



**Queensland
Government**
Queensland Transport

Review of the rail safety legislation (Short Form Public Benefit Test)

**The Transport Infrastructure Act 1994 and the Transport
Infrastructure (Rail) Regulation 1994**

National Competition Policy

May 2004



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Foreword

Queensland Transport is the state's rail safety regulator and recent legislative amendments have served to strengthen this role.

As the regulator, Queensland Transport develops and implements strategy and policy to promote and maintain rail safety in Queensland, manages safety accreditation schemes and audits of rail safety systems and is responsible for upkeep of the rail safety database and data analysis.

Its regulatory powers are sourced in the Transport Infrastructure Act (1994) that establishes the requirements for the management of rail safety in Queensland. All railway managers and operators within Queensland must be accredited under the terms of the Act.

This legislation also provides for competition on the state's rail network and facilitates access for other operators. The rail safety components of the Act were amended in 2003 so Queensland Transport could administer rail safety even better in an environment open to new track owners and train operators, as well as to reflect the outcome of rail safety reviews in other jurisdictions. The safety regulator now has unambiguous legislative power to carry out audits and inspections to ensure compliance and monitor and enforce accreditation conditions.

Because the rail safety components of the Act, including recent amendments, might restrict competition, Queensland Transport was required to conduct a public benefit test of the legislative provisions. The conclusion was that Queensland's rail safety framework is cost-efficient and the legislation on which it is based provides a net benefit.

Rail safety is a challenging and dynamic task; Queensland Transport as the regulator will review this legislation periodically to ensure that high rail safety standards based on its responsible implementation are maintained.



Bruce Wilson
Director-General
Queensland Transport

1 Executive summary

In April 1995 the Council of Australian Governments (COAG) endorsed a package of legislative and administrative arrangements that underpin National Competition Policy (NCP). The underlying objective of NCP is to develop a more open and integrated Australian market that limits anti-competitive conduct and removes special advantages previously enjoyed by government business activities, where it is in the public interest to do so.

Queensland has therefore adopted the position that NCP reforms are only implemented where it is demonstrated that such reforms are clearly in the public interest, that is, there is a clear demonstration that competitive reform will yield a net benefit, and no significant detriment to the community. Further, the Queensland Government will continue to ensure that competition is not pursued for competition's sake and that a considered and pragmatic approach is taken to NCP.

Rail Safety Legislation contained in the Transport Infrastructure Act (TIA) [sections 119-161] has been identified as potentially restrictive. It contains accreditation requirements for rail managers and operators.

This review has examined the background to the legislation, the objectives and impacts of the legislation. In this context, three options have been considered:

- Option 1 - Continue the current regulatory framework;
- Option 2 - Deregulation, dispensing with statutory control over rail safety legislation entirely (i.e. repeal the relevant provisions); and
- Option 3 - Self regulation supported/enforced by minimal statutory regulation.

The options have been assessed in terms of:

- the economic benefits and costs imposed on rail managers, rail operators, rail users, and the general public, as a result of varying risks of accidents under each option, relative to the total costs imposed by the various regulatory regimes;
- the achievement of safety objectives in terms of the number and severity of accidents;
- the environmental impacts;
- impacts on state and regional development;
- the constraints on entry in terms of technical and operational requirements; and
- the ability of each option to achieve NCP objectives.

The review has found the current Queensland rail safety model offers a low cost method of achieving safe and reliable rail services with relatively little Government involvement. Current rail safety accreditation offers the benefits of a legislated safety regime without being highly prescriptive and there are substantially increased risks to public safety, rail infrastructure, the environment, and potentially state development, should amended regulations result in a less safe and less attractive rail system.

Support for Option 1 is reinforced by the Queensland Government's general approach to NCP reviews detailed in section 1.1 of this report. That is to say, there are no clear public benefits to repealing or moving from the current general model (Option 1) to another general model such as Option 2. Some refinement of the general model could, of course, be made over time without affecting the conclusions of this review.

The review recommends retaining the existing approach to rail safety regulation (Option 1).

2 Introduction

2.1 Legislative and policy environment

In April 1995 the Council of Australian Governments (COAG) endorsed a package of legislative and administrative arrangements that underpin National Competition Policy (NCP). The underlying objective of NCP is to develop a more open and integrated Australian market that limits anti-competitive conduct and removes special advantages previously enjoyed by government business activities, where it is in the public interest to do so.

NCP agreements require that for anti-competitive legislation to be retained there must be evidence which clearly shows that the benefits to the community as a whole, of such legislation, outweigh the costs arising from the restriction on competition, and there are no better ways of achieving the objectives of the legislation. However, in the process of implementing NCP requirements, it has been observed that the introduction of increased levels of competition does not always deliver the best overall result for the community. Queensland has therefore adopted the position that *NCP reforms are only implemented where it is demonstrated that such reforms are clearly in the public interest, that is, there is a clear demonstration that competitive reform will yield a net benefit, and no significant detriment to the community.*¹ Further, the Queensland Government will continue to ensure that *competition is not pursued for competition's sake and that a considered and pragmatic approach is taken to NCP*¹.

In the context of the above, there is a specific requirement of each review for the Government's Priority Outcomes for Queensland to be considered as an integral part of the review process.²

A Public Benefit Test (PBT) is the prescribed method for determining whether there is a net public benefit supporting exemption from competition. The conduct of a PBT requires that groups with an interest in the legislation in question be consulted to enable a comprehensive review of the advantages and disadvantages of same to be determined. That information is then used to assess whether or not amendment of the legislation would provide a net public benefit.

¹ *Public Benefit Test Guidelines* Queensland Treasury (p 1)

The *Public Benefit Test Guidelines* state that in some instances *it may be appropriate to conduct a reduced NCP review. These reviews are considered to be short form public benefit tests... more emphasis is placed on assessing risk.* Further, reduced reviews are appropriate in instances where, for example, legislation was developed for principally social rather than economic objectives, legislation has a clear social policy position where restrictions clearly need to be maintained for health and safety reasons, and the level of restriction is low.

2.2 The restrictive provisions under review

Rail Safety Legislation contained in the Transport Infrastructure Act (TIA) [sections 119-161] has been identified as potentially restrictive. It contains accreditation requirements for rail managers and operators. Although these provisions were not identified in the initial NCP audit of Queensland legislation, it is considered appropriate for the legislation to be reviewed, and a public benefit assessment undertaken. Given the sole focus of the provisions is on public safety, and the level of restriction is low, it has been determined, in terms of the Government's *Public Benefit Test Guidelines*, that a "reduced" public benefit test is appropriate, the results of which are presented in this Short Form Justification.

3 Terms of reference

The Terms of Reference for this review are as follows:

the guiding principle for this review is that legislation should not restrict competition unless it can be demonstrated that:

- the benefits of the restriction to the community as a whole outweigh the costs³;
- the objectives of the legislation can only be achieved by restricting competition.
- the tasks involved in the review will be to:
- clarify the objectives of former Part 4 of Chapter 6 (now Part 3 Chapter 7) of the *Transport Infrastructure Act 1994* including the then proposed amendments to rail safety legislation under the *Transport Infrastructure and Another Act Amendment Bill 2003*.
- identify how these restrictions previously have or may, in the future, impact on rail safety;
- analyse existing and potential effects of the restriction on competition within the provision of rail services;
- assess and balance the costs and benefits of the restriction; and
- consider alternative means for achieving the same result, including non- legislative approaches.

³This guiding principle needs to be considered in the context of the Government's approach to NCP reforms detailed in Section 2 of this document.

at a minimum, the following matters should be taken into account:

- other Government legislation and policies relating to this issue;
- social welfare and equity considerations, including community service obligations;
- economic and regional development, including employment and investment;
- the interests of consumers generally or a class of consumers;
- the competitiveness of Australian business;
- the efficiency of resource allocation; and
- environmental and safety issues.

