most common justification to protect their public from unacceptable unfamiliar risks though to be associated with potentially dangerous new products or processes. Regulators attempting to avoid uncertainty and mistakes have a natural incentive to hinder new product introduction until comprehensive and expensive testing is completed. Delays suit incumbent manufacturers anxious to avoid competition from new products and delays suit public interest groups keen to represent to government the public fears of new risk.* The result is a general slowing of innovation and an increase in the cost of the process of innovation to the detriment of the efficiency of the economy. The direct community cost is likely to be high as commercial incentives work generally to ensure that new products are in most cases cheaper, safer or more efficacious in the intended applications than the products they replace.

The OECD has reported on the effect which the Government regulation can have on the competitive advantage of countries in highly regulated societies and markets.† The OECD identified a range of possible regulatory effects on innovation. Negative effects include:

- anti-competitive regulations which reduce market incentives to innovate;
- specification of particular technologies which discourages the development and use of new technologies;
- establishing minimum performance standards without allowing credit for better performance which discourages technological improvements;
- placing higher burdens of proof for safety on new technologies than on existing technologies which encourages the use of older technologies; and
- imposing disproportionate regulatory costs on small firms which are the most active innovators which discourages experimentation and investment in new technologies.

Positive effects include:

- forcing speedy development of new technologies by establishing high regulatory standards;
- channel development of new technologies in areas of priority social interest;
- allowing firms to internalise the benefits of more efficient or effective technologies through, for example, tradeable permits; and
- increasing consumer acceptance of unfamiliar technologies such as biotechnology or radiation of food by establishing standards of practice and quality.

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* Bradstreet, P., *Regulation Reform, Competition and Competitiveness: Some Australian Reflections*, Industry Commission, November 1992

† OECD, Regulation and Innovation, *op cit.*

One company has reported different prescriptive State and Territory regulations has restricted its ability to adopt plant procedures and design developed by the firm to minimise risk and intended for use in its operations throughout the world.

2.7 The National Standard for Plant

The *National Standard for Plant* introduces a performance-based system of regulation to improve regulation currently enshrined in various laws of the Commonwealth, State and Territory governments. The *National Standard for Plant* provides a single umbrella set of duties which requires designers, manufacturers, importers, suppliers, installers, employers, owners and self employed people to undertake a risk analysis to determine hazardous plant and operations of plant and to take the necessary steps to control hazards. The *National Standard for Plant* will allow for the rationalisation of a large amount of plant related legislation and regulation.

The National Standard is presented in six parts and three schedules. Part 1 contains objectives, interpretations, application and incorporation of references; part 2 outlines specific duties of persons in relation to plant; part 3 contains general requirements for hazard identification, risk assessment and control of risk for all persons having a duty in the National Standard (except for employees) and relates to all plant; part 4 relates to registration of plant designs and items of plant; part 5 to exemptions; part 6 to appeals; schedule 1 lists plant designs and individual items of plant requiring registration; schedule 2 lists standards covering the design and manufacture of plant; and schedule 3 lists all standards referenced in the National Standard.

2.7.1 Part 1: Preliminary

The National Standard is intended to protect the health and safety of persons from hazards arising from plant and systems of work associated with plant by:

- ensuring that hazards associated with the use of plant in the workplace are identified and risks to health and safety are assessed and controlled;
- eliminating or, where this is not practicable, minimising risks to health and safety arising from plant;
- specifying requirements with respect to the design, manufacture, testing, installation, commissioning, use, repair, alteration, dismantling, storage and disposal of plant;
- requiring the provision of relevant information and training; and
- requiring the registration of certain plant designs and items of plant.

Application

The provisions of the National Standard apply to:

- designers, manufacturers, importers, suppliers, erectors, installers, employers, self-employed persons and employees with respect to all plant and associated systems of work in a workplace or plant intended to be used in a workplace; and
- owners with respect to particular plant and associated systems of work in a workplace or plant intended to be used in a workplace.

Scope

Plant includes any machinery, equipment (including scaffolding), appliance, implement or tool. The definition of plant is broad and includes such items of plant as non-electric hand-held tools, such as hammers and screwdrivers, as well as office and workplace furniture.

Incorporation of references

The National Standard incorporates a number of Australian and British Standards. However, it allows for the use of other comparable standards which are may be deemed acceptable by the OHS authorities in lieu of the referenced standards. Where there is any inconsistency between the National Standard and any referenced document, the National Standard takes precedent.

2.7.2 Part 2: Duties

A person carrying out a duty under the National Standard is required to apply the principle that risks to health and safety arising from plant or systems of work associated with plant are, as far as is practicable, minimised. Where more than one person is under an obligation to comply then, unless specifically exempted, each person must comply.

Designers

As well as duties for hazard identification, risk assessment and provision of information designers must control the risk, including ensuring that plant is designed according to the relevant standards listed in schedule 2 of the National Standard or other comparable standards.

Manufacturers

Manufacturers must, where the designer is outside Australia, assume the responsibilities that would otherwise be the responsibilities of the designer. They must:

- identify hazards, assess risks, provide information and control risks, including ensuring that the plant is manufactured, inspected and, where required, tested according to the relevant standards listed in schedule 2 of the National Standards or other comparable standards, and having regard to the designer's specifications; and
- identify any design fault that becomes apparent during manufacture that may affect health or safety, ensure that fault is not incorporated into the plant; where practicable consult the designer and after supply of plant to the workplace; and, if appropriate and practicable, advise the owner of the plant of any fault which may have an effect on health or safety.

Importers

The duties of importers and suppliers have been separated in the National Standard. Importers must, where the designer or manufacturer is outside Australia, assume the responsibilities that would otherwise be the responsibilities of the designer and manufacturer. They must also provide relevant health and safety information. These duties apply to the import of both new and used plant.

Suppliers

A supplier who has management and control of plant must ensure that risks to health and safety from the use of plant are eliminated, or where this is not practicable, minimised. A supplier who does not

have management and control of plant must ensure that, as far as practicable, any faults are identified, and the purchaser or owner is advised in writing, prior to the plant being supplied, of the faults and, where appropriate, that the plant is not to be used until the faults are rectified.

A person who becomes a supplier as a result of hiring or leasing plant to a workplace must assume all the duties of an owner and ensure that: the plant is inspected between hirings or leasings; an assessment is carried out in relation to testing; and the testing identified is carried out, recorded and records are maintained for the operating life of the plant.

The supplier has a duty to provide relevant information.

Erectors or installers

An erector or installer must carry out a hazard identification and risk assessment and then control risks associated with the erection or installation procedure. This includes the erection and dismantling of scaffolds, temporarily erected structures and associated temporary equipment, which must be carried out in accordance with the relevant standards and ensuring that all electrical installations associated with plant comply with the relevant standard.

Employers

Employers have duties relating to consultation with employees and their health and safety representatives; hazard identification; risk assessment; provision of training, information, instruction and supervision; the control of risk; the design of plant; installation and commissioning; and operation, maintenance, inspection, cleaning, repair, alteration, dismantling, storage and disposal of plant.

Employers have specific duties for control of risk for: plant under pressure; plant with moving parts; powered mobile plant; plant with hot or cold parts; electrical plant and plant exposed to electrical hazards; plant designed to lift or move people, equipment or materials; scaffolds; lasers; industrial robots and other remotely or automatically energised equipment; and lifts and amusement structures.

In relation to risk assessment, the employer may carry out the assessment either on individual items of plant or, where multiple items of plant of the same design are installed and used under conditions which are the same for all practical purposes, carry out a risk assessment on a representative sample. However, the use of a representative sample is subject to the qualification that where risk may vary from operator to operator, a separate assessment of the risk to each operator of the particular plant is carried out on each item of plant. This provision also applies to installers, erectors and owners.

Employers also have duties in relation to record keeping.

When carrying out a risk assessment, an employer must ensure they identify items of plant which require records to be kept as to minimise risks to health and safety and the type of records and the length of time records are to be kept. Where the risk assessment has resulted in documentation, the employer must ensure that documentation is kept for the currency of that assessment and is available to employees and their health and safety representatives.

An employer must also keep (for the length of time identified in the risk assessment) and have available records for employees and their health and safety representatives while the plant is operable and under their control. The records include any relevant tests, maintenance, inspection, commissioning and alteration relating to items of plant requiring registration, a further list of high risk

plant specified in the National Standard and the plant identified by the risk assessment as requiring records to be kept.

Owners

In the National Standard, ownership duties apply to owners of:

- any plant that is hired or leased; or
- any of four categories of plant (that is, plant under pressure, plant designed to lift or move people, equipment or materials; lifts or amusement structures) where there is no employer or self-employed person having management or control of the plant.

An owner has similar duties to the employer in relation to hazard identification, risk assessment, general control of risk, maintenance, inspection, repair, cleaning, alteration, dismantling, storage and disposal of plant. There is also a requirement to provide relevant health and safety information.

All owners have the specific duties for control of risk for plant covered by the forementioned categories.

In relation to record keeping, an owner of plant that is hired or leased must comply with the same requirements as an employer. An owner of a specific category of plant must keep records relating to health and safety and transfer the records on sale of plant unless the plant is to be sold for scrap or spare parts.

The self-employed

A self-employed person must identify hazards, assess and control risks, keep records and provide relevant health and safety information to appropriate persons.

They have specific duties for the control of risk for plant covering the categories as listed in the duties of owners; namely, plant under pressure, powered mobile plant, plant designed to lift and move, lifts and amusement structures.

In relation to record keeping, where plant is under the control of a self-employed person, that person must keep records relating to health and safety and transfer the records on sale of plant unless the plant is to be sold for scrap or spare parts.

Employees

An employee must comply, to the extent that they are capable, with all activities carried out in accordance with the provisions of the National Standard and must report promptly to their employer any matters of which they are aware that may affect the employer's compliance with the provisions of the National Standard.

Provision of information

Within the requirements of the National Standard:

- a designer must ensure that the manufacturer is provided with information for the plant to be manufactured in accordance with the design specifications and, as far as practicable, with appropriate information relating to:
  - the purpose for which the plant is designed,

  - testing or inspections to be carried out on the plant,
  - installation, commissioning, operation, maintenance, cleaning, transport, storage and dismantling of the plant,
  - systems of work necessary for the safe use of plant,
  - knowledge, training or skill necessary for persons undertaking inspection and testing of the plant, and
  - emergency procedures;
- a manufacturer must ensure that the supplier is provided with the information provided by the designer and that the supplier is provided with any document relating to testing;
- an importer must ensure that:
  - in respect of used plant, the purchaser or owner is provided with relevant health and safety information provided by the designer and manufacturer that is available and any additional available information required to enable the plant to be used safely, and
  - in respect of new plant, the importer takes on the same responsibilities for provision of information as for the designer and manufacturer;
- a supplier must ensure that:
  - in respect of new plant, the purchaser or owner is provided with health and safety information provided to the supplier by the manufacturer,
  - in respect of used plant, the purchaser or owner is provided with health and safety information provided by the designer and manufacturer that is available and, where available, any record which is required to be kept by the previous owner of the plant, and
  - the purchaser or owner is provided with any available information, data or certificate specified by the relevant standards in schedule 2 of the National Standard or other comparable standards;
- an employer must ensure that:
  - persons likely to be exposed to a risk to health or safety which requires the risk to be controlled, and anyone supervising these persons, are provided with information in regard to the nature of the hazard associated with the plant and its associated systems of work, and the processes used for the identification, assessment and control of risks,
  - the safety procedures associated with the plant at the workplace are adhered to;
  - the need for, and proper use and maintenance of, control measures is assessed;
  - the use, fit, testing and storage of personal protective equipment (PPE) is properly carried out,
  - specific information relevant to the plant is made available and used,
  - information is provided to persons who use plant;
  - relevant health and safety information is provided to persons involved in commissioning and installation, operation, maintenance, inspection, cleaning, testing, de-commissioning, dismantling and disposal of plant, and

  - where relevant, information on emergency procedures relating to the plant is displayed in a manner that can be readily observed by persons who may be affected by the operation of the plant;
- an owner must ensure that:
  - where available, the relevant health and safety information is provided to persons involved in the commissioning, installation, operation, maintenance, inspection, cleaning, testing, de-commissioning, dismantling and disposal of plant. An owner of plant has the same responsibility as an employer in relation to information on emergency procedures for plant which is installed in a building; and
- where plant is under the control of a self-employed person, that person must provide relevant health and safety information to persons involved with the installation, commissioning, use, repair, alteration or dismantling of the plant.

Within the National Standard, erectors, installers and employees do not have a specific duty to provide information to other persons.

2.7.3 Part 3: General requirements for hazard identification, risk assessment and control of risk

Part 3 applies to persons having a duty in the National Standard for hazard identification, risk assessment and the control of risk and relates to all plant.

In relation to hazard identification, all reasonably foreseeable hazards to health and safety must be identified. Hazards associated with a list of factors, so far as they are relevant to the design, manufacture, installation, commissioning, operation, maintenance, inspection and cleaning of the plant, must be identified.

In relation to risk assessment, a person carrying out a risk assessment must, as far as practicable, determine a method of assessment which adequately addresses the hazards identified and includes one or a combination of techniques ranging from a visual inspection to a technical or scientific evaluation.

In relation to control of risk, where an assessment identifies a requirement to control a risk to health or safety, that risk must be eliminated or, where it cannot be eliminated, minimised. To minimise the risk to health and safety one or a combination of approaches must be used. These include substitution of the plant by less hazardous plant, modification of the design of the plant, isolation of the plant and engineering controls such as guarding. Where the risk is not minimised through these approaches appropriate administrative controls and personal protective equipment must be used.

Specific requirements relating to access and egress, dangerous parts, guarding, operational controls, emergency stops and warning devices are also included under control of risk.

