



**INDUSTRY
SCIENCE
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AFFAIRS**

PROTECTIVE HELMETS FOR PEDAL CYCLISTS

**REVIEW OF CONSUMER PRODUCT SAFETY
STANDARD UNDER THE *TRADE PRACTICES*
ACT 1974**

PRELIMINARY IMPACT ANALYSIS

AUGUST 1998

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1. INTRODUCTION

This paper raises issues for discussion to assist the review of the mandatory consumer product safety standard for bicycle helmets. The Consumer Affairs Division periodically reviews mandatory consumer product standards to establish whether they are still relevant to the purpose for which they were originally declared.

This Preliminary Impact Analysis looks at the options available for ensuring that bicycle helmets sold in Australia continue to offer a high level of safety. The issues covered in this discussion paper include industry self-regulation, the part that education and information plays, and the options for a revised mandatory standard, including a discussion of the new Australian Standard and a comparative assessment of overseas standards.

In June 1995 the Consumer Affairs Division reviewed the range of consumer product safety standards applying in Australia. In that review the mandatory standard for pedal cyclists helmets was identified as one which needed to be retained pending further discussions with industry and other government agencies. This paper forms a major part of these further discussions.

2. BACKGROUND TO THE REVIEW

The current mandatory requirements were established in 1992 to ensure that helmets supplied in the market meet certain minimum standards and that they are able to minimize the severity of head injury and provide protection against death and injury resulting from pedal cycle accidents.

The Commonwealth and State and Territory Governments are committed to good regulatory practice. Proposals involving new or amended regulation need to conform to the *COAG Principles and Guidelines for National Standard Setting and Regulatory*

Action by Ministerial Councils and Standard Setting Bodies; and the Competition Principles Agreement which provide that:

- regulations should be performance based rather than prescriptive,
- regulations should be the minimum required to achieve the pre determined and desirable outcomes; and
- regulatory measures should be compatible with relevant international standards or practices [where] *even if they differ, standards from other countries should be accepted as equivalent to Australian standards if they adequately meet the objectives of Australian standards.*

The Commonwealth is also interested in looking at non-regulatory options in its assessment of the minimum level of necessary regulation.

Consumers have enjoyed the benefits of mandatory standards applying to pedal cycle helmets for a number of years. However, the existing mandatory standard derives from a set of voluntary Australian Standards that have now been superseded and simplified. There are also a wide range of helmet safety standards worldwide. Given that all States and Territories mandate the wearing of helmets by pedal cyclists in a public place, it is essential that helmets available for sale in Australia are capable of providing the necessary levels of protection.

2.1 Australian Standard for Bicycle Helmets

The existing consumer product safety standard is based on the Australian Standard AS 2063.1 *Lightweight Protective Helmets Part 1: Basic Performance Requirements* and 2063.2 *Lightweight Protective Helmets Part 2: Helmets for Pedal Cyclists* which call up various parts of AS 2512 *Methods of Testing Protective Helmets* for the purposes of specifying the necessary helmet testing and performance requirements.

Over the years, especially since the wearing of pushbike helmets has become mandatory as a result of State and Territory legislation, there has been an increasing consumer awareness of the need for helmets for protection in a range of potentially hazardous activities, such as pedal cycling, horseriding, and a number of other sporting activities.

Standards Australia has found that guidance sought by the major users of the helmet standards, the manufacturers, was impeded by the multi-part nature of the AS 2063 series of 1986 and 1990 which has proved to be a source of confusion.

For this reason Standards Australia, in consultation with Standards New Zealand and a wide range of stakeholders revised the voluntary standard and adopted AS/NZS 2063:1996 *Pedal cycle helmets* as the new voluntary standard specific to pedal cycling, and identifying a number of safety issues that need to be addressed in future iterations of the standard. The new voluntary standard continues to cite the AS/NZS 2512 series as the source of specification for testing and performance.

3. OPTIONS FOR GOVERNMENT ACTION

Commonwealth Government agencies prior to developing or revising regulations need to identify the need for the regulation in the first place, and then consider the full range of legislative and non-legislative options available which might achieve the required outcomes.