4 Description and background of legislation

In Queensland, rail safety legislation is encompassed within the *Transport Infrastructure Act 1994*⁴ (the Act). Chapter 6 (now Chapter 7) of the Act deals with Rail Transport Infrastructure. Guidelines for the framework of the accreditation and safety management systems are provided in Part 4 of Chapter 6 (now Part 3 of Chapter 7). The objective of these provisions is to provide a rail safety accreditation system to maintain appropriate levels of safety in the rail transport industry. The *Transport Infrastructure (Rail) Regulation 1996* further outlines the requirements for an annual levy (in Part 4A) and provides a schedule of the annual accreditation levy.

In 1996, Australian governments signed the *Intergovernmental Agreement on Rail Safety 1996* (IGA) which provided the framework for development of uniform rail safety standard as the basis for rail safety accreditation. The resulting Australian rail safety framework is based on the principle of co-regulation, with rail safety managed jointly by government and industry. Australian Standard *AS4292 Railway Safety Management* provides a resource for the development of a Safety Management System within Australia.

Individual State and Territory Governments have autonomy in rail safety regulation, administered in accordance with relevant legislation in each jurisdiction. Under the co-regulatory framework, the performance of the accreditation function is separated from above-rail operations and below-rail infrastructure management. The Chief Executive of Queensland Transport (QT) is responsible for administering the rail safety provisions of the Act. Rail safety policy, accreditation and performance monitoring are responsibilities of the Rail Safety Accreditation Unit (RSAU) within QT. Consistent with the co-regulatory framework, track owners and rail operators, and not the regulator, are responsible for the safety of their activities.

More specifically, the rail industry is regulated jointly by industry and government. External legislation safeguards are applied to an otherwise self regulated industry. By international standards, Australia's rail safety legislation is less prescriptive and is state based rather than regulated nationally (Booz Allen and Hamilton, 1999).

⁴The Act provides for the function of QR; access to rail transport infrastructure; accreditation of managers and operators; rail transport infrastructure powers; railway incidents; land for railway purposes and general matters pertaining to rail.

The separation of regulatory and commercial functions of rail operators, as established through the Act, is consistent with the Competition Principles Agreement.⁵ There would be a conflict of interest where a track manager and/or rail operator acts both as safety regulator and commercial train provider, as a result of its commercial interests and the wider public interest in rail safety.

As a result of the recommendations of the inquiry into the Glenbrook New South Wales rail disaster in 1999 a decision was made by Queensland Transport to propose amendments to the rail safety provisions of the *Transport Infrastructure Act 1994*. These amendments included clarifying the role of the chief executive in the regulation of rail safety. The amendments provide statutory authority for the chief executive to carry out the chief executive's present audit and inspection functions and confer additional powers on the chief executive for railway managers and railway operators. The amendments include:

- requiring that all safety management systems are reviewed on an annual basis and amendments, generally speaking, are approved by the chief executive;
- making decisions about terms of access agreements relating to safety if parties cannot agree;
- giving safety directions to do or not to do a particular act;
- detailing procedures for disciplinary action.

The *Transport Infrastructure and Another Act Amendment Bill 2003* which included the proposed rail safety legislation amendments was introduced into parliament by Mr Steve Bredhauer, former Minister for Transport and Minister for Main Roads and former Member for Cook, on 3 June 2003.

The Bill was passed on 8 September 2003, assented to on 18 September 2003, and proclaimed to commence on 1 December 2003.

The new rail safety legislation was the result of consultation with relevant Government Agencies and other accredited persons and other persons in the railway industry. In essence, Rail Safety Legislation in Queensland is consistent, in its approach, with other modern alternative compliance mechanisms (that is, it includes accreditation, compliance plans, management systems and compliance assurance), but retains substantial government involvement in the safety regime.

4.1 Accreditation

Chapter 6, Part 4 of the Act (Accreditation) covers the safety requirements and procedures for accreditation of managers and/or operators in the rail transport industry. The safety accreditation requirements of the Act apply to rail transport infrastructure and rolling stock used, or proposed to be used, to transport passengers or freight for reward. These provisions state that a person must not manage a railway unless the person is accredited as the railway manager for the railway. Similarly a person must not operate rolling stock on a railway unless the person is accredited as a railway operator for the railway.

⁵ Cl 4(3) of the Competition Principles Agreement states that before a party introduces competition to a sector traditionally supplied by a public monopoly, it will remove from the public monopoly any responsibilities for industry regulation. The party will relocate industry regulation functions so as to prevent the former monopolist enjoying a regulatory advantage over its (existing and potential) rivals.

Under Section 84 (2) (now 126(2)) of the Act *the chief executive must accredit an applicant as the railway manager for a railway if satisfied-*

- (a) *the applicant-*
 - (i) *is accredited in another State to manage a similar type railway; or*
 - (ii) *has the competency and capacity to manage the railway safely; and*
- (b) *the applicant has an appropriate safety management system; and*
- (c) *the applicant has the financial capacity or public risk insurance arrangements to meet reasonable potential accident liabilities for the railway; and*
- (d) *the applicant has a right-*
 - (i) *of access to the land where the railway is constructed, or proposed to be constructed, either under this Act or with the agreement of the land's owner; and*
 - (ii) *to use rail transport infrastructure or other rail infrastructure for the railway with the agreement of the infrastructure's owner.*

Further, under Section 84 (3) (now 126(3)) of the Act, *the chief executive must accredit an applicant as a railway operator for a railway if satisfied-*

- (a) *the applicant-*
 - (i) *is accredited in another State to operate rolling stock on a railway for a similar type of service; or*
 - (ii) *the applicant has competency and capacity to operate rolling stock on the railway safely; and*
- (b) *the applicant has an appropriate safety management system; and*
- (c) *the applicant has the financial capacity or public risk insurance arrangements to meet reasonable potential accident liabilities for the railway; and*
- (d) *unless the applicant is applying for accreditation as the railway manager and operator of a railway - the applicant has an agreement with the railway's manager to operate particular rolling stock on the railway, and the agreement includes appropriate arrangements for the safe operation of the rolling stock.*

Under Section 85 (1) (now 128(2)) of the Act, *an accreditation may be subject to conditions.*

(2) *A condition may relate only to-*

- (a) *for the accreditation of a person as the manager of a railway-*
 - (i) *constructing or maintaining the railway; or*
 - (ii) *managing the railway safely, considering the need for efficient and competitive services; or*
- (b) *for the accreditation of a person as an operator of a railway-*
 - (i) *operating rolling stock safely, considering the need for efficient and competitive services; or*
 - (ii) *the person having an agreement with the manager of the railway to operate particular rolling stock on the railway, and the agreement, including appropriate arrangements for the safe operation of rolling stock; or*
- (c) *for all accreditations-*
 - (i) *the approved safety management system for the railway or the operation of rollingstock on the railway with which the accredited person must comply; or*
 - (ii) *another matter prescribed under a regulation.*

The Act establishes procedures once accreditations are granted, such as the chief executive's authority to amend, suspend, cancel or request surrender of accreditation and the power to require works to stop.

Under the framework for reporting and investigation of serious rail incidents, railway managers and operators must report such incidents. Guidance is provided to accredited persons on the type of incidents to be reported and the timeliness and form of reports. Although rail managers and operators are responsible for primary investigations of incidents, provision exists for the Chief Executive to establish boards of inquiry and ask for incidents to be reinvestigated by railways.

4.2 “Rail Safety Management Within Queensland Manual”

The RSAU has compiled the *Rail Safety Management Within Queensland Manual* (the manual) as a guide for the rail industry in the process of gaining rail safety accreditation and for accredited railways, to ensure they continue to meet QT's accreditation, incident reporting and investigation requirements. The manual was the result of consultation with the rail industry and is expected to be reviewed at least every 5 years. The manual applies the Act and Australian Standard AS4292 Railway Safety Management in stating accreditation requirements and providing guidance notes and references.

4.3 Accreditation fees

Accreditation involves payment of accreditation fees as an annual levy. Such fees are detailed in the Transport Infrastructure (Rail) Regulation 1996 (the Regulations).

The Regulations outline the requirements for an annual accreditation levy. The annual levy must be paid by the manager or operator by the date notified by chief executive. These provisions state that:

- a) the person must pay the part of the levy that is proportionate to the number of days for which the person is accredited in the year; and
- b) the person must pay the part of the levy when the person is accredited.