2.7.4 Part 4: Registration of plant designs and items of plant

The registration section of the National Standard outlines requirements for the registration of plant designs, registration of individual items of plant and the re-registration of plant.

Registration of plant designs

Registration for designs of plant listed in item 1 of schedule 1 of the National Standard requires:

- an application to be made to only one OHS authority in Australia;
- the person seeking registration to ensure that verification of the design complies with relevant Standards listed in schedule 2 of the National Standard or other comparable standards, and verification is undertaken and documented by a design verifier who is independent from the designer;
- in relation to pressure equipment, verification of the design is carried out in accordance with AS 3920 Part 1: 'Pressure Equipment Manufacture—Assurance of Product Quality';
- the relevant authority to protect confidential information provided by the applicant; and
- any intended alteration to the design is to be re-registered.

Registration of individual items of plant

Registration of individual items of plant listed in item 2 of schedule 1 of the National Standard requires:

- the plant to be registered before it is used in the workplace;
- an application for registration of plant to be made to one Authority;
- an application include sufficient information to clearly identify the item of plant and a statement that the plant has been inspected by a competent person and it is safe to operate;
- where an item of plant, other than that of the normally fixed type, is currently registered with an authority and the plant is in use in the jurisdiction of another authority, the registration with the first authority is deemed as valid; and
- the owner is to ensure that the evidence of current registration supplied by the authority is displayed on or near the plant.

Re-registration

In relation to re-registration of plant:

- the registration of an item of plant shall be valid for a fixed period to be determined for each type of plant on a national basis;
- an application for renewal of registration of an item of plant must include a statement that the plant has been maintained and is safe to operate; and
- where there is a change of ownership or change of location of normally fixed plant, the holder of the certificate of registration must immediately notify the authority.

2.7.5 Part 5: Exemptions

Where a person believes an equivalent level of health and safety can be achieved by a means other than compliance with all requirements of the National Standard, that person may apply to the Authority in writing for an exemption, except that an exemption may not be sought for any consultation requirements for employers.

2.7.6 Part 6: Appeals

Any person or organisation which is affected by any decision made by an authority under the National Standard may appeal to the Authority for a review of the decision.

2.8 Summary

The *National Standard for Plant* introduces a flexible, performance-based system of regulation covering the design, use and disposal of plant in the workplace. The National Standard provides a single umbrella set of duties which requires designers, manufacturers, importers, suppliers, installers, employers, owners and self-employed persons to undertake hazard identification, risk analysis and risk control to eliminate and, where that is not practicable, to minimise the risks to health and safety. The National Standard allows for exemptions where it is considered that alternatives to the regulated provisions will deliver the same or better level of health and safety in the workplace. It places in one easily identified set of regulations the regulatory requirements affecting plant in the workplace. The current regulatory regime can be contrasted for transparency of requirements and flexibility of use.

The above outline of the *National Standard for Plant* reflects that adopted by the National Commission at its December 1993 meeting. However, this National Standard may be subject to change. This economic impact analysis has been undertaken on the National Standard as per its December 1993 format.

3 OHS laws for plant in Australia

The current regulatory regime covering the operation of plant arises from two sources. There are duties which arise under common law and duties introduced by the various Commonwealth, State and Territory statutes and regulations.

3.1 Common law

Under common law the decided cases have developed general duties between employers, employees and others. For example, there is a duty on employers to provide safe premises, plant and systems of work. In particular, obligations have been placed on employers, occupiers, manufacturers, suppliers, employees and self-employed people in the safe operation of plant. It is a duty in common law that a reasonable and prudent employer is:

- bound to take into consideration the degree of injury likely to result;
- bound to take into consideration the degree of risk of an accident; and
- entitled to take into consideration the degree of risk, if any, which is involved in taking precautionary measures.*

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* *Hamilton v Nuroof (WA) Pty Ltd* (1956), 96 CLR 18, per Dixon C.J. and Kitto J. at 26.

The common law duties are general duties. In any particular situation the degree of injury likely to result, the degree of risk of an accident and the precautionary measures are all terms which do not allow more precise specification in the area of breach of duty.*

In determining whether parties have complied with their general legal duties courts have regard to standard custom and practice in the industry as well as other standards and especially those which may be recommended by recognised organisations. However, it is not mandatory to comply with standards which do not have the force of law.†

It is recognised that there may be no feasible alternative way to reduce the risk below a practicable level. The common law recognises that a degree of risk may need to be accepted when no feasible alternative is available.‡ However, even if a risk is of such a nature that it is impossible to eliminate, reasonable care still needs to be taken to lessen it.§ If a particular work situation holds more dangers than others, a higher degree of care is required.** The means by which common law duties are fulfilled is not prescribed.

3.2 State Acts and regulations

The common law duties have been extended by various State and Territory Acts and regulations. The duties and requirements prescribed in particular Acts and regulations exist on top of the general common law duties. The individual States and Territories have a variety of formats for detailing the regulatory requirements with respect to plant. Some of these Acts and regulations have been enacted under principal OHS Acts. Others have been enacted under other principal Acts.

While adoption of the *National Standard for Plant* by the various OHS jurisdictions has only impacted on those Acts and regulations for which they have responsibility, it is nevertheless important to note all Acts and regulations which impact on plant in order to demonstrate the complexity of the regulatory framework in this area.

Some jurisdictions have a principal Act with attendant regulations which cover the regulatory requirements for plant. Other jurisdictions have the regulatory requirements dispersed throughout a number of Acts and regulations. The following is an outline of the general regulatory framework for each State and Territory.

A number of Acts and regulations described below are not administered by the OHS agencies in each State or Territory. These other Acts and regulations are listed to indicate the range of legislation impacting on plant. However, it is not implied that the adoption of the National Standard will affect these other Acts and regulations.

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* *Ibid,* p. 26.

† *O'Connor v Hanson Wilkens Hornibrook Constructions* (1968), 42, ALR 239.

‡ *Neill v NSW Fresh Food and Ice Pty Ltd* (1962–63), 108, CLR 362.

§ *Ibid,* p. 362.

** *Paris v Stepney Borough Council* (1951), 1, All ER 42.

3.2.1 New South Wales

Occupational Health and Safety Act 1983

The NSW *Occupational Health and Safety Act 1983* is the most important NSW Act dealing with the OHS in general. Its objects are to:

- secure the health, safety and welfare of persons at work;
- protect persons present at work places other than persons at work against risk to health and safety arising out of activities of persons at work;
- promote an occupational environment for persons at work which is adapt to their physiological and psychological needs; and
- provide the means for progressively replacing associated OHS legislation by provisions made by or under this Act.

To achieve its object the Act also covers the establishment and functions of occupational health committees, the notification of accidents and certain proposed work and provides for the inspection of workplaces.

Factory Shops and Industries Act 1962 (except parts iv and vi)

Regulations include:

- Occupational Health and Safety (Confined Spaces) Regulation 1990.
- Abrasive Blasting Regulations 1959.
- Boiler and Pressure Vessels Regulations 1944.
- Chaff-cutting Machines (Safety) Regulations 1980.
- Engine Drivers and Boiler Attendants Certification Regulations 1958.
- Explosive Powered Tools Regulations 1956.
- Factories (Health and Safety—Asbestos Processes) Regulation 1984.
- Factories (Health and Safety—Circular Saws) Regulations 1943.
- Factories (Health and Safety) Electroplating Regulations 1988.
- Factories (Health and Safety—Furnaces) Regulation 1983.
- Factories (Health and Safety—Hearing Conservation) Regulation 1979.
- Foundry Regulations 1954.
- Local Government Industries (Machine Safety) Regulation 1979.
- Locomotive Regulations 1958.
- Rural Industries (Machines Safety) Regulations 1972.
- Factories (Health and Safety-Spray Painting) Regulation 1977.
- Timber Industry (Health and Safety) Regulation 1982.
- Welding Regulations 1958.
- Construction Safety Regulations 1950.

- Dangerous Goods Regulation 1978.
- Dangerous Goods (Gas Installation) Regulation 1982.

Codes of Practice include:

- Code of Practice for the Construction and Testing of Concrete Pumps 1993.
- Code of Practice for Compactors 1991.
- Code of Practice for Electrical Practices for Construction Work 1992.
- Code of Practice for Mono-strand Post Tensioning of Concrete Buildings.
- Code of Practice for Pumping Concrete 1983.
- Code of Practice for Safety Aspects in the Design, Manufacture and Installation of On-farm Silos and Field Bins 1991.
- Code of Practice for Safe Work on Roofs 1993.
- Code of Practice for Snigging Logs 1993.
- Code of Practice for Tunnels Under Construction 1991.

The NSW *Factories Shops and Industries Act 1962* is a major statute affecting industrial safety in factories and shops. Particular matters include boilers and pressures vessels, foundries, electroplating, lead processors, locomotives, spray painting and welding. Detailed regulations provide a comprehensive requirements for satisfying the general statutory prescriptions and prohibitions. The program of staged repeal of regulations established by the NSW *Subordinate Legislation Act* requires periodic review of these regulations. A number of regulations under the NSW *Factory, Shops and Industries Act 1962* were due for staged repeal on 1 September 1994.

Construction Safety Act 1912 and associated regulations

The NSW *Construction Safety Act 1912* is the major statute covering safety on construction sites and related locations. Aspects of safety within the Act include notification of certain works, inspections of certain operations and certificates of competency. Regulations made under the Act contain detailed provisions on various construction safety aspects including scaffolding, lifts, cranes, ladders, use of explosives, plant and gear, and safety of amusement devices.

Other legislation

Other legislation affecting plant, and not administered by the NSW Workcover Authority include:

- *Coal Mines Regulation Act 1982.*
- *Electrify Act 1945.*
- Electricity (Workers Safety) Regulation 1992.
- *Liquified Petroleum Gas Act 1961.*
- *Mines Inspection Act 1901.*
- *Mines Rescue Act 1925.*
- *Radiation Control Act 1990.*
- *Rail Safety Act 1993.*

- *Rural Workers Accommodation Act 1969.*

The adoption of the *National Standard for Plant* will, it has been reported, enable the plethora of regulations on plant to be rationalised with at least seven plant regulations under the *NSW Factories, Shops and Industries Act 1962* and others under the *NSW Construction Safety Act 1912* able to be revoked.

3.2.2 Victoria

Occupational Health and Safety Act 1985

The Victorian *Occupational Health and Safety Act 1985* places general duties on employers and others, such as persons who design, manufacture, erect, install, import or supply plant for use at a workplace. The regulations prescribe specific requirements in respect of explosive-powered tools, lasers, machinery and tractors.

Regulations made under this Act include:

- Occupational Health and Safety (Explosive-powered Tools) Regulations 1989.
- Occupational Health and Safety (Laser Safety) Regulations 1986.
- Occupational Health and Safety (Machinery) Regulations 1985.
- Occupational Health and Safety (Tractor Safety) Regulations 1986.

Boilers and Pressure Vessels Act 1970

The Victorian *Boilers and Pressure Vessels Act 1970* prescribes minimum standards for the design, construction, manufacture, installation, alteration, repair, maintenance, inspection, use and testing of boilers and pressure vessels. It also covers approval of designs, registration of boilers and pressure vessels and certification of operators.

The regulations made under this Act are the Boilers and Pressure Vessels (General) Regulations 1992.

Lifts and Cranes Act 1967

The Victorian *Lifts and Cranes Act 1967* legislation prescribes minimum standards for the design, construction, manufacture, installation, alteration, repair, maintenance and use of cranes (including hoists and conveyors) and lifts. In the case of cranes, it covers dismantling, removal and transportation. The Act also covers amusement structures. The legislation requires registration of amusement structures, approval and inspection of lifts and notification in respect of cranes.

Regulations made under this Act are:

- Cranes Regulations 1989.
- Cranes (Suspended Personnel) Regulations 1992.
- Lifts Regulations 1988.

Scaffolding Act 1971

The Victorian *Scaffolding Act 1971* prescribes minimum standards for the design, construction, erection, dismantling, maintenance, inspection and use of scaffolding. Its coverage also includes permits for scaffolding work.

The regulations made under this Act are the Scaffolding Regulations 1992.

The Department of Business and Employment (Occupational Health and Safety Authority) administers these Acts. Enforcement under the Victorian *Occupational Health and Safety Act 1985* is by inspectors, appointed under the Act and one or more of the three equipment-specific Acts, entering and inspecting workplaces. Notification of accidents involving lifts, cranes, amusement structures and boilers and pressure vessels is required under equipment-specific legislation.

It is the Department's intention to replace the legislative provisions applying to plant used or for use at a workplace currently set down in the three equipment-specific Acts and nine principal regulations (listed above) with new regulatory controls under the Victorian *Occupational Health and Safety Act 1985.* The new regulatory controls for plant will be based on the *National Standard for Plant.* The general duties set out in the Victorian *Occupational Health and Safety Act 1985* will be retained. It is intended that safety in the public domain for this plant will be dealt with by a principal Act which is currently before the Victorian Parliament.