It is necessary for the purposes of this review to note that the role of the Commonwealth only extends to mandating compliance with a safety standard. It is the role of the States and Territories to regulate for the usage of helmets. It is also outside the powers of the Commonwealth to oblige suppliers of helmets to have the helmets certified as complying with the Australian Standard or marked with the "StandardsMark".

The effectiveness of bicycle helmets has been the subject of some debate over recent years. This is in large part due to the mandating of helmet wearing by States and Territories. Questions have been raised by certain parties concerning the effectiveness of 'helmet laws' in reducing injury, referring to the possibility that a reduction in injury following the introduction of State and Territory laws was due to an inadvertent reduction in cyclist numbers.

However, it is clear from recent analyses that bicycle helmets have played a significant part in minimizing the severity of injury sustained in bicycle accidents. Vulcan and Lane in *Injury Prevention 2 (4) 1996* discussed the reduction in risk of head and brain injuries as compared with unhelmeted heads. The figures summarized by Vulcan and Lane for effectiveness of helmets in reduction of head injury range from 39% (in a study based in Melbourne) to 67% in a study done in Cambridge, England, while a study in the US posed a possible 88% reduction.

While statistical and analytical methods have a significant impact on the calculations for percentage reduction of risk of head injury, Vulcan and Lane also noted that there are several other studies which show reductions in the range of the Melbourne and Cambridge studies.

Given the significance of this level of reduction and its potential for impact on the overall level of consumer safety, combined with the fact that it is now mandatory in all states and territories for bicyclists to wear protective helmets, there is a clear need to ensure that the helmets available for sale are capable of providing the appropriate levels of head protection.

An additional point for consideration is that the directions taken must conform with the trade harmonization obligations on the Commonwealth under the Trans Tasman Mutual Recognition Arrangement, and the World Trade Organization.

The Commonwealth has to be satisfied that the overall benefits of the final preferred option outweigh its costs. The options for

consideration range from no direct Commonwealth intervention through to the development of a new mandatory standard which will update the existing mandatory requirements.

Outlined below are a number of options, and a discussion of the issues that are involved in each option. Comment is being sought in relation to these issues.

3.1 No Commonwealth Regulation

The option of not applying mandatory requirements for bicycle helmets would allow the supply of any type of helmet in the Australian market, and helmets would not be required to meet any standard.

The removal of mandatory requirements would probably have a range of impacts on the market. Industry may substantially be self regulating, and this would continue the supply of helmets which comply with the Australian Standard. Australian manufacturers might continue their compliance with the Australian Standard voluntarily as a means of promoting the safety of the product. The major retail chains and other suppliers might also continue their requirement for helmets supplied through them to be certified as meeting the Australian Standard as a means of ensuring quality control. While the decisions to continue to comply with the Standard would be voluntary by industry, government might encourage compliance through such activities as promotion of industry codes of practice.

It is considered unlikely that there would be universal adherence to the Australian Standard on a voluntary basis. Suppliers of some imported helmets have questioned the need for compliance with both an overseas standard and the Australian Standard. Also, helmets that do not comply with any safety standards can be expected to enter the market, selling on the basis of lower prices

achieved through avoidance of compliance costs.

For self regulation to work it is generally thought that there needs to be an industry organization to play the critical role of formulation and administration of the voluntary code or guideline which takes the place of the mandated regulation. However, not all suppliers of helmets will be members.

Most initial respondents to this review were of the opinion that a mandatory standard is necessary to maintain minimum standards for helmet safety, and no alternatives to a mandatory standard had been proposed. Some respondents were also of the opinion that market forces alone are unlikely to provide the necessary safety assurances.

Comment is sought on the following issues:

- Whether the industry could be effectively self-regulating.
- The likelihood of total industry commitment to voluntary compliance.
- The likely costs of industry self regulation.
- Whether there would be any benefits to the consumer or relevant industry associations of not having a mandatory standard.

3.2 Status Quo

Another option is to continue with the existing mandatory regulation. This would continue to require that industry complies with the earlier version of the Australian Standard (AS 2063.1, 2063.2 of 1990).