The annual accreditation levy may be paid by instalments under an agreement between the chief executive and the manager or operator. Any differences (over estimations or under estimations) between the amount of levy paid and the amount of the levy worked out using the actual amount (of estimated annual revenue), will be paid (to the accredited person or the chief executive respectively).

Where the accredited person fails to pay the annual levy by the due date, the accreditation lapses (unless otherwise notified by the chief executive).

4.4 Appeals

An applicant for accreditation has the right of appeal over accreditation decisions of the chief executive concerning imposition of conditions, cancellation or suspension of accreditation and even recalculation of underpaid and overpaid annual levies. The rights of the applicant are considered in the structure of the legislation, ensuring full written notice of accreditation conditions, cancellation or suspension and fees is provided by the chief executive.

4.5 Compliance with “Rail Safety Management Within Queensland Manual”

Accreditation applicants are required to develop rail safety management systems that are consistent with the Australian Standard for rail safety management, AS4292, and QT’s *Rail Safety Management within Queensland Manual*, to RSAU’s satisfaction. The manual translates the requirements of the Act and AS4292.1 standard into accreditation acceptance requirements, and provides guidance notes.

The three areas accreditation applications address are:

- a) organisational aspects/activities being undertaken;
 - b) risk management processes for identifying risks associated with those activities; and
 - c) safety management system to control and manage the risks.
- a) Organisational aspects
 - Accreditation documentation should include details of the organisation seeking accreditation and the name of the individual ultimately responsible for these activities; the names of those responsible for maintaining the Safety Management System and an organisational chart with the qualifications of staff responsible for critical safety matters and details of how risk management will be dealt with within that structure (Section 5.2 of the manual).
 - Accreditation documentation should also include details of traffic flows, traffic frequencies, volumes carried, geographical boundaries, signalling systems. Applicants must also supply a detailed list of their assets. The chief executive requires documentation on the applicant’s financial capacity and public risk insurance arrangements, including details on how sufficient cover is determined and the amount covered. Previous rail history of rail operations and accidents are also required for accreditation. Applicants will need to demonstrate they have right of access as required by the Act, including details of any safety interface requirements of these access arrangements.

b) Risk Management Processes

- The applicant's accreditation documentation needs to include details of its safety policy, clearly demonstrate the applicant's commitment to risk management and include arrangements for discharging the policy. Details of projected safety performance levels, with descriptions of how these levels will be achieved, and a timeframe are also required.

c) Safety Management System

- RSAU requires applicants to fully demonstrate understanding of safety risks of operations to be undertaken and further understand how the risks are managed through:
 - an effective safety management system;
 - clear assignment of safety responsibilities;
 - competent staff undertaking safety activities;
 - effective control of interfaces;
 - arrangements for monitoring and reporting safety performance; and
 - arrangements for review of the effectiveness of the safety policy, results and controls.
- Applicants must demonstrate that they have addressed all interface issues, including those associated with level crossings, terminals, yards and stations. RSAU expects railway managers/operators to demonstrate the will, resources, competence and commitment to control risks and manage safety processes. For each control mechanism of the Safety Management System, the following are required:
 - a policy for each subject in the safety system;
 - organisation detail regarding who will be responsible for the policy and the training/experience this person requires;
 - plans as to how the policies will be achieved;
 - monitoring to ensure the plan is being enacted; and
 - review of the effectiveness of the policy, results and control mechanisms.

In considering a safety management system, the legislation requires the chief executive to consider -

- the applicant's rail transport proposal;
 - the appropriateness of the safety management system for the proposal;
 - the safety levels achievable, consistent with the nature of the proposal, at a reasonable cost;
 - the need for efficient and competitive rail transport services;
 - consistency with generally accepted risk management principles; and
 - the levels of safety proposed relative to the levels of safety of competing transport modes.
- The above does not limit by implication the matters the chief executive may consider in considering a safety management system.

Compliance Audits offer the regulator, and accredited railways, opportunities for joint review of rail safety performance. Initially railways will be audited 6 months after accreditation and subsequently audited generally on an annual basis. Additional interim audits may be required following accidents/incidents, major safe working breaches, failure to comply with access conditions or to satisfy other concerns of the regulator. Audits will be conducted firstly via the desktop to confirm procedures exist and are in place, and that accreditation records are being maintained. Secondly, site audits will be used to confirm the implementation of processes, activities, procedures and instructions.

5 Objectives of legislation

The primary objective of the legislation is to provide for the development and implementation of rail transport infrastructure strategies and provide a framework to allow rail managers and/or operators to function in effective and efficient ways, as well as introduce a safety accreditation system. The provisions of the legislation are designed to “ensure the safety and operational integrity of the railway can be protected” (Hayward 1995, p.11878).

The rail safety legislation provides for “a regime for the operation of rail transport infrastructure that contributes to lower transport costs by allowing maximum flexibility in rail transport operations consistent with safety objectives” (Hayward 1995, pp. 11877-8).

The rail safety provisions in the Act were intended to be consistent with the Queensland Government’s encouragement of business confidence and economic development within Queensland, particularly regional rail service delivery and employment (Hayward 1995, p. 11880).

The objectives of the rail safety legislation in Queensland are achieved through the accreditation system administered by the RSAU. The five main functions of the RSAU are to:

- implement strategic policy to promote, maintain and enhance safety;
- manage the Rail Safety Databases and data analysis;
- implement and manage the safety accreditation scheme;
- audit rail safety systems; and
- coordinate review and where appropriate, participate in incident investigations.

The rail safety accreditation system legislation ultimately affects passengers and users of the Queensland rail system. Accreditation ensures reasonable standards are maintained in the management of railways and operation of rolling stock. Accreditation ensures railway managers have the competency and capacity to manage a railway or rolling stock safely (this may mean they are already accredited in another State). The Intergovernmental Agreement offers mutual recognition for interstate operations where the railway safety management system already implemented is consistent with the Australian Standard for Rail Safety (AS 4292). Rail users can be assured of consistent safety standards in rail in Queensland. Accredited managers and operators have to demonstrate they have the financial means or public risk insurance arrangements to meet reasonable potential accident liabilities for railways.

In summary, it is intended that passengers and users of rail services which comply with an approved safety management system receive high levels of safety at reasonable cost levels. Rail efficiency and competitiveness are not compromised and generally are consistent with accepted risk management principles.

6 Other relevant legislation

Environmental protection legislation in Queensland exists under the *Environmental Protection Act 1994*. The Act is administered by the Environmental Protection Agency (EPA) and obliges persons and businesses in Queensland to exercise a general environmental duty not to carry out any activity that causes or is likely to cause environmental harm. Such legislation is not prescriptive. Whilst this legislation is relevant to the activities of rail managers and operators, it is clearly not designed to address rail safety issues.

The Queensland *Fair Trading Act 1989* is relevant to consumer protection but does not apply to rail service safety issues. This legislation focuses solely on individuals who are consumers of goods and services.

The *Queensland Competition Authority Act 1997* provides the power to make “codes” for the purpose of setting out rules that apply for access. It also provides powers to the Queensland Competition Authority (QCA) to require an infrastructure service provider to prepare an “undertaking” or for the Authority to prepare an undertaking, also for the purpose of setting out rules of access.

The *Trade Practices Act 1974* is relevant to consumer protection, but does not address rail safety issues. Part IIIA of the Trade Practices Act does however incorporate provisions relating to access to the services provided by nationally significant infrastructure. It would be possible to include rail safety issues into access arrangements along the lines of that of the Queensland regime.

The objective of the *Workplace Health and Safety Act 1995*⁶ is to prevent a person’s death, injury or illness caused by a workplace, by workplace activities or by specified high risk plant. It places obligations on the employer and others to ensure the workplace health and safety of the employer’s workers at work. That Act also places obligations on workers and others to ensure that they comply with instructions given for workplace health and safety by the employer at the workplace. Therefore, the *Workplace Health and Safety Act* is very relevant to rail safety both from the perspective of employee casualties and broader individual safety. Although the Act is quite generic, it is possible to develop industry codes under the Act that could provide specific industry detail. The contents of any such codes would determine the ability of the legislation to address the broad spectrum of rail safety issues. As a result of the increasing complexities of particular industries (such as mining, quarrying and rail), there is a move away from industry codes under the Workplace Health and Safety Act toward reliance on industry specific safety legislation.