Other legislation

There are other Acts and regulations in Victoria administered by regulatory agencies other than the Department of Business and Employment (Occupational Health and Safety Authority) which impact on plant. These other Acts include:

- *Building Act 1993.*
- *Coal Mines (Pensions) Act 1958.*
- *Dangerous Goods Act 1985.*
- *Environment Protection Act 1970.*
- *Extractive Industries Act 1966.*
- *Health Act 1958.*
- *Liquified Gases Act 1968.*
- *Local Government Act 1989.*
- *Marine Act 1988.*
- *Mines Act 1958.*
- *Petroleum Act 1958.*
- *Petroleum (Submerged Lands) Act 1982.*
- *Pipelines Act 1967.*
- *Physiological Practices Act.*
- *Shearers Accommodation Act 1976.*
- *State Electricity Commission Act 1958.*
- *Workers Compensation Act 1958.*

The Victorian *Coal Mines Act 1958* consolidates the law relating to coal mines and coal mine workers. The Victorian *Marine Act 1988* covers in parts specific safety aspects to be observed in the operation of vessels. The Victorian *Mines Act 1958* covers general safety regulations for mines including permits and inspections of mines and mining machinery, certification of personal, their duty to keep accident

records. The Victorian *Petroleum Submerged Lands Act 1982* contains provision on matters of diving, accident procedures and general safety practices. The Victorian *Pipelines Act 1967* contains construction and operational aspects of pipelines including requirements for examination and testing. The Victorian *State Electricity Commission Act 1958* regulates the inspection and approval of electrical equipment.

3.2.3 Queensland

Workplace Health and Safety Act 1989

Workplace Health and Safety Regulations 1989 include:

- Part 4—Registration of Work Places and Plant.
- Part 10—Construction and Maintenance Equipment.
- Part 11—Construction and Alteration Removal of Building Structures.
- Part 17—Electrical Equipment and Installations.
- Part 18—Cranes and Hoists.
- Part 31—Spray Painting.
- Part 33—Foundry and Abrasive Blasting.
- Part 34—Compressed Air.
- Part 35—Under-water Diving.
- Part 38—Air Handling and Water Systems of Buildings.

The Queensland *Workplace Health and Safety Act 1989* and regulations provides for codes of practice. The Queensland *Code of Practice for Plant* took effect on 30 April 1993 and outlines provisions for the prevention and control of risks arising from or associated with plant at a workplace. The Code of Practice applies to a person who designs, manufactures, imports, supplies, erects or installs plant for use at a workplace. It applies to an owner of plant, an employer who owns leases or manages plant at a workplace, a person in control of a plant at a workplace and an employee or other person who uses plant at a workplace.

The Code of Practice covers plant generally including machinery, equipment, appliances, pressure vessels, implements and tools and personal protective equipment as well as plant generally specified in schedule 3 to the Queensland *Workplace Health and Safety Act 1989* which may also be used at premises other than a workplace. It excludes scaffolding, shoring and form work. The Code of Practice indicates where a duty of care is required and the practical steps to be taken to fulfil the duty. The Code of Practice includes appendixes on risk management, standards and manufacturers instructions.

Enforcement of legislation is by audit inspection and investigation with prosecutions before the Queensland Industrial Magistrate.

The Queensland *Workplace Health and Safety Act 1989* requires employers to appoint a workplace health and safety officer in respect of each workplace with 30 or more employees or where directed by the health and safety authority.

3.2.4 South Australia

Occupational Health Safety and Welfare Act 1986

Regulations under this Act include the:

- Commercial Safety Regulations 1987.
- Construction Safety Regulation 1987.
- Health and First Aid Regulations 1991.
- Industrial Safety Regulations 1987.
- Asbestos Regulations 1991.
- Synthetic Mineral Fibres Regulations 1991.
- Logging Regulations 1991.
- Confidentiality of Health Records Regulations 1991.
- Safe Handling of Pesticides Regulations 1987.
- Power driven Machinery Regulations 1987.
- Rural Industry and Machine Safety Regulations 1987.
- Proceedings Regulations 1987.
- General Regulations 1987.
- Election of Health and Safety Representatives Regulations 1987.
- Notification of Work Related Injuries Accidents and Dangerous Occurrences Regulations 1987.
- Registration of Employers Regulations 1990.
- Manual Handling Regulations 1990.
- Industrial Code 1967.

The objectives of the South Australian *Occupational Health Safety and Welfare Act 1986* are to:

- secure the health safety and welfare of persons at work;
- eliminate risks to the health safety and welfare of persons at work;
- protect the public against risks to health and safety arising out of or in connection with the activities of persons at work;
- involve employees and employers in issues affecting occupational health, safety and welfare;
- encourage registered associations to take a constructive role in promoting improvements in occupational health, safety and welfare practices; and
- assist employers and employees to achieve a healthier and safer working environment.

The duties in the South Australian *Occupational Health Safety and Welfare Act 1986* are cast in general terms with the regulations providing detail. Enforcement is affected by means of inspection of the workplace. Notices for improvement or prohibition can be issued and summons action where the director considers, on the evidence, prosecution is warranted.

The South Australian *Occupational Health Safety and Welfare Act 1986* provides for a health and safety representative for a group. The composition of groups should be determined by consultation between employers and employees.

Other legislation

Other Acts include:

- *Boiler and Pressure Vessels Act 1968.*
- *Building Act 1971.*
- *Dangerous Substances Act 1979.*
- *Electrical Products Act 1988.*
- *Electrical Workers and Contractors Licensing Act 1965.*
- *Gas Act 1965.*
- *Health Act 1937.*
- *Agriculture Chemicals Act 1955.*
- *Industrial Relations Act 1990.*
- *Lifts and Cranes Act 1988.*
- *Marine Act 1958.*
- *Mines Regulations Act 1964.*
- *Mining Act 1968.*
- *Petroleum Act 1940.*
- *Petroleum (Submerged Lands) Act 1982.*
- *Psychologist Act 1977.*
- *Workers Rehabilitation and Compensation Act 1986.*

South Australia's *Boiler and Pressure Vessels Act 1968* controls detailed matters with respect to controls to boilers and pressure vessels, including such matters as approval of design and registration of such vessels; the requirement for annual inspection; the reporting of accidents; and certificates of competency for persons in charge of boilers and pressure vessels. The South Australian *Agricultural Chemicals Act 1955* contains matters affecting labelling. The South Australian *Building Act 1971* covers demolition, alteration and construction of buildings; fire safety; ventilation; structural provisions and emergency lighting. The South Australian *Dangerous Substances Act 1979* regulates the keeping handling conveyancing and use and disposal of a quantity of dangerous substances. There is a general duty to take proper precautions with respect to dangerous substances. Licences are required to keep dangerous substances and convey dangerous substances. The South Australian *Electrical Products Act 1988* provides for the labelling of electrical products and for the prohibition on the sale or use of unsafe electrical products. The South Australian *Electrical Workers and Contractors Licensing Act 1965* licences electrical workers and contractors. The South Australian *Lifts and Cranes Act 1988* regulates the construction erection modification maintenance and operations of cranes hoist and lifts. The South Australian *Marine Act 1936* makes provision for safety equipment and control of employees such as certificates of

competency for marine engine drivers and other persons in related matters. The South Australian *Mines and Works Inspection Act 1920* covers such matters as general provisions relating to safe working conditions.

3.2.5 Western Australia

Occupational Health Safety and Welfare Act 1984

The objectives of this Act are to:

- promote and secure the health safety and welfare of persons at work;
- assist in securing safe and hygienic work environments;
- protect persons at work against hazards by reducing eliminating and controlling the hazards;
- foster co-operation and consultation between employers and employees and to provide for their participation in the formulation and implementation of health and safety standards;
- provide for formulation of policies and for the co-ordination of the administration of laws relating to occupational health safety and welfare; and
- promote the education and community awareness on matters relating to OHS and welfare.

The Western Australian *Occupational Health and Safety Act 1984* provides for the establishment of workplace health and safety representatives and committees and covers general workplace standards and requirements. Specific regulations relating to plant include those covering boilers and pressure vessels, cranes, lifts, hoists and escalators.

Other legislation

Other Acts and regulations include the:

- *Coal Mines Regulation Act 1946;*
- Coal Mine Regulations 1946.
- *Marine Act 1982.*
- *Mines Regulation Act 1946;*
- Mines Regulation Act Regulations 1976.

Mining legislation covers such matters as accident reporting and injury procedures, function of inspectors and the regulation of employment of persons in charge of machinery. The Western Australian *Marine Act 1982* includes requirements for the carriage of dangerous goods and covers life saving appliances, fire appliances and other equipment on ships.

3.2.6 Tasmania

Industrial Safety, Health and Welfare Act 1977

This Act covers the duties and obligations of various persons, notification and registration requirements and miscellaneous provisions and is supported by detailed regulations. Tasmania's *Industrial Safety, Health and Welfare Act 1977* covers factory, shops and offices, scaffolding, and inspection of machinery. Enforcement of the Act and regulations is by means of inspection and the issue of a written warning detailing any breaches and any time limits by which the breaches are to be

rectified. The Act provides for the election of workplace safety representatives where there are 10 or more employees.

Regulations under the Tasmanian *Industrial Safety, Health and Welfare Act 1977* are the:

- Industrial Safety, Health and Welfare (Administration and General) Regulations 1979.
- Industrial Safety, Health and Welfare (Employees Safety Representatives) Regulations 1982.
- Industrial Safety, Health and Welfare (Forest Industries) Regulations 1990.
- Industrial Safety, Health and Welfare (Heating Systems) Regulations 1979.
- Industrial Safety, Health and Welfare (Certificates of Competency) Regulations 1988.
- Industrial Safety, Health and Welfare (Fees) Regulations 1987.

Other legislation

Other Acts include:

- *Dangerous Good Act 1976.*
- *Fire Services Act 1979.*
- *Hydro-Electric Commission Act 1944.*
- *Industrial Relations Act 1984.*
- *Local Government Act 1993.*
- *Mines Inspection Act 1968.*
- *Pesticides Act 1968.*
- *Petroleum (Submerged Lands) Act 1982.*
- *Public Health Act 1962.*
- *Radiation Control Act 1977.*

The Tasmanian *Dangerous Good Act 1976* controls the sale manufacture keeping and handling of dangerous goods. The Tasmanian *Fire Services Act 1979* includes requirements covering the inspection of fire safety equipment. Tasmania's *Local Government Act 1962* regulates aspects of building and construction. The Tasmanian *Mines Inspection Act 1968* includes requirements for fire and safety equipment and for the safe operation of machinery.

3.2.7 Northern Territory

Work Health Act 1986

The objectives of this Act are to:

- promote OHS;
- prevent industrial injuries and diseases;
- promote the rehabilitation and maximum recovery from incapacity of injured workers;
- provide financial compensation to workers incapacitated by industrial injuries or diseases and to dependants of workers; and
- establish certain bodies.

The Northern Territory's *Work Health Act 1986* provides for the establishment of a work health authority to promote self regulation of workplaces and co-operation between employers and workers in overcoming hazards. The Northern Territory Work Health Authority has the power to penalise for breaches of duties required by the Act. The Authority can issue notices to rectify safety deficiencies and, if necessary, prohibit certain activities.

The Work Health Occupational Health and Safety Regulations 1992 made under the Northern Territory's *Work Health Act 1986* detail the duties and obligations of employers and workers including specific requirements with respect to plant, equipment and processes and general hazards. These regulations include:

- Part 2—Responsibilities of employers, workers, self employed persons, occupiers of work places, owners of plant, designers of plant, manufacturers, importers, suppliers and installers of plant and joint responsibilities.
- Part 6—General obligations including the identification and control of risk and responsibilities for information and induction training.
- Part 9—Plant requiring design verification and registration.
- Part 10—Plant and equipment;
  - Division 2: Cranes and Hoists.
  - Division 3: Lifts Escalators and Moving Walks.
  - Division 4: Amusement Structures.
  - Division 5: Industrial Trucks.
  - Division 6: Refrigeration Machinery.
  - Division 7: Conveyors.
  - Division 8: Lifting Gear.
  - Division 9: Explosive Power Tools.
  - Division 10: Compressed Air Nailing Tools.
  - Division 11: Portable Ladders.
  - Division 12: Lasers.
  - Division 13: Scaffolds.
- Part 11—Construction work.
- Part 12—Specific processes including abrasive blasting, asbestos, spray painting, and under water work.

Other legislation

Other Acts include the:

- *Building Act 1993.*
- *Marine Act 1981.*
- *Mine Management Act 1990.*

- *Radiation (Safety Control) Act 1978.*
- *Electrical Workers and Contractors Act 1978.*
- *Fire Services Act 1983.*
- *Petroleum (Submerged Lands) Act 1982.*

The Northern Territory's *Building Act 1993* establishes building standards and its *Dangerous Goods Act 1980* incorporates requirements for the safe manufacture, storage, transportation, sale, import and export of dangerous goods. The Northern Territory *Mine Management Act 1990* and its regulations cover safety procedures in underground and open cut mines including regulation of fire equipment, winding processes, explosives, electricity, mining machinery, equipment and ventilation.

3.2.8 Australian Capital Territory

Occupational Health and Safety Act 1989

The objectives of this Act are to:

- secure the health safety and welfare of employees at work;
- protect persons at or near work places from risks to health and safety arising out of the activities of the employees at work;
- promote an occupational environment for employees that is adapted to health and safety needs; and
- foster a co-operative consultative relationship between employers and employees on the health, safety and welfare of employees at work.

Enforcement of the ACT *Occupational Health and Safety Act 1989* includes inspection and the issue of improvement and prohibition notices. Prosecution by summons can be effected when considered necessary. This Act allows for workplace representatives where employers have 10 or more employees and, to a lesser degree, for health and safety committees.

Machinery Act 1949

This Act covers the installation, use, inspection and operation of machinery. Regulations under the ACT *Machinery Act 1949* aim to secure the safety of persons and property from injury or damage arising out of the installation use or operation of machinery. Regulations with respect to boiler and pressure vessels have been made under this Act.

Scaffolding and Lifts Act 1957

This Act and regulations covers: scaffolding, lifts and cranes; building work excavation; and compressed air work. Requirements include notification of certain works, inspection of certain operations and the issue of certificates of competency.