However, the earlier version of the Australian Standard is now out of date. Furthermore, as noted in Section 2.1 the existing standard draws from a range of voluntary standards that have subsequently been updated and that suffer from being a potential source of confusion for the various users. Part of this confusion relates to the fact that the voluntary standard deals with other types of personal safety helmets for

hazardous activities, in addition to bicycle helmets. The voluntary standards called up in the mandatory standard are sub-divided into parts and this has the effect of impeding access to concise information for the users of the standard, both industry and consumers.

Comment is sought on the following:

- whether the current mandated standard is sufficient to meet the ongoing needs of Australian consumers and industry alike.

3.3 Education/Provision of Information

Improved consumer awareness of issues affecting the safety of bicycle helmets might be considered as an alternative to regulation. Such a proposal, however, would hinge on the feasibility of educating consumers to a level which would enable them to recognise the essential safety features of the helmet on the market, and to understand compliance with the relevant standard.

Information and education campaigns play an important part in enhancing the safety and quality of life of consumers in need of adequate and effective personal protective equipment. Over recent years there has been a considerable increase in consumer awareness of the importance of adequate protection against the potential hazards associated with cycling.

A range of stakeholders including both manufacturers and consumer groups have expressed the opinion that it is not reasonable to expect consumers to have the expertise to judge the safety of a product where such a judgment requires specialised knowledge.

Consumer education about the need for helmets to meet voluntary standards would be expected to reach many consumers, but not necessarily all. There is a range of target audiences which would need to be approached in a tailored way. There is no guarantee that all such target groups would

be influenced more by safety concerns than style and fashion.

However, whether or not education alone could fulfil the role played by regulation, an education campaign could be used for a positive effect in addressing the fashion versus safety concerns, as well as other issues.

Comment is sought on:

- the role of information and education in the overall helmet safety regime.

3.4 New Mandatory Standard

Consideration of the option to implement a revised mandatory standard needs to include the justification of applying mandatory requirements and the form of the standard that should apply.

In the consideration of new regulation the Commonwealth government identifies the preferred form that a mandatory regulation ought to take, taking into account the fact that in this case the regulation needs to:

- resolve any coherency and clarity problems in the existing standard to assist in its enforcement,
- consider harmonization with the standards used in New Zealand, in keeping with the Trans Tasman Mutual Recognition Arrangement, and with other countries,
- have widespread industry and consumer acceptance and support, and
- fulfil consumer safety objectives.

3.4.1 SAFETY/PERFORMANCE ISSUES

A revised mandatory standard might take a number of forms. The minimal change to the revised standard would see the latest version of the Australian Standard AS/NZS 2063:1996 *Pedal cycle helmets* being

mandated as the new consumer product safety standard under the *Trade Practices Act 1974*.

This standard includes testing the ability of the helmet to reduce the rate of head deceleration and to absorb impact in the event of an accident. The helmet is tested for both flat and small surface impacts, imitating different types of collision, and the helmet is tested for performance at different temperatures and when wet. Additional tests include stability of the helmet on the head, and the effectiveness of the 'retention system' - the system of straps and clips by which the helmet is fixed to the head.

Mandating a standard requires careful consideration of the specifications that are necessary to ensure safety and performance.

Most contributors to the first round of consultation supported the Australian Standard because it provides for the most stringent safety performance tests of all standards worldwide, particularly in the area of localised loading and small area impacts. There were a number of submissions which suggested further development of helmet standards were necessary to address certain crash situations that are not necessarily dealt with satisfactorily under the current standard, such as increasing facial, forehead and temporal protection. Consideration is being given to lowering the test line - the specified line above which the various impacts are applied in testing the helmet - (currently described in AS/NZS 2512.1:1996) in the next edition of the Standard, which may be some years off.

In addition, the Bicycle Federation of Australia suggested further development along the lines of more stringent linear acceleration tests, adequacy of sizing and fit of helmets in test, and the role of rotational forces in real life head injuries.

In December 1996 Professor Peter Vulcan and John Lane from Monash University Accident Research Centre (MUARC) wrote in *Injury Prevention* that a number of technical matters need to be addressed in optimizing the performance of the helmet,

and these include the choice of liner material in mitigating the effects of low severity impacts, and the need for a standard to recognise helmet use by young children.