⁶A Memorandum of Understanding has been signed by Queensland Transport and Queensland Workplace Health and Safety which has generally defined responsibilities and a process for consultation on areas of duplication.

7 The economics of rail safety

Accidents arising out of rail management and operation incidents relate to injury or property damage involving employees, highway crossing, trespassers, non trespassers, passengers, and collisions and derailments.

Only limited data is available to analyse the economics of rail safety. Data on US railroad fatalities and injuries, disaggregated into the accident categories defined above, from 1890 to 1994, is presented in Figure 1 and 2 respectively. It is considered that the data presented can be used in an analysis of Australian circumstances as an indicator of the outcomes of a completely deregulated rail safety situation and this comparison is further developed in Section 9.1.

Figure 1: Annual Railroad Fatalities (USA)⁷

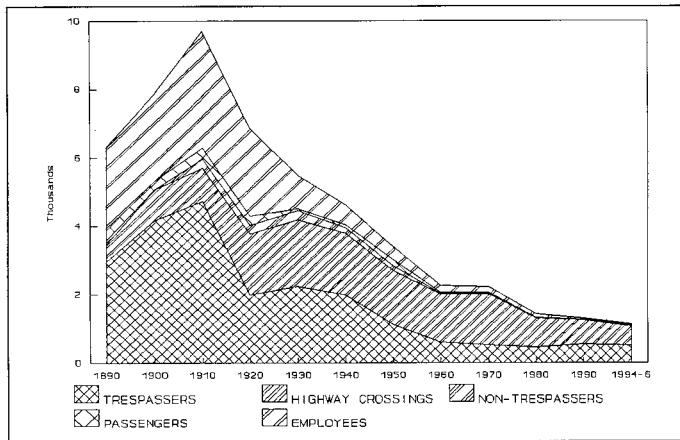
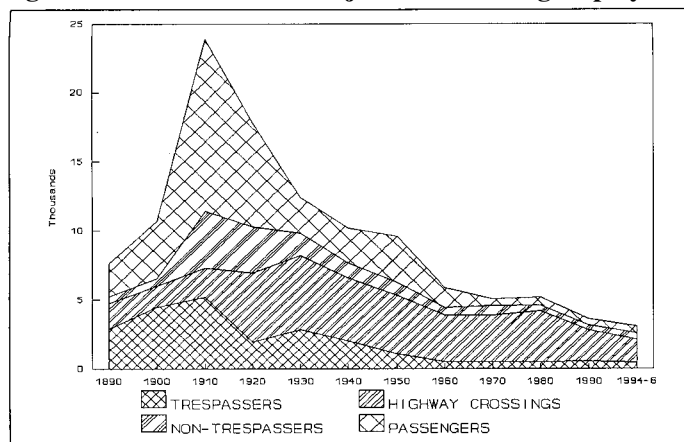


Figure 2: Annual Railroad Injuries - excluding employees (USA)⁷



⁷Savage (1998), pages 12, 13

US data is readily available and provides a long term series of data for well established railroads. It also enables comparison of accidents over a considerable period in the context of a developing regulatory regime. The data clearly reveals declining fatalities and injuries since early in the 20th century.

The clear trend in figures 1 and 2 of declining rates of rail road fatalities and injuries is associated with both changing technology and increasing general and rail-specific safety regulation in the US. A series of Acts was introduced to deal with perceived rail safety problems including the *Accidents Reports Act 1910*, the *Block Signal Systems Act 1906*, the *Signal Systems Act 1920*, the *Locomotive Inspection Act 1920*, etc. Between 1920 and 1960 accident rates improved considerably and the industry was left to self regulate. Technical committees were formed as a result of *Safety First* programs.

Figures 1 and 2 show that in the 1960's US rail safety declined. Employee fatality and injury rates increased by 16% and 75% respectively between 1960 and 1970. The rate of accidents per ton mile caused by track defects doubled between 1966 and 1974. The major cause was the decline in railroad finances. As a result of these developments, the *Federal Railroad Administration* was formed in 1967, as well as other safety and environmental agencies. New legislation including the *Occupational Health and Safety Act 1970*, the *Highway Safety Acts 1973 and 1976*, and the *Transportation Uniform Safety Act 1990*, were established. As figures 1 and 2 show, fatality and injury rates again improved in the 1980's and beyond. (Savage p 22 - 28).

From an economic perspective, government intervention in a market is considered appropriate if there is a clear demonstration of market failure and if there are net social benefits arising from government intervention. The sources of inefficient resource allocation by a market include market structure (e.g. monopolisation), and the existence of externalities, public goods, and asymmetric information.

In the case of rail safety, the market fails through several factors, namely:

- market power (market structure);
- imperfect information (asymmetric information);
- customer irrationality (partly from asymmetric information);
- railroad myopia (market structure); and
- the existence of externalities.

Market Power

Market power arises through a number of features of railway operations including:

- significant indivisible costs, particularly in the provision of rail infrastructure;
- barriers to entry existing for new operators as a result of economies of scale, arising from indivisible inputs;
- limited physical opportunities to create new rail corridors, particularly in the urban passenger market;
- limited profitability in certain segments of rail service provision (e.g. passengers and general freight) and frequent resort to government subsidies to sustain operations; and
- the weak bargaining position of small scale users of rail services relative to the large scale (often monopoly) providers of rail infrastructure and services (usually in passenger and general freight services).

Imperfect Information

Imperfect information relates to the level of information rail customers hold in relation to the safety choices available to them. If customers misperceive the preventative efforts made by rail operators and other transport firms they are likely to make inappropriate decisions. Freight customers are more likely to be aware of safety considerations than passengers because they have greater resources and incentives to be informed. Incident reporting and investigation requirements are an important tool in portraying more accurate representations to customers in respect of rail safety.

Irrationality of Customers

Economic theory presumes individual consumers and firms make decisions that best serve their interests. Firms shipping goods by rail are likely to compare the performance of modes relative to price, damage rates and collisions etc. Rail passengers are likely to be less rational by denying the potential for personal injury or failing to accurately assess it. Psychologists have found evidence that people consider themselves less likely to be injured than the average person (Savage 1998, p.113).

Myopic Behaviour

The nature of the market for safety makes myopic behaviour possible. The costs of preventative effort are borne in the present, whereas accident costs (including the liability to customers and bystanders) occur at random times in the future. “An *unscrupulous railroad* may decide to improve short-run profits by reducing preventative efforts. It might do so if it is close to bankruptcy and feels that it can escape without accident cost in the future. It might also do so if it feels that customers will fail to recognise that an inferior product is now offered and will continue to pay a high price for the service.” Also “newly-formed railroads may provide too little preventative effort due to inexperience rather than avaricious intent” (Savage 1998, p.115).

Externalities

While the first party, the rail operator, may cause injury to the second party, the shipper or passenger, by equipment failure, third parties can be involved where equipment malfunctions (e.g. derailments) and collides with third persons and or their property. If the marginal cost of preventative effort is greater than the cost of the likely legal liability to compensate the victim, railroads will have no incentive to reduce external impacts.

Most of the harm suffered by both second and third parties is transferred to the responsible party (either by contract arrangements or general legal liability). However there are situations where this might not happen. For example, externalities arise where the usual rules of law invalidate compensation for certain victims (e.g. the economic losses such as increased business expenses or reduced revenue) or certain types of harm, or when expenses incurred by emergency services are not recovered from the railroad. Also, if contracts (between rail operators, managers and rail service users) inadequately consider the impacts of rail accidents, then inadequate or inappropriate compensation will occur.

As previously stated, there is a tradeoff between the costs of government involvement in the market (e.g. by regulation) and the benefits achieved as a result of that involvement. In this case, there are costs of administering a rail safety regime (in any form) and costs of complying with that regime. The issue is whether offsetting benefits of reduced incidents and accidents as a result of the regime, exceed the costs of the regime for governments and rail operators and managers.