Other legislation

Other Acts include the:

- *Building Act 1972.*
- *Dangerous Goods Act 1984.*

- *Electricity Act 1971.*
- *Fire Brigades Act 1957.*
- *Public Health Act 1928.*

3.3 Conclusion

It can be seen from a reading of the existing State and Territory legilation and regulations affecting plant that there are significant differences in the regulatory frameworks between the various States and Territories.

The existing regulatory structure for plant is fragmented and predominated by prescriptive and detailed technical requirements. The disadvantage to this approach is that detailed technical requirements need to be revised from time to time to keep pace with technological advancement. Indeed, the existing prescribed standards for plant may not reflect latest technology and national or international standards. Further, overlap and ambiguity in definitions used in specific Acts and regulations can cause administrative difficulties to both the regulators and the regulated.

Current Acts and their regulations tend to focus on the plant rather than the hazards and risks associated with the plant. Consequently, requirements for hazard identification, risk assessment and control are not a common requirement throughout these regulations. The processes of hazard identification, risk assessment and control are commonly featured in contemporary OHS regulations as a means of eliminating or mitigating risks at the source. Similarly, requirements for consultation and information provision are not incorporated within plant-specific Acts and their associated regulations.

The existing regulatory structure does not have a common exemption process for all types of plant. The long delays often associated with obtaining exemptions, under existing arrangements, can be a source of frustration and significant cost on firms. This is also the case with arrangements for obtaining government approvals. Furthermore, as prescriptive regulations become outdated, the need for exemptions and the costs associated with exemption process increases.

Currently, some of the control measures involved in the area of plant safety are exercised or approved by the various State and Territory governments, and the mechanisms or procedures for exercising controls over certain high risk plant, such as lifts, have involved significant responsibility being apportioned to government. Methods of assuring safety include the statutory requirement for government involvement in design approval and inspection once the plant is operational. Thus, the onus of responsibility for ensuring safety in relation to plant, in many cases, rests with the State or Territory OHS agencies.

These problems are exacerbated, especially for those organisations involved in interstate activities, by differences in requirements between the States and Territories. Thus, a lack of uniformity on common regulatory requirements for plant exists within Australia. A generic regulation on plant safety is needed to address this and other deficiencies, as well as to ensure that all types of potentially dangerous plant are adequately regulated.

The *National Standard for Plant* provides the opportunity to eliminate these differences to the maximum extent. This may best be achieved by adoption of the National Standard into State and

Territory legislation and regulation by reference wherever possible. In this economic impact assessment it is assumed that the National Standard has been adopted in its entirety.

4 Methodology

4.1 Cost-benefit analysis

In recent years, a number of governments in both Australia and overseas—most notably the United States—have predicated their rule-making process on proposed regulations being subjected to an economic or regulatory impact assessment. For example, New South Wales and Victoria have enacted subordinate legislation which require regulatory impact statements to be undertaken on all proposed regulations which impose a significant burden on any section of the community.

The essential elements of a regulatory impact statement in these two States include:

- definition of the objectives of the proposed regulation;
- identification of alternative means of achieving defined regulatory objectives;
- analysis of the impact of the proposed regulation together with alternatives, including an assessment of all costs and benefits.

In undertaking a regulatory impact statement in Australia, the benefits are normally restricted to those benefits which the proposed regulation is seeking to obtain, although other indirect benefits are required to be listed. Thus, in the area of OHS, the primary benefits are normally seen as a reduction in work-related accidents, deaths, diseases and injuries. As issues of OHS often manifest in other areas, such as industrial disputation, a regulation may have the effect of leading to lower levels of such disputes. While these benefits are required to be spelt out, the cost-benefit comparison is normally undertaken on the OHS-related benefits where there are no powers under primary OHS Acts to achieve other ends, such as reducing levels of industrial disputation.

This methodology is contrasted with the guidelines for economic impact assessments of National Commission National Standards, where all benefits are to be included irrespective of their nature.

Cost benefit analysis is a widely used technique of applied welfare economics. It is used to throw light on the social desirability of undertaking an economic project, whether it be an act of investment, introduction of a new commodity or a change in policy. The cost-benefit criterion generally adopted is that an expenditure is to be judged potentially worthwhile if the associated benefits exceed its costs, where benefits and costs are defined to include any welfare gain and loss which occur as a result of that expenditure.

Since both costs and benefits will typically accrue over time, and thus have different values due to the effects of inflation and different time preferences, it is necessary for them to be discounted to arrive at a valuation based on a common price level in order to allow them to be compared. This process derives the "net present value" (a summation of the discounted costs and benefits).

A variant of cost-benefit analysis is cost-effectiveness analysis, which is simpler to carry out. Under this methodology, if the benefits are fixed then the problem is to minimise the net costs. This type of analysis is often applied where some precise, usually non-pecuniary objective is exogenously stipulated or where it is not possible to measure all benefits in dollar terms.

In the context of regulatory impact analysis, the option is open as to whether or not to use cost-benefit as opposed to cost-effectiveness analysis. Where a given standard or outcome measure has been determined by the authorities and there is no community debate as to its desirability—for example, the standards for ionising and non-ionising radiation sources—then the issue is one of minimising the cost to the community of meeting that standard. In this case cost-effectiveness analysis would apply.

However, where the outcome of the regulatory process can provide a range of benefits, these benefits can be matched against the alternative cost environments for meeting them. Thus, for a given level of benefit, discounted present values can be computed to give a rank ordering of the social desirability of undertaking the project. However, It must be pointed out that a project with a higher net present value than an alternative may not be undertaken. This may occur where the costs associated with that project exceed a limited budget. In this case, a project with a lower net present value may actually be selected since its cost do not exceed the budget limit. In simple terms, that benefits must exceed costs is seen as a necessary condition for approval, but it is not a sufficient condition in its own right.

4.2 Modelling regulatory impacts

4.2.1 Costs

Two issues are of primary importance in estimating the costs of compliance with a proposed regulation or standard. These include:

- what will be the impact of a proposed regulation on affected parties over and above what they are currently obligated to do under an existing regulation?; and
- what will be the estimated cost of compliance with additional regulatory requirements?

To ascertain the first issue, it is necessary to obtain an understanding of current regulatory obligations. In addition, it is also necessary to gain an understanding of current practice. For example, many employers may engage in Best Practice and already be meeting the requirements of a proposed regulation which will thus have no substantive impact on their work practices. For those parties not engaged in Best Practice, it is necessary for them to estimate what changes will be required in their work practices in order to comply with a proposed regulation. This, it will be appreciated, is often very difficult without a thorough understanding of the requirements and implications of a proposed regulation.

For those parties who will be required to undertake additional compliance measures, it is then necessary to estimate the expected costs of additional compliance measures. Again, this is often not an easy task.

4.2.2 Benefits

Despite the difficulties enumerated in the estimation of costs, these tend to be less difficult than the estimation of benefits, especially in the area of OHS. The primary area of benefits in the area of OHS is a reduction in the level of accidents, deaths, injuries or disease, with the actual level of benefits being measured in reduced compensation payments.

Again, the initial issue is to obtain an understanding of current trends, for example, the effect to the level of accidents associated with the proposed regulatory area. In other words, what would the estimated level of accidents be in the absence of any regulatory change?

Following this, it is necessary to estimate the likely impact of the proposed regulation on the level of accidents. In some areas which involve, for example, exposures to substances, this may be somewhat easier where epidemiological studies can provide dose and exposure relationships, for example, asbestos. In the area of plant, such data are typically not available. It is also made more difficult by the existence of current regulations. For example, there are virtually no accidents or deaths associated with lifts because they are already regulated.

The estimation of OHS benefits in areas such as plant is therefore usually based on a combination of:

- analysis of previous regulatory experience (what has been the impact of previous regulatory regimes on the accident rate?);
- analysis of overseas experience where similar regulations may have been enacted; and
- discussion with experts in the area.

As noted above, there may also be other benefits. These benefits may range from reductions in the cost of compliance with the proposed regulation to benefits which are not related to the principle aims or objectives of the proposed regulation. With respect to OHS regulations, these other benefits may include reduced industrial disputation (as noted above) and improvements in productivity. These are difficult to quantify and are not measured in this study.

4.2.3 Model overview

There are a number of parties affected by the *National Standard for Plant*—designers, manufacturers, importers, suppliers, employers, self-employed, erectors and owners. Only employers are included in the model. As noted in Section 1.3.2, these other parties were not included in the survey because there

are no sources of data which would allow them to be appropriately sampled. Thus, no attempt is made to estimate the quantitative impact (in terms of both costs and benefits) of compliance with the National Standard. The costs and benefits associated with non-employers are addressed in terms of a qualitative assessment of the impact of the National Standard on them.

The cost-benefit model to assess the impact on employers was developed using the software *Lotus-123*. It contains data obtained from the Australian Bureau of Statistics (ABS), the results of an employer survey undertaken as part of this study and data relating to accidents and compensation from the various State and Territory OHS agencies.

The model computes the discounted cash flow of the stream of estimated costs and benefits over a ten-year time horizon.

For the purposes of the model, the estimation of costs is based on the survey of employers noted above. In addition, the model contains a series of assumptions, based on the employer survey in terms of expected rates of compliance. All factors may be altered for purposes of sensitivity testing. The employer survey and base assumptions are discussed in more detail in Section 5.2.

The outcome of the model, in net present value terms, is completely dependent upon the data and assumptions underlying the model. Because such a model is particularly dependent upon these assumptions, which are critical in the absence of more specific data, the outcome needs to be interpreted with caution. Any net present value result should be seen as indicative only. This is exacerbated by the number of costs and benefits which cannot be estimated in this economic impact assessment. The results of the model are discussed in chapters 6–8.

5 Model base data and assumptions

5.1 Base data and assumptions

Data relating to the number of employers and employees was obtained from the ABS. State and Territory OHS authorities provided compensation claims data.

The cost-benefit calculations are all undertaken in 1993 prices. The period of analysis is 10 years. The Commonwealth Department of Finance notes that, when undertaking cost-benefit analyses, project-specific discount rates are to be preferred. Given the diversity of employers and industry types affected by these regulations, it is not feasible to use such a rate. Therefore, the Department of Finance recommends eight per cent real as being appropriate and that sensitivity testing at rates of six per cent and 10 per cent also be undertaken. The Steering Committee recommended that eight per cent be used for the primary (or base) case and that sensitivity be undertaken at four per cent and six per cent. For the purpose of the analysis, these rates have been used.

The estimates for numbers of employers and employees affected are assumed to grow by one per cent per annum. These rates are notional and are used for illustrative purpose only to give a degree a of realism to the model and should not be seen as forecasts of growth.

For the purpose of the analysis, all employers are assumed to comply where required in order to meet any obligations under the *National Standard for Plant.*

5.2 Employer survey

In order to obtain detailed information on both compliance with existing regulations in the various jurisdictions together with expected impact of the *National Standard for Plant*, a survey of employers was undertaken.

5.2.1 Questionnaire and pilot survey

A questionnaire was designed and piloted across a number of employers, classified by both industry sectors and employment size. This pilot phase was undertaken by the inspectorates of the various jurisdictions.The questionnaire initially comprised six tables to be completed. These tables contained questions relating to:

- hazard identification;
- risk assessment (two tables);
- risk control;
- training; and
- record keeping.

Each table asked employers to provide details on current practices, including estimates of hours and/or costs associated with each process together with estimates of hours and/or costs required where the employer considered that further action would be necessary to comply with the National Standard.

The pilot survey indicated that the questionnaire was feasible, although acknowledged as both complex and time consuming.

One area which was changed as a result of this pilot phase was in the area of hazard identification and risk assessment. The National Standard has separate obligations for these two processes. Thus, separate questions were initially asked on both processes. During the pilot survey, employers indicated that they treated these two processes as one and the same, that is, hazard identification and risk assessment were undertaken as a continuous process and thus could not be costed separately.

As a result, the Project Steering Committee agreed that these two questions should be combined.

5.2.2 Sample design

The sample was based on data from the ABS Integrated Business Register which provides numbers of locations by the Australian Standard Industrial Classification (ASIC) and employment size. Establishments were initially classified at the two-digit ASIC classification (minor group) and by three employment categories: less than 20 employees; 20–99 employees; and more than 100 employees.

It was determined that 500 interviews would be adequate to provide statistically valid results. Jurisdictions were allocated interviews to be undertaken by their inspectorates. Jurisdictions were given blocks of interviews within ASIC categories rather than allowing them to undertake interviews across all ASIC categories. Although it was realised that this may lead to some bias in the results (for example, agriculture in Queensland may not be representative of agriculture in Tasmania), it was nevertheless considered preferable to allowing a State to undertake interviews of a cross-section of all industry within its boundaries. The reason for this decision was that by allowing inspectors to concentrate in

industry sectors, they would gain greater experience in the range of work undertaken within an industry and make the interviewing process easier.

This sample framework was provided to the State and Territory OHS agencies which then accessed their compensation databases to ascertain the names and addresses of employers in the relevant ASIC or employment category of the framework.

Copies of the questionnaire may be obtained from Worksafe Australia.

5.2.3 The survey

The survey was undertaken by the inspectorates of the various State and Territory OHS agencies. Inspectors were given interview instructions and provided with an initial training session as to the purpose of the survey, the National Standard and the questionnaire.

Interviewers were asked to contact employers and explain the nature of the survey, the range of information required and to seek their assistance. For those employers agreeing to participate, a copy of the questionnaire was sent in advance together with an outline of the National Standard. In addition, employers were asked to arrange for a union or OHS representative to be present during the interview if possible. Analysis of the survey showed that union and/or health and safety representatives were present at 31 per cent of surveys undertaken.

As a result of the survey, 367 questionnaires (or 73.4 per cent of target interviews) were returned for analysis. Ten questionnaires were returned after the cut-off date and were not able to be used because of the tight timelines for the project. Table 5.1 sets out the responses by ASIC and employment categories.