However, Vulcan and Lane also suggest that while it is important to continue to improve the protective performance of helmets, this quest for improved performance cannot be allowed to impede the overall priority of getting helmets on heads. Benefits of increased head protection must be balanced with popular resistance to wearing helmets.

It has also been noted that should the updated Australian Standard 2063:1996 be adopted as the new mandatory standard, a transitional period will need to be specified so as not to disadvantage manufacturers and retailers who still hold stock compliant with the previous mandatory standard.

Comment is being sought on the following safety/performance issues

- The balance between technical performance specifications and the overall acceptability of helmets to users.
- What are the key safety and performance specifications in the Australian Standard that are necessary for meeting the safety needs of helmet users?

3.4.2 COMPLIANCE ISSUES

There are no mandatory requirements that complying helmets be certified with the StandardsMark. The Commonwealth Government does not have the power to mandate the certification process, only to require compliance with the Standard.

However, a number of respondents reported that certification is necessary in the Australian market because many major retail chains require certification as proof of compliance (as does at least one State Police Department in its enforcement of that State's helmet wearing laws).

Certification issues fall outside the scope of this review, and are discussed in Appendix 2.

One manufacturer was also concerned that there is no explicit control of resale of helmets that may no longer afford the protection that was once available when the helmet was new, and they were also concerned that the useful lifetime of a helmet may be exceeded by certain outdoor activity organisations. Likewise, the NSW DFT Consumer Protection Agency was concerned that the second hand helmet market was expanding, with no necessary certainty for the consumer regarding compliance with the standard.

Comment is being sought on the following:

- Whether a mandatory standard ought to include second hand helmets.
- Are there any key issues concerning second hand helmets that a mandatory standard might need to address?

3.4.3 RECOGNISING OVERSEAS STANDARDS

The mandatory standard could recognise other standards from overseas that are considered to provide appropriate levels of protection and meet both the needs of the Australian consumer and the needs of the Australian helmet industry.

A table of the comparative features of a range of relevant overseas standards is attached at Appendix 4 below.

The Australian Consumers Association, along with many others, were of the opinion that if an overseas standard offered equal or better levels of protection then there was no in principle objection to it being recognised as appropriate. However, there was also a preference for both independent expert verification of the technical aspects of the overseas standard, and it would be necessary to undertake a wide public consultation on the proposal. There was also a common fear expressed, due to the perception that the Australian Standard is at least as good as, if not better than all overseas standards, that admitting other standards could result in a decline in levels of safety.

The localised load tests of the Australian Standards were seen by a number of respondents as being a high point that distinguishes the Australian from overseas standards. The small anvil impact was recognised as imitating a number of real life obstacles that may be involved in bicycle crashes, such as kerbs, signage, and protrusions and pillars on motor vehicles. This requirement is included in the Swedish standard, but does not appear in any other overseas standards.

A supplier of US-manufactured helmets, however, objected to this particular test because 'high performance' helmets that are approved elsewhere in the world have failed this requirement in the Australian Standard. The company suggests that the importation of these helmets would be likely to increase the overall number of cyclists wearing helmets, presumably appealing to non-wearers on the grounds of aesthetics.

Quality Assurance Services Pty Ltd (QAS), also noted that a high profile US manufacturer has had helmets bearing the American Society for Testing of Materials (ASTM) approval failed on impact attenuation results when tested to the Australian Standard. There is a current trend in helmets for an increase in the amount of ventilation, and this trend has also been criticised by the Bicycle Helmet Safety Institute in the United States. The trend for an increase in number of ventilation slots has been directly related to the failure of helmets on the localised loading and impact attenuation tests in the Australian Standard.

Critical safety features, both in terms of construction and testing for pedal cycle helmets vary across the range of overseas safety standards. A comparison of overseas standards provides some indication of the range and type of protection available according to the differing specifications. The issue of partial or complete recognition of overseas safety standards also needs to be addressed in the development of an updated mandatory safety standard.

It was also suggested that it may be appropriate for helmets that are certified to overseas standards which do not provide the full suite of tests demanded in the Australian Standard to undergo the necessary testing for those specifications that are peculiar to the Australian Standard.