8 International comparisons

As previously mentioned, the present rail safety regulatory regime in Australia is state based and co-regulatory in nature. In 1996, the Commonwealth, the States and the Northern Territory entered into an Inter-Governmental Agreement (IGA) to establish a cost effective, nationally consistent approach to rail safety and to ensure that no inappropriate barriers to the entry of third party operators would exist. The IGA was based on:

- safety accreditation of railway owners and operators;
- mutual recognition of accreditation between accreditation authorities;
- development and implementation of performance based standards;
- greater accountability and transparency; and
- facilitating competition and technical and commercial innovation consistent with safe practice.

Under co-regulation, for practical purposes, the industry is regulated jointly by the industry and government, a process designed to apply external safeguards to an otherwise self regulated industry. There are varying degrees of prescription in international rail safety regimes. New Zealand is at an extreme end of the co-regulatory scale. Its approach is national in scope. New Zealand's rail safety regime operates under the Transport Services Licensing Act 1999 and Transport Services Licensing Amendment Act 1992. The Land Transport and Safety Authority (LTSA) is responsible for administering the Acts and monitoring compliance through a "stand back" approach to compliance audits through a panel. The New Zealand railway selects and pays the auditor, whilst the sanctions are provided for by the LTSA. The LTSA sets minimum standards for scope and content of the safety management system, but not in operating or technical standards.

Early indicators of rail safety in New Zealand are not promising with unofficial statistics (NZ Rail and Maritime Transport Union 2000) estimating rail deaths are increasing.

In comparison, the systems in USA, and Canada prior to 1988, are national in scope and typically much more prescriptive in nature. In particular the US federal regime is highly prescriptive in application, where standards are mandated and compliance is strictly enforced.

In the USA, the Federal Railroad Administration (FRA) is responsible for ensuring railroad safety. It monitors railroad compliance with federally mandated safety standards through site-specific railroad safety inspections. Since 1993 the FRA has introduced a Safety Assurance and Compliance Program (SACP) to complement its traditional safety enforcement program. FRA publishes safety accident and incident data, safety alerts, railroad safety initiatives and emergency orders (FRA 1999 cited in Booz Allen and Hamilton 1999). Although the US rail safety regime is national in scope, local regimes do apply within states. The National Transport Safety Board may investigate accidents as required.

The US system of prescription mandates standards for all aspects of operations including physical, procedural and documentation. It provides managers/operators with little flexibility or incentive to innovate. New entrants do not have to establish their own safety management procedures as these are mandated. In contrast, under co-regulation, it is the managers/operators responsibility to demonstrate to an independent authority that the procedures adopted reflect good safety management within the organisation concerned.

Canada has moved away from a “command and control” approach to a more performance-based approach in recent years. In the mid 1980’s new Federal Railway Legislation was enacted separating accident investigation from regulatory activities. This legislation established a multi-modal transportation safety board and separated economic regulation. Canada’s present level of prescription in rail safety is slightly higher than that of the Queensland regime and is much lower than that of the US regime. Canada’s new rail safety regime relies on the use of risk management based approaches to setting safety priorities and utilises audits rather than direct inspection. Over the last 10 years, the safety record has improved (Transport Canada 1998) and the cost of regulatory oversight is significantly less (Burtch 1998 and Ackermans 1998). As legislative refinements continue, improvement in corporate safety management practices continues (Burtch 1998 and Ackermans 1998 cited in Booz Allen and Hamilton 1999).

Canadian rail fatality rates have decreased during 2001 and 2002 (Transport Canada, 2002). Canada has implemented a performance-based approach to rail safety since 1998.

The United Kingdom’s “Cascade” model offers a regime with similar levels of prescription to Canada’s current rail safety regime, but differs in the mix of State and National involvement. Under the “Cascade” model the prescribed standards are set by the track owner (RailTrack). Primary interface accountability rests with RailTrack along with the regulatory management of the operators (track operating companies). Her Majesty’s Railway Inspectorate (HMRI) is part of the Health and Safety Executive (HSE) and is responsible for occupational health and safety and rail safety regulation. The Infrastructure Controller (IC) presents safety cases to HMRI for assessment and is required to set technical and operational standards (HSE 1998, cited in Booz Allen and Hamilton 1999).

QR statistics indicate the low level of fatalities in Queensland (and indeed in Australia where consistent regulation applies) relative to fatalities on rail services where such safety legislation does not exist. QR’s long term passenger fatality rate is among the worlds lowest at one fatality per 400 million passenger journeys (0.25 per 100 million passenger journeys). QR employee fatality rates for the last decade were well below the international levels and three times safer than for the Australian workforce overall (QR 2000, p.13).

Prior to 1995, QR⁸ was responsible for the management and operation of rail safety in Queensland. Statistics on Queensland rail accidents and incidents indicate lost time injury frequency rates fell from 65 accidents/million hours worked in 1991-92 to 47 accidents per million hours worked in 1995-96 (QR 1996, p. 17).

⁸ QR was corporatised from 1 July 1995. QR’s safety performance was regarded as “exceptionally high” following a 6 week safety audit undertaken by QT’s Rail Safety Accreditation Unit.

9 Options

Three options (or general models) are considered in the assessment of anti-competitive aspects of safety legislation. A highly prescriptive regime has not been considered as an option as it could potentially be anti-competitive and, in the context of this review which focuses on the public benefit of the current regime, such consideration was not considered necessary. However, recent findings from accidents highlight the need to keep these aspects under review and also to consider changes to existing arrangements to clarify responsibilities when it is evident this needs to be done.

Option 1

Continue the current regulatory framework

Option 2

Deregulation, dispensing with statutory control over rail safety legislation entirely (i.e. repeal the relevant provisions).

Option 3

Self regulation supported/enforced by minimal statutory regulation.

The current regime (Option 1) means that existing rail operators and rail managers (and potential new rail operators and managers) are bound by requirements for the safe use of rail infrastructure and rolling stock. Standards for financial capacity, public risk insurance arrangements, and risk management, combine to establish standards of safety in rail infrastructure and rolling stock provision. However, the existing accreditation process, safety management system and regulations are not restrictions on entry to the rail industry per se. They merely act as a standard for minimum rail safety. Further, there are no legislative requirements for prescribed quality or technical standards to be observed, or specified equipment to be used. The Rail Safety Manual influences the standards by specifying outcomes, and allows managers/operators to determine the most effective approach to achieving those outcomes.

Under existing arrangements, rail users of both passenger and freight services, are guaranteed minimum safety standards in rail infrastructure, rolling stock and service provision regardless of both the cost of stipulated safety provisions to the accredited provider and the profitability of the activities.

The option of complete deregulation (Option 2) could yield a range of outcomes between two extremes (i) QR dominating rail activities and accreditation and (ii) multiple rail operators independently setting safety standards. These extremes would lead to either (i) a significantly anti-competitive environment in which safety standards act as an entry barrier or (ii) a rivalrous environment in which safety standards were adjusted to satisfy financial pressures.

Option 3 (largely self regulation) represents a substantially reduced regulatory environment. It would likely provide a requirement for railway managers/operators to both maintain rail safety levels and monitor, report and investigate rail incidents, and address the causes of those incidents as exists presently. However, option 3 would incorporate greater use of alternative compliance mechanisms such as:

- industry initiated performance based alternatives to prescriptive standards (rather than government initiated);

- management systems and compliance assurance established and supervised by industry;
- third party (i.e. non government) accreditation;
- compliance plans.

Option 3 offers the additional benefit of ensuring minimum safety requirements are met, and introducing greater flexibility in the operation of safety management systems. Alternative compliance methods, by introducing greater flexibility, provide the potential for a higher level of efficiency for those managers/operators demonstrating a high degree of compliance, and improve cost effectiveness by reducing compliance costs. However a legislative basis would be necessary to ensure minimum acceptable standards.

Each of the options, and the assessed impacts on specific stakeholder groups is discussed in more detail in section 9.1.

9.1 Key Groups Affected

The key groups affected by the current arrangements are passengers and users of rail services, existing and potential managers and operators of rail services, government, insurance companies, general business and the community.

The likely impacts of each of the identified options are contained in the Table 1.