The shortfall arose for two main reasons:

- The questionnaire was complex and requires employers to obtain significant amounts of information in some detail. As a result, some States experienced considerable difficulty in obtaining the assistance of employers.
- As the inspectorates still had their normal duties to undertake, the time-consuming nature of the interviews meant that the survey process took longer than initially scheduled. As a result, the survey was curtailed in order to meet to the study timelines.

Of some concern in the shortfall was the virtual absence of response in the personal services sector. Given the timelines of the project, it was not possible to arrange for adequate number of additional interviews to be undertaken. However, Queensland undertook to do three interviews of employers in this area. As it was not possible to enter these data in time for the analysis, these responses have been assessed to obtain an indication of whether the results differed to any significant extent from the responses of other industry sectors.

Despite this shortfall, it is considered that the number of responses are adequate for information to be given sufficient statistical validity. Nevertheless, the occurrence of a number of blank cells in the survey sample means that the level of analysis with respect to employers was initially undertaken at the one-digit (major group) ASIC level. Table 5.2 sets out the numbers of questionnaires returned by ASIC and employment categories.

5.2.4 Coding and review

All questionnaires were vetted on return prior to data entry. This was necessary to ensure consistency and that questions had been answered appropriately.

For example, Table 1 of the questionnaire asked employers details of current hazard identification and risk assessment processes together with estimates of future hazard identification and risk assessment under the National Standard by plant category. The last plant category listed in the questionnaire is 'Other Plant', which is extremely broad in scope and covers items such as manually powered hand-held tools and furniture. Table 3 of the questionairre asks employers to provide details on current risk control measures and estimated costs of future risk control measures.

During the vetting of this latter table, it was realised that a number of employers had misunderstood the scope of Other Plant. If an employer gave types of risk control measures for Other Plant such as 'electric cut-off switches', it indicated that the type of plant listed under this category in Table 1 of the questionnaire was wrong.

Again, as an example, Table 4 of the questionairre asked for details of current and expected training for employees assessed as being at risk from plant. Employers were asked to provide this information on a per employee basis. The vetting process indicated that a number of employers provided these estimates on a total basis.

As a result of this vetting process, a number of employers were contacted directly by the consultants to clarify responses with questionnaires being amended accordingly.

Analysis of the questionnaires also indicated that virtually all respondents were unable to provide meaningful data for the Other Plant category. As discussed previously, this category is extremely broad in scope. Consequently, many employers indicated that it was not possible to estimate the numbers of plant involved or provide any indication of costs of compliance with the National Standard for this category. Other Plant was ommitted from the subsequent analysis.

5.3 Survey analysis

The survey responses were initially weighted at the one-digit ASIC level by the number of employers in each employment category to provide average rates of numbers of employers who estimated that they would require additional compliance activities over and above their current activities or processes together with average cost estimates of future compliance requirements.

Preliminary analysis of these data showed some results which did not seem reasonable. As a result, individual questionnaires were re-checked. As an example, this preliminary analysis indicated that the estimated cost of future hazard identification/risk assessment for the construction sector was $54,815 per firm compared with $7,141 per firm for the manufacturing sector. An analysis of questionnaires from the construction sector indicated that this large estimated cost was due to one response which was having a disproportionate effect following the weighting process.*

* This one 'outlying' response was from an employer with three employees who indicated that the estimated cost of hazard identification/risk assessment for three units of powered mobile plant was $120,000.

Because of a number of cells with small counts together with the effect of non-representative 'outliers', the weighting process can have a disproportionate effect as noted and possibly provide misleading estimates at the one-digit ASIC level. It was therefore decided by the Project Steering Committee that the appropriate level of analysis was for all employers across all ASIC groups, that is, to use the weighted average results for all employers rather than the weighted average results at each ASIC category. This in turn meant that the level of analysis could only be undertaken at the industry-wide level rather than at the initially proposed sectoral level.

5.4 Interpretation of results

It needs to be emphasised that the cost estimates for hazard identification, risk assessment, risk control and record keeping are weighted averages for *all* employers. The average employment size of an employer is nine. Thus, an individual employer who is significantly larger may have difficulties in relating to the data. Nevertheless, the estimates are representative of all employers. The cost estimates for training are estimated on a per employee basis.

Table 5.1
Survey responses by ASIC and employment categories

Sector	*<20*	*20–99*	*>100*	*Total*
Agriculture	8	8	2	18
Mining	3	8	1	12
Manufacturing	65	67	49	181
Electricity/gas/water	1	3	4	8
Construction	9	1	0	10
Wholesale/retail trade	16	17	17	50
Transport	12	4	1	17
Communications	1	0	0	1
Finance	3	1	2	6
Public Service	7	2	8	17
Community services	19	13	13	45
Personal services	0	0	1	1
Total	**144**	**124**	**98**	**366**

6 Costs of compliance

6.1 Methods of cost estimation

The cost estimates used in the model have been derived from the results of the employer survey discussed in chapter 5 together with official ABS employer and employee data.

The cost estimates for hazard identification and risk assessment, risk control and record keeping are weighted averages for *all* employers. The average employment size of an employer is nine. Thus, an individual employer who is significantly larger may have difficulties in relating to the data. Nevertheless, the estimates are representative of all employers. The cost estimates for training are estimated on a per employee basis. The costs of compliance outlined in this section may be understated to some extent with the exclusion of the 'Other Plant' category.

When implementing the National Standard, a person carrying out a duty must apply the principle that risks to health and safety arising from plant and systems of work associated with plant are, as far as practicable, eliminated, or where this is not practicable, minimised. For the purposes of the National Standard, "minimise" means to reduce to the lowest practicable level.

The concept of practicability is used in virtually all States' OHS legislation. As defined in the Victorian *Occupational Health and Safety Act 1985:*

> 'Practicable' means practicable having regard to the:
>
> - severity of the hazard or risk in question;

- state of knowledge about that hazard or risk and any ways of removing or mitigating that hazard or risk;
- availability and suitability of ways to remove or mitigate that hazard or risk; and
- cost of removing that hazard or risk.

This means that during the survey, an employer may have provided an estimate of cost of compliance without taking the issue of practicability into account. It is not feasible in this economic impact assessment to make any allowance for this possibility.

6.2 Employers

6.2.1 Assumptions

In addition to the base assumptions set out in Section 5.1, two more specific assumptions were adopted with respect to employers. The National Standard requires that where new plant is introduced or there is a change to work practices or the way in which plant is used, new hazard identification and risk assessment processes should be undertaken.

To model the impact of this requirement, it was assumed that in any one year, 10 per cent of employers change their work practices (or introduce new machinery). This implies that over the 10-year analysis period, all base year employers will require additional methods of hazard identification and risk assessment in addition to the one undertaken in the first year. The second assumption relates to risk control measures. The model assumed that if an employer introduces a risk control measure following hazard identification and risk assessment processes, that measure—other than PPE—will have a life span of 10 years. The average life span of plant and equipment is known to be 7–10 years, so this simplifying assumption is a reasonable approximation. Thus, for any given risk control measure, the initial cost only occurs once—any other costs associated with that risk control measure are purely recurrent in nature, for example, maintenance or replacement of PPE.

The specific assumptions used to generate estimated costs of compliance together with the data used from the survey results are set out in the following sections.

Hazard identification and risk assessment

Year 1. Number of employers *multiplied* by the proportion estimated to require additional hazard identification and risk assessment *multiplied* by the weighted average cost of hazard identification and risk assessment.

Year 2 onwards. Number of new employers *multiplied* by the proportion estimated to require hazard identification and risk assessment *multiplied* by the weighted average cost of hazard identification and risk assessment *plus* the number of employers in previous year who are assumed to change work practices in current year *multiplied* by the proportion requiring new hazard identification and risk assessment *multiplied* by the weighted average cost of hazard identification and risk assessment.

Risk control

Year 1. Number of employers *multiplied* by the proportion estimated to require risk control measures *multiplied* by the weighted average cost of initial risk control measures.

Year 2 onwards. Number of new employers *multiplied* by the proportion estimated to require additional risk control measures *multiplied* by the weighted average cost of initial risk control measures *plus* the number of employers in previous year who instituted risk control *multiplied* by the proportion whose risk control measures entail recurrent costs *multiplied* by the weighted average cost of recurrent risk control measures *plus* the number of employers in previous year who are assumed to change work practices in current year, leading to need for new risk control measures, *multiplied* by the proportion requiring additional risk control measures *multiplied* by the weighted average cost of initial risk control measures.

Training

Year 1. Number of employees *multiplied* by the proportion estimated to require additional training *multiplied* by the weighted average cost of training.

Year 2 onwards. Number of new employees *multiplied* by the proportion estimated to require training *multiplied* by the weighted average cost of training *plus* number of employees in previous year whose employers are assumed to change work practices in current year, leading to need for new training, *multiplied* by the proportion estimated to require training *multiplied* by the weighted average cost of training.

Record keeping

Year 1. Number of employers in each ASIC category *multiplied* by the proportion within that ASIC estimated to require records *multiplied* by the weighted average cost of initial record keeping.

Year 2 onwards. Number of new employers *multiplied* by the proportion estimated to require records *multiplied* by the weighted average cost of initial record keeping *plus* the number of employers in previous year who kept records multiplied by the weighted average cost of recurrent record keeping.

6.2.2 Hazard identification and risk assessment

The proportion of employers who estimate that they will require to undertake additional hazard identification and risk assessment as a result of the National Standard is 26.9 per cent.

During the survey, a number of employers were contacted with queries about their responses. It was realised that for many employers, estimates of costs were in fact based on maintenance costs. That is, the processes of hazard identification and risk assessment were undertaken as part of their regular maintenance schedule. Thus, the cost estimates initially generated from the survey responses for this area were significantly understated. As a result of this, the Project Steering Committee agreed that 10 per cent of the total cost estimate should be attributable to the processes of hazard identification and risk assessment.

The average cost for employers who estimate that they will require to undertake additional methods of hazard identification and risk assessment as a result of the National Standard is $285.

Year 1. Using these factors, the estimated cost of hazard identification and risk assessment in Year 1 is $66.3 million.

Year 2 onwards. The estimated cost is $25.3 million in Year 2, increasing to $27.6 million by Year 10.

Total costs

Total costs for hazard identification and risk assessment over the 10-year period is $303.2 million undiscounted, or $212.9 million when discounted at eight per cent.

6.2.3 Risk control

The proportion of employers who estimate that they will need to introduce additional risk control measures as a result of the National Standard is 13.7 per cent. In addition, a number of these controls will incur annual costs, such as maintenance or replacement of personal protection equipment. Some 13.4 per cent of employers will incur these recurrent costs associated with control measures.

The average cost for employers who estimate that they will require to introduce additional risk control measures as a result of the National Standard is $6,850. The average cost for recurrent measures is $1,575.

Year 1. Using these factors, the estimated cost of risk control measures is $811.6 million.

Year 2 onwards. In Year 2, the estimated cost is $271.8 million, increasing to $294.3 million by Year 10.

Total costs

Total costs for risk control measures over the 10-year period is $3,357.9 million undiscounted, or $2,379.7 million when discounted.

6.2.4 Training

The proportion of employees estimated to require additional training as a result of the National Standard is 12.9 per cent.

The average cost of training for each employee estimated to be required as a result of the National Standard is $445.

Year 1. Using these factors, the estimated cost of additional training is $445.0 million.

Year 2 onwards. In Year 2, the estimated cost is $49.0 million, increasing to $53.0 million by Year 10.

Total costs

Total costs for additional training over the 10-year period is $903.0 million undiscounted, or $705.3 million discounted.

6.2.5 Record keeping

The proportion of employers who estimate that they will require to keep additional records as a result of the National Standard is 6.0 per cent.

The average cost for employers who estimate that they will require to keep additional records as a result of the National Standard is $330. The average costs for recurrent costs associated with record keeping is $215.

Year 1. Using these factors, the estimated cost of additional record keeping is $17.1 million.

Year 2 onwards. In Year 2, the estimated cost is $11.3 million, increasing to $12.3 million by Year 10.

Total costs

Total costs for additional record keeping over the 10 year period is $123.1 million undiscounted, or $83.7 million discounted.

6.2.6 Total costs

Table 6.1 sets out the estimates for cost of compliance by employers over the 10-year period and the assumptions underlying the costs of the model.

The estimated total costs of compliance for employers range from $1,334.0 million in Year 1, $357.4 million in Year 2 and $387.0 million by Year 10. Total costs over the 10-year period are estimated at $4,687.9 million undiscounted, or $3,381.5 when discounted. These costs may be overstated since the issue of practicability was not addressed.

As discussed previously, this total excludes costs associated with the Other Plant category. No direct data are available which would provide an indication of the extent of these costs since employers were not able to provide any meaningful estimates of the numbers of items of plant falling within this category, let alone costs of compliance. However, given the level of costs estimated for all other categories of plant where both the hazards and risk are more substantial, it is considered that any costs associated with Other Plant should not be significant.

6.3 Other costs

6.3.1 Other parties

The National Standard imposes obligations on a number of parties in addition to employers—designers, manufacturers, importers, suppliers, installers, erectors, owners, self-employed persons and employees. Section 2.7 sets out these duties which in essence include the principal elements of hazard identification, risk assessment and control of risk.

Employees are not anticipated to incur any costs as a result of compliance with the National Standard.

These remaining parties already have obligation imposed on them as a result of existing Acts and regulations, compliance with Australian Standards, laws relating to product liability and common law. As a consequence, many of them will already be undertaking processes and taking action in response to these processes which have the net effect of providing a significant degree of compliance with the National Standard.