One manufacturer was concerned that of all overseas standards the US Snell Memorial Foundation Standards are the only ones which have follow-up testing, and none but the Australian Standard has pre-distribution batch testing. Another manufacturer, however, proposed that a product that meets a "recognizable world standard" such as the Consumer Product Safety Commission (CPSC) standard should be acceptable for Australian needs.

QAS was of the opinion that without third party compliance testing, an overseas standard would not be sufficiently secure in providing the levels of safety that the Australian consumer has come to expect. Another issue is the market from which samples for testing are taken, should one or more of the overseas standards be acceptable. Concern was expressed that should overseas standards be appropriate for Australian needs the samples tested will need to come from the Australian marketplace.

It has also been noted in correspondence that the New Zealand Land Transport Safety Authority is in the process of examining whether the joint Australian and New Zealand Standard AS/NZS 2603:1996 should have exclusive coverage for bicycle helmets in New Zealand. Over recent years New Zealand has accepted a range of overseas standards, including Snell and the ASTM standards. The reasons for New Zealand reviewing the appropriateness these other standards is that there may be practical problems with checking compliance and certification, and trade harmonization issues.

There was also concern from the Australian Retailers Association that changes to standards should not result in unreasonable changes to the current compliance processes.

The Motor Accidents Authority of NSW report prepared by Dr Michael Henderson *The effectiveness of bicycle helmets - a review* in December 1995 concluded that helmets that comply with Australian and Snell standards provide a margin of protection greater than the respective standards require, and that the vast majority of head impacts in real world traffic situations are easily survivable if a helmet that complies with these standards is worn.

There is a wide divergence in the safety specifications of overseas standards, and we are seeking comments in relation to how these divergences might be dealt with in the context of the mandating of a consumer safety standard in Australia.

Comment is being sought on the following issues:

- appropriate ways for verifying the comparative performance requirements of different standards,
- potential impact on the domestic market of recognition of overseas standards,
- acceptability or otherwise of overseas certification of helmets.

In reference to the divergences noted in Appendix 4, comment is being sought on:

- Point/localised Load Distribution - only Australia and Sweden have this test specified - is this a critical test?
- Is it feasible for an overseas standard to be acceptable following subsequent 'part-testing' to bring it up to compliance with the Australian standard?
- Sequence of testing (impact followed by retention system) - the Australian Standard is very specific (and is the only one). Are we losing real-world safety if we allow for tests that don't maintain the sequence?
- Are there any critical differences that preclude any other bicycle helmet standard from being accepted as is?
- Slide Resistance - Only AS and Snell B90 and B95 specify smoothness, but

- there is no test specified. Is this requirement considered necessary?
- Are there any divergences (such as labelling) that the importer may be able to provide to ensure compliance?

4. CONCLUDING REMARKS

As has already been discussed above, this Preliminary Impact Analysis forms the basis of the Commonwealth's consultation and review process. This consultation is to ensure Government decision making balances effectively the safety needs of the Australian consumer and the business needs of the bicycle helmet industry.

The Consumer Affairs Division of DIST is seeking comment from any interested party on the options discussed above. Such comment should be submitted by close of business 4 September 1998. Following this a final proposal will be prepared, for which all comments received in this process will be taken into account.

Comment should be directed to:

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Appendix 1

Authorising Law

Division 1A of Part V of the *Trade Practices Act 1974* provides the Minister for Customs and Consumer Affairs the power to make interventions into the market to protect consumers against the risk of physical injury posed by unsafe consumer goods, and against possible economic loss resulting from poorly described or labelled goods. These powers include, *inter alia*, the power to

... prescribe a consumer product safety standard consisting of such requirements as to-
performance, composition, contents, methods of manufacture or processing, design, construction, finish or packaging of the goods;

the testing of the goods during or after the completion of manufacture or processing; and

the form and content of markings, warnings or instructions to accompany the goods,

as are reasonably necessary to prevent or reduce risk of injury to any person.

(section 65C(2), *Trade Practices Act 1974*)

Section 65E(1) of the *Trade Practices Act* provides the Minister with the power

... to declare that ... a particular standard, or a particular part of a standard, prepared or approved by the Standards Association of Australia ... or such a standard or part of a standard with additions or variations specified in the notice, is ... a consumer product information standard for the purposes of section 65C.