Table 1: Stakeholder Impacts Matrix

Stakeholder Group	Option 1 (Status Quo)	Option 2 (Repeal)	Option 3 (Alternative Compliance supported by limited regulation)
Passengers and users of rail and rail corridors	<p>Existing high levels of safety and consumer protection would continue.</p> <p>Existing high levels of incident/accident investigation, reporting would continue.</p>	<p>Removal of rail safety regulation opens the industry to managers/operators unable or unwilling to operate safely. There would be no assurance that managers/operators are financially able to meet minimum safety obligations and acceptable risk levels. Reporting and investigation of incidents would likely be reduced, or less rigorous. Public reporting would likely not occur. There would be no external check on any ameliorative actions undertaken.</p> <p>The interface with the rail system such as level crossings may become less safe but this would be dependent on government reaction to developments.</p>	<p>Under self regulation existing safety and consumer protection would likely continue, but perhaps to a lesser degree. Reduced oversight by Government would make it difficult to ensure compliance.</p> <p>There may also be implications here for level crossing safety.</p>
Rail Managers	<p>Rail managers' responsibilities and powers would continue to be clearly defined to ensure appropriate levels of safety without unduly restricting competition.</p> <p>Rail manager's infrastructure would continue to be protected by high standards required of accredited rail operators.</p>	<p>Because of the stronger market position of rail managers, they are likely to have substantially more power in any deregulated system than operators. Rail managers, in specifying requirements of operators, could do so to the extent that some activities, or competition (if the rail manager is vertically integrated) might be reduced or eliminated.</p> <p>If operators are not accredited, and rail managers do not (or can not) use monopoly powers, rail lines could be damaged or closed as a result of unsafe operations or rollingstock.</p> <p>Insurance costs might rise if incidents increase.</p>	<p>Self regulation offers the potential for some improved cost effectiveness by managers and operators. However, the details of the system which emerges would determine the actual impacts on rail managers.</p> <p>There is not clear independence in the processes which could lead to complaints that managers would play a major role in the accreditation or certification of operators, and that rail managers would desire to impose restrictions that best suited to their commercial operations rather than benefited public safety. Liability issues would be relevant here.</p> <p>Reporting and investigation of incidents would likely be reduced to ensure that liability and publicity were minimised.</p>

Stakeholder Group	Option 1 (Status Quo)	Option 2 (Repeal)	Option 3 (Alternative Compliance supported by limited regulation)
Rail Operators	The requirements of rail operators would continue to be clearly defined to ensure appropriate safety outcomes.	<p>If rail managers are not accredited or required to provide high standards of infrastructure and operational control, there is increased risk of rolling stock damage, delays, lost business and reduced profits for operators.</p> <p>Rail managers would also be able to use their market power to impose inappropriate restrictions on operators to ensure the best commercial outcome for the rail manager (although outcomes would be dependent upon the requirements of the third party access regime).</p> <p>Insurance costs might rise if incidents increase.</p>	The details of the system would determine the impact on rail operators. However it is likely that managers would play an increased role in the accreditation or certification of operators at the expense of operators. Rail managers would desire to impose restrictions that are best suited to their commercial operations rather than benefit public safety.
The Insurance Industry	Maintaining standards in rail safety reduces the risk of an accident and is likely to maintain reasonable costs of insurance. Whatever the costs, they are likely to be passed on to the insured.	The frequency of incidents, and therefore the cost of insurance might rise. Whatever the costs, they are likely to be passed on to the insured.	Standards in rail safety are likely to be reasonably maintained, and costs of insurance should be reasonable. Whatever the costs, they are likely to be passed on to the insured.
Rail Employees	Existing high levels of safety for employees would continue	Removal of rail safety regulation could impact on the safety of employees but there would still be protection by Workplace Health and Safety Act.	Under self regulation existing safety, consumer and employee protection would likely continue, but perhaps to a lesser degree. Reduced oversight by Government would make it difficult to ensure compliance.
Government	<p>Maintain relatively low costs of administration compared with more prescriptive/intrusive models.</p> <p>The maintenance of a safe rail environment will support the transport objective of having rail play a greater role in freight and passenger transport.</p> <p>Greater use of rail as a result of a safer rail system will reduce environmental impacts of transport.</p>	<p>Reduced costs of direct administration, but likely increased costs of responding to accidents, etc</p> <p>Adverse publicity and perhaps increased litigation whilst the rail manager remains a government entity.</p> <p>Reporting and investigation of serious rail incidents may become inefficient and ineffective (resulting in both a lack of information and response by Government and/or the rail manager/operator).</p>	Prima facie, self regulation may involve lower administrative costs to Government. In the longer term, the costs in terms of accidents and economic losses resulting from accidents (where self regulation proves to be inadequate) may be higher than currently exists. Ultimately impacts will depend upon the actual system of self regulation established.

Stakeholder Group	Option 1 (Status Quo)	Option 2 (Repeal)	Option 3 (Alternative Compliance supported by limited regulation)
	The Government's priority of having safer communities will be progressed.		
General Business and Community	Maintaining a high level of rail safety.	<p>Without safety and accreditation systems, the general quality and standards in rail would likely decline and usage would decrease. This has impacts on transport efficiency as well as external implications for other transport modes.</p> <p>If onerous requirements are placed on rail operators by rail managers, costs are likely to increase with a resulting reduction in business and community welfare, and potential changes to relative transport tasks for the various modes.</p>	The impacts on the general business community would depend upon the details of the system established. Any reduction in safety or competition within rail is likely to be detrimental to this group of stakeholders.

10 Assessment of Options

The options presented above can be assessed in terms of: the economic benefits and costs imposed on rail managers, rail operators, rail users, and the general public, as a result of varying risks of accidents under each option, relative to the total costs imposed by the various regulatory regimes:

- the achievement of safety objectives in terms of the number and severity of accidents;
- the environmental impacts;
- impacts on state and regional development;
- the constraints on entry in terms of technical and operational requirements; and
- the ability of each option to achieve NCP objectives⁹.

In general terms, in assessing the potential impacts of the alternative, less regulated options, it is important to recognise that the impacts are very much dependent upon the responses of the market participants. The less regulated options provide market participants more flexibility to innovate, and opportunity to use (or misuse) market power, where it exists, to achieve their own commercial ends without consideration of the broader, and perhaps longer term, outcomes and impacts. In this regard there are substantial externalities associated with railway activities, particularly as those activities relate to safety. Most of those externalities would be likely to be transferred to the rail operator or manager (as the case may be) through access agreements, public liability requirements and insurance costs. However there will always be uncompensated impacts, or at least claims of uncompensated impacts. Also, in the case of an unscrupulous or inexperienced operator or manager, or an operator or manager without the financial capacity or insurance to cover costs of accidents, costs may remain externalised.

In view of the difficulty of determining market participant reaction to the alternative options presented, reliance has been placed on the outcomes of overseas experience, where regimes exist with various levels of regulatory control.

10.1 Benefits and Costs

Railways have the potential for large scale accidents. However, in most developed countries the industry is relatively safe. This relative safety arises as a result of specific statutory requirements, general laws relating to the liability of corporations and individuals, as well as the broad requirements of society, and the market choices that are available to consumers and potential consumers of rail services.

Rail safety regulation is specifically aimed at preventing, or at least reducing the risk, of personal injury, death and property damage which impose costs on society through medical treatment, emergency services and the loss of income or assets.

⁹.i.e. the benefit to the community as a whole of such legislation outweighs the costs and there are no better ways of achieving the objectives of the legislation.

From an industry perspective, effective rail safety regulation also brings many benefits. It is likely that under a system of self regulation, a prudent rail participant would expend resources on safety management to avoid losses associated with accidents including civil and criminal damage claims. In such a situation, the operator would take a commercial approach to balancing the competing claims on resources within the business to fulfill the company's goals. This would include the company's own assessment of the likelihood and impact of an adverse rail incident on the net worth of the business. However, under a prescribed regulatory regime, the participants' interests would, of necessity, be broadened with, in many instances, a resulting improvement in safety outcomes. Participants may be required to implement a safety system which departs from preferred levels of risk. However, the participant would still receive the industry wide benefit generated from higher levels of safety in the industry as a whole.