While more detailed studies would be required to provide more detail, discussions with representatives of a number of these parties suggested that there would be no significant additional costs of compliance.

6.3.2 Registration of plant design and items of plant

There are certain categories of plant, listed in Schedule 1 of the National Standard, for which design verification is required and that design must be registered with an OHS agency. A plant design registered with one agency is considered to be registered with all agencies.

Table 6.1a
Estimated costs of compliance to the National Standard for Plant by employers

	Year									
Base data	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***
Employers ('000)	864.8	873.5	882.2	891.0	899.9	908.9	918.0	927.2	936.5	945.8
Employees ('000)	7,752.0	7,829.5	7,907.8	7,986.9	8,066.8	8,147.4	8,228.9	8,311.2	8,394.3	8,478.2
Costs ($)										
Hazard identification/ risk assessment	66,254.40	25,292.40	25,545.40	25,800.80	26,058.80	26,319.40	26,582.60	26,848.40	27,116.90	27,388.10
Risk control	811,584.70	271,793.30	274,511.20	277,256.40	280,028.90	282,829.20	285,657.50	288,514.10	291,399.20	294,313.20
Training	445,003.6	48,950.40	49,439.90	49,934.30	50,433.60	50,938.00	51,447.40	51,961.80	52,481.40	53,006.30
Record keeping	17,123.30	11,327.30	11,440.60	11,555.00	11,670.60	11,787.30	11,905.10	12,024.20	12,144.40	12,265.90
Total ($'000)	1,339,966	357,363	360,937	364,546	368,192	371,874	375,593	379,349	383,142	386,973

Table 6.1b
Estimated costs of compliance to national standard for plant by employers—assumptions (growth rate)

Employers	1.0%
Employees	1.0%
Hazard identification/risk assessment	$285.00
Proportion needing to undertake hazard identification and risk analysis	26.9%
Risk control	
– initial	6,850
– recurrent	1,575
Per cent requiring risk controls	
– initial	13.7%
– annual	13.4%
Training	$445.00
Per cent of employees requiring training	12.9%
Records	
– initial	$330.00
– recurrent	$215.00
Per cent needing additional records	6.0%
Changes to plant/work	10.0%

There are certain categories of plant* which must also be registered with an OHS agency. An item of plant registered with one agency is deemed to be registered with all agencies.

This process of registration with one agency will, in fact, lead to cost savings since it will avoid duplication of the registration processes. In addition, the items of plant requiring design registration are, in a number of States, much less than currently regulated. For example, Queensland estimates that there will be a 70 per cent decrease in the number of items subject to design verification requirements in that State under the *National Standard for Plant.* It is not possible to estimate either any additional costs or the level of cost savings, but discussions with agencies and affected parties indicate that the cost savings will exceed any additional costs.

However, some designers of plant expressed concern about the design verification process in terms of its possible impact on the retainment of 'intellectual property'. The view was expressed that using independent verifiers may lead to expert knowledge being passed on from designers to verifiers.

6.4 Summary of costs of compliance

This Section sets out an estimate of the expected costs of compliance for employers with the *National Standard for Plant.* The cost estimates are based on the responses of employers to a survey which asked for employers to estimate what additional activities or processes would be required for them to comply

* Listed in schedule 1 of the National Standard.

with the Standard, over and above their current compliance with State or Territory regulatory regimes in the area of plant.

The estimated total costs for employers over the 10 year analysis period are $4,687.9 million in undiscounted terms, or $3,381.5 when discounted. This is summarised in Table 6.2.

The costs associated with plant design verification, design registration or plant registration were not estimated for the purpose of this economic impact assessment. However, because verification and registration with one jurisdiction will be recognised by all jurisdictions (compared with the current situation where these processes are required in individual jurisdictions), there are expected to be net benefits.

It has not been possible to estimate the costs of compliance for other parties affected by the National Standard—designers, manufacturers, importers, suppliers, self-employed people or owners of business. However, discussions with representatives of a number of other parties indicated that there was already a significant degree of *de facto* compliance with the National Standard and, as a result, they did not expect to incur any substantial additional costs of compliance.

Table 6.2
Summary of estimated total costs of compliance for employers

	Undiscounted ($m)	***Discounted ($m)****
Hazard identification/risk assessment	303.2	212.9
Risk control	3,357.9	2,379.7
Training	903.0	705.3
Record keeping	123.1	83.7
Total	**4,687.9**	**3,381.5**

* *Rate = eight per cent.*

7 Benefits

7.1 Methods of benefit estimation

The benefits anticipated as a result of the introduction of the *National Standard for Plant* in the various State and Territories are:

- a reduction in accidents, fatalities and injuries associated with plant; and
- the introduction of nationally uniform regulations which is expected to lead to lower operating costs for affected groups, such as designers, manufacturers and employers, thus leading to an improvement in Australia's competitive efficiency.

In terms of the first anticipated benefit, the benefits will actually be measured in terms of reductions in compensation costs. This in turn may be measured in terms of both direct and indirect costs.

The direct costs of workers compensation are usually thought of as those associated with medical expenses, rehabilitation and compensation payments. However, to these must be added direct, uninsured payments. These direct, uninsured payments may be thought as employer costs associated with the processing of any claims. These are clerical in nature and not re-imbursable under workers' compensation schemes, but they can be a significant cost to employers.

Indirect compensation costs include management time and money spent on accident investigation, disruption to work, loss of production, damage to plant, wages for rescheduling of work for short term time-off, replacement employees for long term time-off, training, re-training and any search and hiring costs.

Thus, a number of attempts have been made to measure the extent of the indirect costs of compensation. These are usually assessed as ratio of indirect to direct costs. For example, a ratio of 2:1

means that for every dollar of direct compensation costs, there is an additional $2 of indirect compensation costs. Thus, stopping one accident will lead to a total benefit of $3 in terms of reduced costs.

However, while most OHS experts acknowledge the concept of indirect costs of compensation, the actual ratio is subject to considerable dispute. The Review Committee to the Commonwealth Minister for Industrial Relations, which evaluates OHS in Australia, reported studies on the ratio of indirect costs to direct costs in a number of overseas industrialised countries over the range 1:1–7:1. Other studies have reported ratios ranging from less than 1:1 to as high as 50:1. Some studies include all accidents while others report on accidents within a given industry sector. In addition, many of the studies do not agree on what constitutes either direct or indirect costs. As a result, the reported ratios can vary between industries and between countries. Due to a combination of different coverage, definitions and methodology, many of these studies are not directly comparable.

Significant discussion occurred among the Steering Committee members as to the appropriate ratio of indirect to direct costs for use in the study. A ratio of 4:1 has been previously adopted in some regulatory impact statements dealing with OHS issues, this being the mid-point of the range of ratios (1:1–7:1).

A literature survey which was presented to the Steering Committee concluded that a ratio in the vicinity of 1:1 was appropriate. However, a number of members of the Steering Committee considered that the survey was insufficiently exhaustive, that the results did not confirm their intuitive understanding of the issue and that equal weighting was given to studies which were not strictly comparable in terms of methodology or coverage. Some other members felt that the weight of evidence adduced from the various studies indicated that the lower end of the scale (1:1) was more appropriate and feasible.

Worksafe Australia has previously indicated in a submission to the Industry Commission inquiry into workers' compensation that it has conservatively assessed a ratio of 1:1 in relation to industrial accidents generally. Other submissions to the inquiry provided estimates ranging 0:1–20:1. The Industry Commission, in its final report, stated that the real figure was not known.*

A number of Steering Committee members considered that the ratio was higher than 1:1 in relation to plant-related accidents due to the nature of injuries sustained, effects on production and plant damage. However, no firm evidence is available to support this view at present.

The Steering Committee considered the matter at length but was unable to reach agreement on an appropriate indirect to direct ratio. It was therefore unable to agree on a 'base case'. Accordingly, the Steering Committee decided that sensitivity analyses would be calculated on the basis of ratios ranging from 1:1 to 6:1 for claims of five or more days.

Consideration by the Steering Committee of the available data and evidence led to disparate views as to its adequacy. All members agreed that more in depth and definitive studies need to be undertaken on the issue.

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* Industry Commission, *Workers' Compensation in Australia*, Report No. 36, 4 February 1993, AGPS, Canberra, p. 5 and Appendix A2.4.

In this regard, it was noted that Worksafe Australia is proposing to undertake a major research project on the issue while the Industry Commission is also understood to be considering commissioning research.

For fatalities and claims under five days, the contributory factors which may lead to a higher indirect cost ratio for claims over five days are either not present, or are different in order of magnitude. Thus, for fatalities and claims under five days, an indirect to direct costs ratio of 1:1 was considered appropriate.

As noted above, there are two main areas of benefits which are related to the *National Standard for Plant.* These are OHS related benefits (reductions in accidents, fatalities and injuries) and others (principally those benefits accruing as a consequence of the introduction of nationally uniform regulations).

The source of data for the primary benefit—reductions in accidents, fatalities and injuries—are the workers' compensation databases of the various State and Territories.

As previously noted, the estimation of the OHS-related benefits is quite difficult and is based on a combination of:

- analysis of previous regulatory experience (what has been the impact of previous regulatory regimes on the accident rate?);
- analysis of overseas experience where similar regulations may have been enacted; and
- discussion with experts in the area.

At a time when employers are adopting many measures to improve their degree of competitiveness, the adoption of nationally uniform regulations is very difficult to isolate in terms of its quantifiable effects from all other measures. For the other benefits—principally those accruing to the adoption of nationally uniform regulations by the various State and Territory OHS agencies—these are treated in a qualitative manner.

7.2 OHS-related benefits

This study is not intended to attribute regulatory change in different plant sectors to a corresponding reduction in injuries known to be related to particular types of plant. This is not possible with the available data. Rather, the National Standard is considered as a package.

Since the data on claims come from the various State and Territory workers' compensation databases, the data have been compiled under different coding schema and with different criteria. For example, accidents may not be reported which occur among the self-employed and those accidents which occur via public equipment, such as lifts or escalators (for which owners are responsible). In addition, a number of jurisdictions exclude the agricultural sector from their compensation schemes. As a result, the number of accidents, costs and, as a consequence, the level of benefits in terms of reduced accidents may be understated.

The State and Territory OHS jurisdictions were contacted and asked to provide compensation data detailing for 1987–92:

- the number of claims;
- days off; and
- total compensation.

The jurisdictions were asked to provide this information by ASIC and agency or type of plant associated with the claim. In addition, the jurisdictions were asked to separately provide fatalities over the same period in the same format.

The request for trend data was to obtain an estimate of the underlying trends in the accident or claims rate prior to estimating the anticipated level of benefits. However, a number of jurisdictions were unable to provide these data over this time period or at the level of detail requested.

Queensland was unable to provide data prior to 1990–91 or data relating to the costs of compensation. For the purpose of this analysis, an Australian average of compensation costs was calculated and this average cost was applied to the Queensland accident data to impute costs.

A number of States and Territories record all claims, irrespective of the length of the claim. Other States only record those claims of five or more days duration.* Ignoring the claims of less than five days will tend to understate the level of benefits. An analysis of these data show that, on average, there are two claims of less than five days for every claim of five or more days. The average cost of compensation for these claims is about $400. For the purpose of the analysis, it will be assumed that there are two claims of under five days (at an average cost of $400) for every claim of five or more days.

At the time of writing, no compensation data had been received from the ACT, which means that the level of claims is somewhat understated.

Table 7.1 sets out the basic data relating to claims for plant associated accidents involving five or more days off† over the period 1990–91 to 1992–93. For Queensland and New South Wales, the data have been imputed on the basis of past trends since these data were not available at the time of analysis.

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* More than five days or more than $600 in the case of Victoria.

† More than five days or more than $600 in the case of Victoria.

Table 7.1a
Number of compensation cases, days of lost production and their costs, 1990–91 to 1992–93

	NSW	*Vic*	*Qld*	*SA*	*WA*	*Tas*	*NT*	*Comcare*	*Total*
1990–91									
Number	17,144	23,328	8,469	7,051	8,588	1,386	762	606	**67,334**
Days	128,982	1,341,522	335,918	498,423	285,395	58,256	32274	—	**2,680,770**
Cost ($m)	$141,095	$184,822	$71,403	$82,712	$79,598	$5,942	$2,441	$1,122	**$569,342**
1991–92									
Number	22,097	16,435	8,392	6,990	10,319	5,417	649	1,706	**72,005**
Days	143,456	813,203	304,905	379,547	358,646	95,013	33607	—	**2,128,377**
Cost ($m)	$191,378	$122,721	$66,079	$68,375	$103,052	$10,835	$2,522	$4,982	**$570,337**
1992–93									
Number	20,141	11,209	8,316	6,330	10,517	6,262	560	2,217	**65,551**
Days	141,876	355,592	276,755	227,414	294,664	79,501	29736	—	**1,405,538**
Cost ($m)	$169,376	$55,881	$49,516	$41,665	54,690	$9,346	$2,462	$8,465	**$391,557**

Table 7.1b
Per occurance, average days of lost production and their costs, 1990–91 to 1992–93

	NSW	*Vic*	*Qld*	*SA*	*WA*	*Tas*	*NT*	*Comcare*	*Total*
1990–91									
Days	8	58	45	71	33	42	42	—	**40**
Cost ($m)	$8,230	$7,923	$8,431	$11,731	$9,269	$4,287	$3,203	$1,852	**$8,456**
1991–92									
Days	6	49	38	54	35	18	52	—	**29**
Cost ($m)	$8,661	$7,467	$7,874	$9,782	$9,987	$2,000	$3,886	$2,921	**$7,921**
1992–93									
Days	7	32	30	36	28	13	53	—	**20**
Cost ($m)	$8,410	$4,985	$5,955	$6,582	$5,200	$1,492	$4,396	$3,819	**$5,973**

* *Average days for NSW are understated since it excludes days off for cases associated with permanent disabilities.*

It can be seen that there is considerable variation in the trends within and between States over this period of time which makes it very difficult to ascertain underlying trends. Much the variation between States and Territories is due to differences of industry composition between the jurisdictions and to differences between the various compensation schemes. The variations of trends within jurisdictions is predominantly a function of changes to compensation schemes—for example, Victoria—and to changes in OHS practices. The average cost per claim and days per claim data for NSW is not comparable with the data for the other jurisdictions. The data from NSW was provided in terms of permanent disability and temporary disability cases. No days off associated with permanent disability cases were provided. This means that the average days off per claim is understated.