Broadly, the impacts (i.e. costs and benefits) resulting from a rail safety regime comprise (1) direct administrative costs for government of the regulatory regime (2) costs imposed on the rail industry in complying with the regime, and the cost savings by way of reduced accidents, and (3) costs and cost savings accruing to users and third parties, of varying accident levels, including the impacts of any modal switching which may occur as a result of the safety outcome of the various options.

The cost of administering Queensland's existing rail safety accreditation system is small relative to cost of rail incidents. There is little cost to government for running rail safety accreditation as it is mostly funded by industry. The total cost to government of administering the existing Queensland rail safety system (including accreditation and policy development) is about \$425,000 annually. The quantum of accreditation fees collected is about \$420,000 per annum¹⁰. By way of comparison of costs of administration, under the current rail safety regime, QR paid approximately \$376,000 in administrative compliance costs in 1999. Under New Zealand's less prescriptive rail safety regime, QR in 1999 would have paid approximately \$A249,574.¹¹

Revenues from the rail industry are obtained through accreditation levies. Although the levies are broadly set to recover costs, it needs to be recognised that the rail industry is not the only beneficiary of the rail safety regime.

The structure of the industry will impact on the cost of safety regulation. Vertical integration via monopoly presents the lowest costs by virtue of internal policing. Vertical integration via oligopoly will require some codes and more costs. Non-vertical integration raises policing costs as more players arise at each stage of activity.

Because there is primarily only one vertically integrated rail manager/commercial rail operator in Queensland at present, and a number of smaller commercial/heritage rail operators, the appropriateness of the fee structure has not been considered in any depth to date. However, there are significant issues which are likely to require consideration in the context of a prospective increase in the number of third party rail operators in Queensland and an increasing focus on the effectiveness of regulatory constraints. Issues such as the level of fees (e.g. whether they should be set at cost recovery levels or higher or lower than those levels), the structure of fees (e.g. whether they are based on costs imposed, risks of incidents or some other criteria) and methods of collection, will all need to be considered to ensure that inappropriate restrictions are not imposed on competition in the rail industry.

¹⁰Based on revenues from accreditation fees for 2000/01

¹¹based on official exchange rates of \$A1 = \$NZ 1.2466 as at June 1999 (RBA 2001).

Overseas studies involving relatively more prescriptive rail safety regimes indicate that those regimes incur greater administrative costs and do not appear to noticeably reduce the number of rail incidents.

The direct costs to the industry of complying with system requirements (i.e. establishing safety systems, providing complying rolling stock and infrastructure, reporting etc), also need to be considered. Whilst in some instances (or for some operators) the cost of complying with the regime are likely to be far greater than the government's costs of administration, this is not necessarily the case overall. Informally, operators currently accredited within Queensland have reported that the requirements of the Queensland regime are no more onerous than would be imposed by their own safety requirements. In the case of new and/or under capitalised operators, compliance costs may be judged to be higher than would be self imposed by such operators. It is also very likely, however, that the risks associated with these operators, without the imposition of a regulated safety regime, would be substantially higher. Experience in the US in the 1960s, as discussed in section 7, indicates the impacts of unsound railway finances on rail safety.

The administration and compliance costs emerging from Options 2 and 3 would depend upon the requirements of the alternative compliance mechanism established (if any were to be established under Option 2). Direct administration costs may be reduced slightly, as would compliance costs, if a less onerous system is established, or more efficient methods of compliance are identified. However, should rail managers have commercial interests in establishing a stricter safety regime, or perceive that a more prescriptive regime is appropriate to improve safety levels, both administration and compliance costs may increase, without any external accountability.

The three options resemble, to a degree, the different international rail safety regimes previously discussed. Queensland's current rail safety regime represents Option 1. The regime in New Zealand perhaps approaches Option 2, as did the regime that existed in the US early last century. Option 3 resembles the existing regime in Canada. The current US situation offers a more prescriptive regime representing an extreme government interventionist role that is not considered as an option in this report. Table 2 presents a summary of rail accidents and incidents under each of the above regimes.

Table 2: Rail Accident 2002 (Number per million train kms)

	Fatalities	Serious Injuries	Derailments	Collisions
Queensland ¹² (Option 1)	0.13	not available	not available	not available
New Zealand ¹³ (perhaps approaching Option 2)	0.47	0.45	not available	not available
US ¹⁴ (The current system is more highly regulated. This option not considered)	0.81	9.3	1.66	0.16
US 1920 pre modern legislated safety requirements ¹⁵ (Possibly representing Option 2 but excluding the impacts of changing technology)	2.3	6.3 (excluding employees)	not available	not available
Canada ¹⁶ (Option 3)	0.65	0.48	3.17	0.82

all non fatal accidents (serious and not so serious injuries)

a data for 1998 only is available

Estimates of fatality cost savings can be made based on the information in Table 2, and a conservative estimate of the economic cost of a life of \$827,400¹⁷. The potential fatality costs saved, relative to a deregulated rail safety regime, need only amount to about 0.5 fatalities per annum to justify administrative costs of approximately \$425,000. Savings would also be made from costs associated with a decrease in major accidents/incidents.

Based on time series data, limited in some cases, fatality rates in Queensland are better than the rates in the United States (more prescriptive) and comparable to rates in New Zealand (somewhat less prescriptive) as shown in Table 3. Fatality rates in countries such as Canada and the UK also appear to be much higher than Queensland fatality rates. Given the minimal administrative costs of Queensland's rail safety regime as established above, the low fatality rates indicate the system to be as effective as the more prescriptive regimes (US) and less prescriptive regimes of New Zealand.

¹² Financial year data (2001/02) and (1998/99) based on estimated 37.4 million train kms. All other years used actual kms as stated in relevant QR annual reports.

¹³ Financial year data. For 2001/02 as reported in LTSA (2002)

¹⁴ Department of Transport (2002) Office of Safety, United States.

¹⁵ Savage (1998)

¹⁶ Transport Canada (2002)

¹⁷ ARRB preliminary costs for accident types, Research Report 217 (1992) Indexed using estimates of Average Weekly Earnings AWE for NSW, ABS Catalogue No. 6302.0. Other estimated cost of life significantly exceed the ARRB figure used.

Table 3. 12 Year Fatality Rate (per million train kms)

	Queensland ¹⁸	Canada ¹⁹	U.S ²⁰	U.K ²¹	New Zealand ²²
2002	.13	.65	.81	.73	.47
2001	not available	.81	.85	.80	.64
2000	not available	0.7	0.8	0.81	not available
1999	0.35	0.87	0.81	0.68	.24
1998	0.53	0.82	0.92	0.74	.44
1997	0.24	0.88	0.97	0.66	.37
1996	0.41	0.96	0.96	0.65	not available
1995	0.47	0.98	1.06	0.71	not available
1994	0.27	0.92	1.16	0.72	not available
1993	0.56	0.95	not available	not available	not available
1992	0.53	1.12	not available	not available	not available
1991	0.59	1.03	not available	not available	not available

10.2 Safety

Safety outcomes of each of the options is directly related to the probability of incidents and the severity of the accidents that arise from those incidents. The direct impact of varying safety levels would be influenced by the reaction of customers to perceived variations. Freight shippers, for example, because of the intensity and frequency of use, are likely to be more well informed about safety risks and are more likely to make decisions in a rational, and calculating, way. That is to say, the greater risk of damage to freight would reduce the use of the relevant mode and increase the use of alternative modes. This would only occur, of course, where there were viable alternatives.

For passengers, the response may be less rational, in that they may ignore safety aspects, within reasonable bounds, simply to reduce their anxiety about unpleasant events. Alternatively, because of the infrequency of use or general lack of data or safer alternatives (e.g. cars, walking or cycling are significantly less safe than rail), the increased safety risk may be excluded from consideration.

10.3 Environment

Environmental standards in Queensland are protected under various Acts for noise abatement, health, soil conservation, land and resources, cultural record (landscape and estate) and nature conservation. The TIA does not prescribe the environmental duties and responsibilities of those carrying out rail activities which are causing or likely to cause environmental harm.