Care also needs to be taken in the interpretation of dollar costs, particularly in the last year. While some decrease is attributable to changes in compensation schemes, many of the cases in 1992–93 are open, that is, the claimants are still receiving compensation benefits which means that the average payment will increase over time. This may also occur with the average payment figure for 1991–92. The same logic applies to the interpretation of average days of compensation.

For the purpose of this analysis, the number of claims for the base year of the model is assumed to be 68,300. This is the average of the last three years claims. The average cost of compensation is assumed to be $8,190—the average amount paid over the period 1990–91 to 1991–92. In respect of claims of under five days, it is assumed that there are 136,600 claims (at an average cost of $400) in the base year. The base number of fatalities is estimated at 225, at an average cost of $150,000.

7.2.1 Reductions of accidents

The methodology used to estimate the reduction in accidents (and hence claims) is the Reducing Balance Method. This is calculated as follows:

- assume that there are 100 accidents per annum, prior to the introduction of a new regulation; and
- assume that the impact of new regulation is estimated to lead to a reduction of 10 per cent per annum, of the reducing balance.

The impact of this patterning methodology is described in Table 7.2.

Table 7.2
Estimated number of reduced accidents utilising the Reducing Balance Method over a five-year period

	1	*2*	*3*	*4*	*5*
Number of claims under old regulations	100	100	100	100	100
Rate of reduction	10%	—	—	—	—
Number of claims after new regulations	90	81	72	64	58
Number of claims reduced	**10**	**19**	**28**	**36**	**42**

The rate of decrease is applied to the reduced number of claims, not the number of claims originally expected. Thus, in Year 2 the percentage decrease of 10 per cent is applied to 90, not the 100 that would have occurred in Year 2 in the absence of any regulatory change. This methodology means that

the rate of reduction reduces over time and prevents the number of reduced claims being greater than the original number if a simple percentage decrease is assumed.

The starting point in the analysis of OHS-related benefits is to estimate what the trend rate of accidents (and hence claims) would be in the absence of any change to the regulatory environment. If a simple rolling average of the three years data shown in Table 7.1 is taken, there were an average of 69,670 claims in the years 1990–91 and 1991–92 and average of 68,780 claims in the years 1991–92 and 1992–93. This shows a reduction of -1.3 per cent. This rate needs to be interpreted with caution as it may not be indicative of what may be termed the 'underlying trend'. The reason for this cautionary view is that the rate of reduction estimated above is based on short term trend data and is significantly affected by the trends in the Victorian claims. If Victoria is deleted from the analysis, then the number of claims are estimated to have increased by 10.9 per cent over this period.

Nevertheless, it will be initially assumed that this 1.3 per cent decline is indicative of the overall trend in the claims rate. This is applied to the number of claims (68,300) in the base year and in each subsequent year. The same logic is assumed for claims of less than five days and fatalities.*

Thus, in the absence of any regulatory change, the number of claims is estimated to decline from 68,300 in Year 1 to 60,712 in Year 10 while claims of less than five days commence at 136,600 in Year 1 and reduce to 121,424 by Year 10.

For fatalities, the underlying rate is projected to fall from 225 in Year 1, to 200 by Year 10.

The next step in the analysis is to estimate the impact of the National Standard. An Australian study by Gun† has analysed the role of regulations in the prevention of occupational injury. He concludes that regulations have a substantial relevance to occupational injury in that:

- the injury rate would be at least halved if all regulations were complied with;
- there was nevertheless a substantial rate of compliance with regulations without which the rate of severe injuries may be more than doubled;
- substantial benefit may be gained from increasing the ambit of regulations; and
- management training and good management practices are most likely to prevent those injuries associated with violations of regulations.

One of the principal differences between the National Standard and existing regulatory regimes in the various State and Territories is that the National Standard is process-oriented. Rather than taking the prescriptive approach required under much of the current regulatory requirements, parties affected by the National Standard will be required to initially undertake a process of hazard identification and risk assessment. Any subsequent measures required will be determined by the outcome of this initial process.

As was noted previously, it is becoming increasingly difficult to improve industrial safety by prescriptive measures. The risks that remain may be largely attributed to human failure, that is, it not

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* This assumption of a 1.3 per cent decrease in claims will be adjusted later to show the impact if another underlying trend rate of reduction is assumed.

† Gun, R. T., 'The Role of Regulations in the Prevention of Occupational Injury', *Safety Science*, no. 16, 1993.

the individual who makes a mistake leading to an accident, but rather the organisational framework that the individual operates within which causes accidents.

Thus, it is now considered that performance-based risk regulation (with its emphasis on process) intends to stimulate organisations to investigate their ability to detect accident-promoting structures within themselves and remedy them when detected. This can only be done within the organisation.

When the tripartite process of development of the National Standard (involving the National Commission, employers and unions) is taken into account together with the findings of Gun, it is judged appropriate to conclude that compliance with the National Standard will lead to a reduction in the number of accidents and hence claims. The issue then is to consider what is the appropriate rate of reduction.

The initial point is the assumed current rate of reduction in claims, estimated at 2.5 per cent per annum. After discussions with the Project Steering Committee, the assumed rates of reduction shown at Table 7.3 are assumed.

Table 7.3
Assumed current rate of reduction in compensation claims

	Year									
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***
Rate of reduction (%)	2.5	5	10	2.5	3.5	4.5	5.5	6.5	7.5	7.5

The patterning of the claims reduction is based on the assumption that all parties comply with their obligations in Year 1 (other than where there are specific transition periods contained within the National Standard). It is considered that the process of risk assessment in Year 1 will enable organisations to recognise weaknesses in the processes of work which may lead to accidents. The rate assumed (2.5 per cent) is the same rate of reduction currently applying. In other words, there will be an overall rate of reduction of 5.0 per cent in Year 1, of which half will be attributable to the National Standard.

This rate will increase to a maximum of 10 per cent in Year 3 as the impact of new risk control measures take effect. This will decrease in Year 4 and then begin to increase again in Year 5 as new plant designed and manufactured to the National Standard come into effect. This reducing balance method of patterning the claims reduction (and taking into account the underlying trend rate) leads to a 24.0 per cent reduction in the expected number of claims over the 10-year period.

To estimate the direct value of the reduced number of claims estimated to follow as a result of the National Standard, the number of reduced claims in each year is multiplied by the average value of the type of claim—$150,000 for a fatality, $8,190 for a claim of five or more days and $400 for a claim under five days.

Thus in Year 1, the direct benefits are estimated at $16.2 million. This increases in Year 2 to $47.4 million and finally reaches $261.7 million in Year 10. The total of the direct benefits over the 10-year period is estimated at $1,468.7 million in undiscounted terms and $876.1 million when discounted.

The estimated value of the indirect benefits is discussed in chapter 8.

A summary of the direct benefits estimated to be obtained through reduced number of claims, and hence reduced workers' compensation payments are shown in Table 7.4.

7.2.2 Indirect benefits

As noted previously, the Steering Committee was unable to agree on an appropriate ratio of indirect to direct costs for claims of five or more days. It was therefore agreed that a range of ratios be used—1:1, 2.5:1, 4:1 and 6:1. A ratio of 1:1 was used for claims of less than five days and for fatalities.

To estimate the indirect benefits, the dollar value of each claim type is multiplied by its respective indirect ratio.

Given the estimated direct benefits of $1,468.7 million (undiscounted) over the 10-year analysis period, the estimated indirect benefits range from: $1,468.7 million (1:1) to $7,810.1 million (6:1) undiscounted; or from $876.1 million to $4,658.8 million when discounted.

7.2.3 Effects on social security payments

In its recent draft report on workers compensation, the Industry Commission noted measurement of the costs of work-related injuries and illnesses, as measured by workers' compensation payments, underestimated the real costs. Among the unrecognised costs were losses to individuals in terms of un-reimbursed income and health expenses, and workers' compensation costs shifted to the Commonwealth Government, such as health expenses borne by Medicare and social security payments made to individuals with a work-related injury or illness.*

The Department of Social Security (DSS) submitted to the inquiry that for each 1000 workers who transfer to the social security system from workers' compensation systems, it would incur some $10 million. A consultant to the DSS has estimated that there are at least some 20,000 workers compensation claimants a year seeking social security payments of some kind.† If these data provided by DSS are utilised, it provides a means of giving an estimate of the impact of the National Standard.

Plant-related workers compensation claims account for about one-third of all compensation claims. If the same ratio applies, some 6000–7000 of the estimated 20,000 workers compensation claimants receiving additional social security payments may be assumed to have a plant-related illness. If these claimants are reduced at the same rate as estimated for plant-related claims, they could be reduced by some 25 per cent over the 10-year period. This would lead to estimated savings in social security payments of about $100 million over this timeframe.

7.3 Other benefits

The other benefits which are expected to accrue to the National Standard will be primarily as a result of national uniformity.

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* Industry Commission, *Workers' Compensation in Australia*, Report No. 36, 4 February 1993, AGPS, Canberra, p. 5 and Appendix A2.4.

† *Ibid*, p. 5.

7.3.1 Benefits of national uniformity

The benefits expected to result from nationally uniform plant regulations have already been canvassed in Section 2.6. In essence, the major costs resulting from inconsistent OHS regulations are:

- inhibited mobility of labour and capital, the mobility of which is essential to both micro-economic reform and to the improvement of Australia's competitive position in the international economy;
- inconsistencies in standards which may be detrimental to workplace health and safety, thus contributing to the costs of workplace injury and disease;
- costs which may be imposed on the private sector as employers and manufacturers are faced with dissimilar and complex requirements in different States and Territories to meet similar health and safety objectives; and
- costs for meeting the different standards in each State or Territory may discourage investment.

Discussions with a number of representatives of firms indicated that, other than with respect to some specific plant types (such as cranes, lifts and other geographically mobile plant), they did not consider the costs of disuniformity were substantial. A number commented that a substantive element of the costs of disuniformity were administrative in nature. Firms operating across State borders required all Acts and regulations of the States and Territories within which they were operating to determine the requirements with respect to plant. In essence, they found the requirements were not substantively different.

Some firms commented that there were no substantive costs associated with disuniformity as they establish their firms' operating structures along State lines. However, this suggests that there may be unrecognised costs associated with firms operating in this manner.

It is considered that uniform plant regulations would:

- eliminate unnecessary costs of complying with differing State regulations;
- remove restrictions on competition between firms based in different States;
- reduce inefficiencies in important inputs to production such as the movement of plant, labour and capital between States; and
- enhance technological innovation.

All firms interviewed were in favour of the concept of uniformity. However, a number did not consider that the benefits would be substantial.

Those firms that expect some benefits all commented that these would only occur if the States and Territories adopted the National Standard in its entirety. If the various jurisdictions only picked up elements of the National Standard, then these benefits would disappear.

7.4 Summary of benefits

As a result of the introduction of the *National Standard for Plant*, it is estimated that there may be a reduction of 24 per cent in the level of plant-related fatalities and compensation claims for plant-related accidents. Overall, the direct OHS benefits expected from employers complying with the National Standard are estimated at $1,468.7 million undiscounted and $876.1 million when discounted

over 10 years. In addition, there will be substantial indirect benefits. These may range from $1,468.7 million to $7,810.1 million undiscounted, or from $876.1 million to $4,658.8 million discounted. The actual level of indirect benefits will depend on the determination of the appropriate indirect:direct cost ratio.

Furthermore, there may be a further $100 million savings in social security payments.

While a number of firms interviewed did not expect substantial benefits resulting from nationally uniform plant regulations, the study indicated that there may be significant hidden costs associated with disuniformity which will increase the level of benefits if all States and Territories adopt the National Standard in its entirety.

Table 7.4a
Estimate of benefits as a result of the introduction of the National Standard for Plant

	Year									
Benefits	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***
Deaths	225	222	219	216	214	211	208	205	203	200
Reduction in deaths	6	16	37	41	47	55	63	72	82	91
Claims*	68,300	67,412	66,536	65,671	64,817	63,974	63,143	62,322	61,512	60,712
Reduction in claims*	1,708	4,993	11,147	12,510	14,341	16,574	19,136	21,943	24,910	27,596
Accidents†	136,600	134,824	133,071	131,342	129,634	127,949	126,286	124,644	123,023	121,424
Reduction in accidents†	3,415	9,985	22,294	25,020	28,682	33,149	38,271	43,885	49,821	55,191
Reduction in direct compensation‡	$16,194	$47,352	$105,720	$118,648	$136,011	$157,194	$181,485	$208,108	$236,254	$261,720

* *>5 days.*
† *<5 days.*
‡ *$'000.*

Table 7.4b
Assumptions related to the estimate of benefits as a result of the introduction of the National Standard for Plant

	Year									
Assumptions	***1***	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***
Change in claims under current regulations	-1.3%	—	—	—	—	—	—	—	—	—
Reduction in claims under new regulations										
Rate	2.5%	5%	10%	2.5%	3.5%	4.5%	5.5%	6.5%	7.5%	7.5%
Cost per death	$150,000	—	—	—	—	—	—	—	—	—
Costs per claim*	$8,190	—	—	—	—	—	—	—	—	—
Costs per accident†	$400	—	—	—	—	—	—	—	—	—

* *>5 days.*
† *<5 days.*

8 Results

8.1 Benefits and costs

In terms of the directly measurable costs, the total cost of compliance with the *National Standard for Plant* by employers is estimated at $4,687.9 million undiscounted over the 10-year period or $3,381.5 million when discounted at eight per cent. The direct benefits accruing to the National Standard, measured by reduced accidents—and hence compensation claims—are estimated at $1,468.7 million undiscounted and $876.1 million discounted.