¹⁸Financial year data (2001/02) and (1998/99) based on estimated 37.4 million train kms. All other years used actual kms as stated in relevant QR annual reports.

¹⁹Transportation Safety Board of Canada (1998), (2000) and (2001) based on 75.9m train miles x 1.61 for all years except 2001 and 2002 where actual corresponding kms were used.

²⁰ US Department Of Transport (2000)

²¹ Financial year data Health and Safety Executive (2000/01)) and (2001/02) based on 260.52m train miles x 1.61 for all years

²² Financial year data Land Transport and Safety Authority of NZ (1998/99),(2000/01), and (2001/02) based on 35.2m-37.63m train kms for all years

Sections 162 to 167 of the TIA deal with access to land where the railway is constructed. The sections set out the procedures for entering another person's land to carry out railway works. The Act outlines the due care with which this work is to be undertaken by accredited persons and the requirements for compensation to be paid to owners for loss or damages due to the works. Chief executive approval is required for all railway works involving diversion or construction of a watercourse, ensuring the watercourse's physical integrity and flow characteristics. Limited environmental standards in rail service provision are set within the accreditation and safety management sections of the Act in an effective, yet non-prescriptive way.

General environmental protection from rail service provision in Queensland, as it relates to the rail safety provisions, is provided through the safety accreditation process and requirements of a rail safety management system. That is to say, the accreditation process and other requirements are likely to reduce the likelihood of an incident/accident and therefore more likely to reduce the risk of environmental impact from such occurrences.

The adoption of a rail safety regime that resulted in increased or more severe incidents would be likely to have adverse implications for the environment. In this context, it is difficult to make an assessment of the likely outcomes of Options 2 and 3. However, any change in environmental impact is likely to be incidental to the achievement of more commercial objectives under a less regulated regime.

10.4 Impacts on State and Regional Development

The impact of the proposed options on state and regional development has the potential to be relatively significant. It would be reasonable to expect that the option which represented the most effective rail safety environment at the least cost (both in administration and compliance) would likely result in a more effective transport system and be of general benefit to the State's economy.

The adoption of a rail safety regime that resulted in increased or more severe incidents would be likely to have adverse implications for state development. For example, the derailment at Black Mountain in July 2001 not only resulted substantial damage to track and rollingstock (70 coal wagons were destroyed, resulting in inadequate wagon capacity), but also resulted in considerable delays in coal exports. Should such incidents occur on a regular basis, there are likely to be implications for Queensland's reputation as a reliable and timely exporter of coal, coal prices and future contracts.

To support the above comments, a clear link has been demonstrated in macro economic modeling, between transport expenditure and economic growth (i.e. expenditure on transport is positively linked with gross state product). Should an improved rail safety regime result in lower overall costs of transport, similar developmental benefits are likely to arise.

10.5 Technical and Operational Impacts

Although under Option 1, accreditation and safety management plans are required from accredited managers/operators, no prescriptive technical requirements are established (for rollingstock design, performance or configuration). As such, these requirements for accreditation therefore do not act as an inappropriate barrier to entry. They would offer some barrier if the operator could not achieve the safety accreditation requirements, but this would only be on public safety grounds.

Option 2 (i.e. deregulation) may result in onerous technical requirements for rail operators should the rail manager(s) use the market power it/they possess (as a monopoly or near monopoly provider of rail infrastructure). If the present safety legislation is repealed, the consequences would depend on developments within the market for rail access, and the prescriptions for rail safety contained in other legislation, regulations and policy documents. This might include the QCA rail access regime and consumer protection legislation in the *Trade Practices Act 1974*. In the absence of specific rail safety legislation, the legislation designed for other ends may decide the level of rail safety.

The outcome of Option 3 would depend upon the alternative compliance mechanisms established and the extent of control of the relevant legislation. It is reasonable, however, to expect that more prescriptive requirements for rail operators, and a less prescriptive regime for rail managers might emerge from an industry administered regime, if rail managers were able to exercise their monopoly or near monopoly powers.

There are currently no prescriptive operational requirements in rail safety accreditation or regulation. Therefore such general requirements do not appear to stifle innovation in performance of train services. The extent of operational influence of the alternative options presented depend upon market developments, and the comments made in section 9.4 above are relevant.

10.6 NCP Objectives

There are a variety of policy responses that might be deployed to ameliorate the five market failures discussed in section 7. Those identified are legal liability, anti monopoly powers, information provision requirements, insurance requirements, and safety regulation. Table 4 provides a summary of the likely effectiveness of each of these approaches as they impact on market failure of rail safety provision.

Table 4: Matrix of Market Failures (for rail safety) and Policy Responses

		Market Power	Imperfect Information	Customer Irrationality	Railroad Myopia	External Harm
Anti Monopoly Powers		x				
Legal Liability			x			x
Information on safety	Inputs		x		x	
	Outputs		x			
Insurance Requirement					x	
Safety Regulation		x	x	x	x	x

The legal liability of rail operators and managers exists in modern society under the requirements of both common law (under the general law of negligence) and statute law. The anti monopoly powers are addressed, to a large extent, by the powers of the *Trade Practices Act 1974*, as well as the requirements of the regimes of third party access, prices oversight, and structural reform of government business entities under National Competition Policy.

Safety regulation can address customer irrationality, particularly as it relates to passengers. Also, direct safety regulation is able to restrain opportunistic cost cutting by railroads as well as address the information requirements of new rail operators. Safety regulation of some description is, however, clearly the only option identified that is capable of satisfactorily addressing the majority of elements of market failure, and at the same time, providing an acceptable and economic level of rail safety.

More deregulated safety regimes may offer lower short term costs for operators and consumers, however, when a large scale disaster occurs, the long term consequences for an industry or society can be incalculable.

10.7 Findings

The current rail safety accreditation legislation existing in Queensland offers a low cost method of achieving safe reliable rail services with relatively little Government involvement. Current rail safety accreditation offers the benefits of a legislated safety regime without being highly prescriptive. The optimal level of rail safety regulation would appear to lie within the bounds of the existing general model.

There are no strict technical or operational requirements for rail safety accreditation. As a result, these requirements do not represent an inappropriate barrier to new entry or continued operation of existing managers and operators. Such general requirements of safety accreditation do not discourage competition. Instead the regime's requirements encourage entry (or at least avoid the constraints on entry that might be imposed by other regimes), enhance the safety and stability of the rail industry, and do not unnecessarily detract from the rail industry's profitability.

On the one hand, removal of the safety regime (or the introduction of essentially an industry based regime) could perhaps provide a lower cost rail safety regime with even a lower level Government involvement. On the other hand, costs to the rail industry (or certain sections of it at least) may increase should commercial interests overtake broader safety objectives. For example, rail managers may impose unreasonable requirements on rail operators to achieve commercial rather than safety objectives. Irrespective of the outcomes of the alternative scenarios, the cost to the community is likely to be greater. This would be either as a result of increased costs of compliance, and possibly the reduced competition from rail operators emerging from a more onerous regime, or increased costs as a result of reduced safety levels, increased accidents and undesirable modal shift. Either outcome would potentially result in reduced economic growth, possibly higher unemployment levels, and potentially increased environmental damage.

In the light of overseas experience relating to increased accident rates in more deregulated rail safety environments (and indications that the more regulated regimes do not appear to offer greater levels of safety), the uncertainties and risks associated with the varying levels of market power participants in the rail industry hold, the good performance and relatively low cost of Queensland's existing rail safety regime and the regime's consistency with that of other states; and the fact that regulation of some form is seen to be the only way of overcoming all the market failures existing in the provision of rail safety, Option 1 is the preferred option.

Support for Option 1 is reinforced by the Queensland Government's general approach to NCP reviews detailed in section 1.1 of this report. *That is to say, there are no clear public benefits to repealing or moving from the current general model (Option 1) to another general model such as Option 2.*

However there are substantially increased risks to public safety, rail infrastructure, the environment, and potentially state development, should amended regulations result in a less safe and less attractive rail system.

11 Recommendation

This review recommends retaining the existing approach to rail safety regulation (Option 1).

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