The Steering Committee was unable to agree on an appropriate ratio of indirect to direct costs for the purposes of a base case. It was therefore agreed that a range of ratios be used—1:1, 2.5:1, 4:1 and 6:1. A ratio of 1:1 was used for claims of less than five days and for fatalities.

Given the estimated direct benefits of $1,468.7 million (undiscounted) over the 10-year analysis period, the estimated indirect benefits range from $1,468.7 million (1:1) to $7,810.1 million (6:1), or from $876.1 million to $4,658.8 million when discounted.

8.2 Net present value estimates

To determine the net present value estimates of the costs and benefits, the Steering Committee directed that sensitivity analysis be undertaken, assumuming the:

- indirect to direct cost ratio;
- discount rate; and
- estimated impact of the National Standard on expected claims.

Discount rates of four and six per cent were used in addition to the base rate of eight per cent.

In addition, sensitivity analysis was undertaken on the underlying trend rate of claims reduction. The estimated underlying trend rate of claims has been substantially affected by legislative changes to Victoria's accident compensation scheme which has resulted in a 52 per cent decrease in the number of claims recorded between 1990–91 and 1992–93. Excluding Victoria, data from the number of claims shows an estimated 10.9 per cent increase in the number of claims over the same period. To show the impact of a different underlying trend rate on the net present value, an alternative rate of reduction was used.

For the base case, the model assumed that the rate of claims for plant-related accidents would decrease at the rates indicated in Table 8.1after introduction of the National Standard.

Table 8.1
Assumed rate of claims for plant-related accidents

	Year									
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***
Rate of reduction (%)	2.5	5	10	2.5	3.5	4.5	5.5	6.5	7.5	7.5

This patterning would lead to an overall reduction of 24.0 per cent over the 10-year analysis period.

This rate of reduction may be seen as conservative in that it leads to a 24.0 per cent reduction in plant-related claims over the 10-year period. By way of comparison, the US Office of Regulatory Analysis, in its regulatory impact analysis of a proposed regulation covering control of hazardous energy sources, estimated that full compliance with the proposed regulation would lead to an 85 per cent reduction in accidents associated with this class of plant.* Therefore, the Steering Committee requested that sensitivity testing be undertaken on the claims rate reduction assumed for the model. The agreed rates of reduction to be tested are shown at Table 8.2.

Table 8.2
Agreed rates of reduction to be tested

	Year									
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	***9***	***10***
Rate of reduction (%)	2.5	5	15	5	5	5	5	5	5	5

This patterning would lead to an overall reduction of 28.5 per cent over the 10-year analysis period.

* United States Occupational Safety and Health Administration, Office of Regulatory Analysis, 'The Control of Hazardous Energy Sources—Lockout/Tagout', *Regulatory Impact and Regulatory Flexibility Analysis of 29 CFR 1910.47*, Washington DC, August 1989.

Net present values

By combining all effects, it is possible to ascertain the impact on the outcome in net present value terms. These combined effects are shown in Table 8.3. This table shows that there is a significant variation in the net present value outcome, depending upon the assumptions chosen.

Table 8.3
Effect on the net present value of varying model assumptions

	Indirect to direct ratio			
	1:1	***2.5:1***	***4:1***	***6:1***
Discount rate				
8 per cent	-$1,629.3m	-$494.5m	$640.3m	$2,153.4m
6 per cent	-$1,662.2m	-$380.0m	$902.2m	$2,611.8m
4 per cent	-$1,694.0m	-$238.6m	$1,216.8m	$3,157.2m
Adjusted rate of reduction for claims				
8 per cent	-$1,283.7m	$75.0m	$1,433.7m	$3,245.2m
6 per cent	-$1,277.1m	$254.5m	$1,786.1m	$3,828.3m
4 per cent	-$1,263.4m	$470.8m	$2,205.0m	$4,517.3m

The assumed underlying trend rate of reduction in claims (of -2.5 per cent) was significantly affected by legislative changes to the Victorian accident compensation scheme. Removing Victoria from the analysis showed that plant-related claims had increased by 10.9 per cent over the period 1990–91 to 1992–93. This makes it difficult to estimate what is, in fact the true underlying trend rate. Thus, further sensitivity testing was undertaken to assess the impact of varying this assumption.

Testing was done by assuming no rate of change and increases of 2.5 and five per cent. These tests were undertaken under the assumptions of eight per cent discount and an indirect to direct ratio of 4:1. The results in terms of the change to net present values are:

- -1.3 $640.3m.
- 0.0 $808.5m.
- 2.5 $1,158.2m.
- 5.0 $1,545.7m.

8.3 Implications of the National OHS Certification Standard for this study

A complicating factor in the economic impact assessment of the *National Standard for Plant* is the *National Occupational Health and Safety Certification Standard for Users and Operators of Industrial Equipment* [NOHSC:1006(1993)].

This National Standard, declared by the National Commission in November 1992, aims to reduce the incidence and severity of accidents involving a range of plant including categories such as cranes, fork-lift trucks, hoists, other mechanical loadshifting equipment, pressure equipment and scaffolding. It seeks to achieve this by establishing minimum standards of competency for people working with that equipment and implementing a certification system to ensure those standards are observed.

This issue complicates the economic impact analysis for plant because:

- the training required under the operators regulations will have a degree of commonality with the training required under the *National Standard for Plant*, and vice versa, meaning that:
  - the training costs identified under this economic impact analysis may be overstated and they are more properly attributable to the operators standard, and
  - the level of estimated benefits in this economic impact assessment may also be overstated and more properly attributable to the operators standard; and
- it is very difficult to account for the impact of the operators standard with respect to this economic impact analysis as it is not known what items of loadshifting equipment will continue to require certification under operators regulations, or will be discontinued and fall purely under the ambit the *National Standard for Plant*, or indeed what aspects of the National OHS Certification Standard will be adopted by the States and Territories.

As a result, it is not possible to estimate with any certainty the impact of the National OHS Certification Standard on the economic impact assessment of the *National Standard for Plant.* Some data from the Victorian Regulatory Impact Statement undertaken in February 1994 on a proposed regulation—the Occupational Health and Safety (Certification of Plant Users and Operators) Regulations 1994—which is based on the National OHS Certification Standard provides some indication.

Some of the costs estimated for this economic impact assessment as well as the benefits in terms of reduced compensation claims may be more properly attributable to the National OHS Certification Standard. This would reduce both total costs and benefits estimated in this economic impact analysis. This would not materially change the outcome of the economic impact analysis nor the conclusions drawn.

9 Summary and conclusion

This study shows that plant is a major cause of workplace accidents in Australia. At present there are 65,000–70,000 plant-related workers' compensation claims costing some $550 million in workers' compensation payments each year. In addition, there are over 200 plant-related fatalities every year. Because of the risk of injury associated with the use of plant, State and Territory governments over the years have enacted many measures in order to reduce both the incidence and severity of accidents.

There has been a steady change in how government regulation is used to reduce the incidence of occupation-related injury and ill health. The statutory requirements have traditionally been prescriptive in nature. There has been a subsequent move away from prescriptive legislation towards performance based legislation with a principal Act containing a general description of the duties of parties and regulations covering specific things to be done in particular areas. Statutory requirements framed in a general liability manner impose obligations on employees, employers and others to put their mind to identifying hazards, undertaking risk assessments, as well as introducing hazard reduction measures designed around the particular situation. The *National Standard for Plant* reflects these developments.

To study the economic impact of the National Standard, a two-fold approach was adopted. A survey of employers was undertaken to ascertain levels and costs of compliance with existing jurisdictional regulatory requirements together with estimates of expected costs of compliance necessary for employers to comply with the National Standard. The effects of the National Standard on other

affected parties, including designers, manufacturers, importers, suppliers and owners, was assessed qualitatively.

Several caveats of this economic impact assessment:

- are premised on all States and jurisdictions introducing the National Standard in its entirety; and
- assumes all parties will comply with their obligations under the National Standard.

9.1 Employers

The estimated costs of compliance for employers over the 10-year analysis period are summarised in Table 9.1.

Table 9.1
Estimated costs of compliance for employers over 10 years

	Undiscounted ($m)	*8 % Discount ($m)*
Hazard identification/risk assessment	303.2	212.9
Risk control	3,357.9	2,379.7
Training	903.0	705.3
Record keeping	123.1	83.7
Total	**4,687.9**	**3,381.5**

These estimates exclude any costs of compliance associated with the category 'Other Plant', including items such as manually powered hand-held tools and furniture. Employers were unable to provide any data with respect to Other Plant. This will have the effect of understating costs of compliance to some extent, although this is not considered to be significant. Alterantively, the costs may be overstated to the extent that compliance with the National Standard is not practicable for individual parties.

The benefits of the National Standard were described principally in terms of reductions in reduced numbers of fatalities and accidents, measured by compensation claims. Using a conservative modelling pattern, it was estimated that compliance with the National Standard would lead to a 24.0 per cent decrease in the number of fatalities and accidents, with the direct benefits being reduced compensation payouts of $1,468.7 million (undiscounted) over the 10-year period, or $876.1 million when discounted at eight per cent. This result needs to be interpreted cautiously because of doubts as to what is the true underlying trend in the current claims rate which has been significantly affected by legislative changes to some workers compensation schemes.

As noted in this report, direct benefits (measured by compensation payments) substantially understate the total level of benefits as they do not take into account such issues as lost production, plant damage and so on. There is considerable debate over the ratio of indirect to direct costs, with studies reporting results ranging 0:1–20:1. Using ratios of 1:1–6:1 leads to estimates of indirect benefits ranging $1,468.7–$7,810.1 million, or $876.1–$4,658.8 million when discounted.

In addition to compensation payouts, there are indications that payouts are made via Commonwealth agencies, such as Medicare and the DSS. Data from the DSS indicates that people with plant-related injuries could account for approximately $100 million of payments over 10 years.

The net present value varies considerably according to the indirect to direct cost ratio together with the discount rate selected. As shown in Table 8.1, the net present values range is -$1,694.0–$3,157.2 million.

For the base case of an eight per cent discount rate, the effect of varying the indirect to direct ratio is shown at Table 9.2.

Table 9.2
Effect of varying the indirect to direct ratio of net present values at a discount rate of eight per cent ($m)

1:1	*2.5:1*	*4:1*	*6:1*
-1,629.3	-494.5	640.3	2,153.4

9.2 Other parties

Estimates of costs of compliance for other parties affected by the National Standard—designers, manufacturers, importers, suppliers, owners, self-employed people or owners of business were not quantified for this economic impact analysis. However, discussions with representatives of a number of other parties indicated that there was already a significant degree of *de facto* compliance with the National Standard and, as a result, they did not expect to incur any substantial additional costs of compliance.

In terms of benefits, it is concluded that uniform plant regulations would:

- eliminate unnecessary costs of complying with differing State and Territory regulations;
- remove restrictions on competition between firms based in different States;
- reduce inefficiencies in important inputs to production such as the movement of plant, labour and capital between States;
- reduce the need for unnecessary firm structures based on State jurisdictions; and
- enhance technological innovation.

All firms interviewed were in favour of the concept of uniformity. However, a number of companies did not consider that the benefits would be substantial. Nevertheless, it is concluded that there may be significant hidden costs of disuniformity and that the benefits may be larger than a number of firms recognise.

In overall terms, it is concluded that the benefits for other parties would outweigh any additional costs of compliance.

The outcome of any economic impact statement is a function of the quality of data and assumptions which underpin it. This study was required to make a series of assumptions in the absence of definitive

data. It is also based on the fundamental assumption that all States and Territories adopt the *National Standard for Plant* in its entirety and that all parties fully comply with it.

On this basis, taking into account both quantifiable and non-quantifiable benefits and costs, it is considered that the introduction of the *National Standard for Plant* will have a positive impact on the Australian economy and lead to an improvement in social welfare.

APPENDIX 1

Members of the steering committee and reference group

Steering committee

Chair
Mr Barry Durham
Director
Standards Branch
National Occupational Health and Safety Commission

ACCI
Mr David Marks
Principal Consultant
Victorian Employers Chamber of Commerce and Industry

ACTU
Mr Mark Towler
OHS Coordinator
Victorian Trades and Labour Council

States
Mr John Randall
Chief Inspector of Machinery
Department of Occupational Health, Safety and Welfare
Western Australia

Mr John Smith
Manager
Risk Management Services
WorkCover Authority
New South Wales

Ms Ann Quinnell
Manager
Planning and Program Development Branch
Division of Workplace Health and Safety
Department of Employment, Vocational Education, Training and Industrial Relations
Queensland

Reference group

Dr Jim Butler
Health Economist
University of Newcastle

Mr Gerd Hollander
Assistant Director
Economic Assessment Branch
Bureau of Industry Economics
Commonwealth Department of Industry, Technology and Regional Development

Mr Carl Bazeley
Principal Policy Analyst
Department of State Development
New South Wales

Mr Rex Deighton Smith
Director
Office of Regulation Reform
Victoria

Worksafe Australia staff
Ms Helene Orr
Manager
Economic Impact Assessment Taskforce

Ms Elaine Spicer
Project Officer

Mr Andrew Hawkins
Project Officer