Requirements for Making Legislation

In line with the *Principles and Guidelines for National Standard Setting and Regulatory Action by Ministerial Councils and Standards Setting Bodies*, issued by the Council of Australian Governments in September 1995, new and amended regulations are subject to a regulatory impact statement (RIS).

A regulation impact statement is to:

contain a statement of the objectives sought to be achieved, and the reason for the objectives;

identify alternative options by which the objectives may be achieved either wholly or in part;

assess the costs and benefits of the proposed regulation and alternative options, including the costs and benefits relating to resource allocation, administration and compliance;

asses which of the alternative options involves the greatest net benefit or the least net cost to the community.

The impacts of the proposed regulation and the alternative options may be expressed in quantitative or qualitative terms. It is preferable to express costs and benefits quantitatively, and ideally in monetary terms to provide a common basis for comparison, but it should be recognised that this is not always possible in practice. Impacts that do not lend themselves to monetary valuation are no less important than those where a measure in dollar terms is available. It is essential that these impacts be given full weight in assessing the regulation.

Appendix 2

Issues Beyond the Scope of the Review

Submissions were received that reported on the impact of human behaviour on the efficacy of helmet safety standards, such as incorrectly fitted helmets. Submissions were also received in respect of the mandated wearing of bicycle helmets under State and Territory legislation. While both of these issues are beyond the scope of this review, the former, which includes comments concerning the inadequate ways in which people are reported to be using the helmet, can be partially addressed through ensuring that adequate information is provided to consumers. As with all mandated safety requirements, educative processes form a part of the suite of measures available to governments and industry.

One manufacturer was also concerned that legislation does not preclude the purchase (via the internet for example) of non-compliant helmets for use in Australia. However, it is noted that such usage is a matter for State and Territory legislation.

It has also been noted above that many major retail chains require certification as proof of compliance. The South Australian Police, likewise, are reported as requiring the StandardsMark on the helmet or the helmet in question is deemed as non-compliant and in breach of that State's *Road Traffic Act 1961*. These specific issues are also outside the scope of this review, as neither the mandatory or voluntary standards specify certification and compliance marking as necessary for compliance with the performance basis of the standard.

Quality Assurance Services (QAS) is licensed by Standards Australia to certify Standards compliance. They are of the opinion that standards require independent third party certification so as to verify the level of product safety. They have had experience of product failure in critical safety performance attributes which has been picked up before the product was in the marketplace. However, one manufacturer was concerned with the length of time taken for certification tests and the impact that this has on returns on investment. One way of overcoming this would be to allow marketplace sampling with the product on the shelf, instead of pre-market batch sampling.

Kidsafe noted that bicycle helmets are the type of product where without certification it is impossible for the consumer to judge the level of safety provided until the helmet has actually been subject to an incident where its performance is required. There is a not unreasonable consumer expectation that personal protective equipment is actually going to perform according to its purpose. It was also noted that such a post hoc approach is very inefficient - relying on marketplace and possibly legal remedies to repair damages resulting from death or serious injury.

QAS submitted tables of compliance costs for both locally produced and imported helmets. As would be expected, the costs per helmet for certification diminish as the number of helmets increase over a longer period of time. There is only minimal difference between imported and local products in larger volumes over longer periods. Summary tables drawn from the tables submitted by QAS are reproduced in Appendix 3.

Appendix 3

Certification Costs

Table 1 QAS certification costs for Aust & NZ StandardsMark licensees

Production Quantity (helmets/year)	5 000		20 000		100 000	
	Year 1	Year 2 Plus	Year 1	Year 2 Plus	Year 1	Year 2 Plus
Cost per helmet	\$1.34	\$0.62	\$0.62	\$0.39	\$0.41	\$0.37

Table 2 QAS certification costs for overseas StandardsMark licensees

Production Quantity (helmets/year)	5 000		20 000		100 000	
	Year 1	Year 2 Plus	Year 1	Year 2 Plus	Year 1	Year 2 Plus
Cost per helmet	\$2.50	\$1.28	\$0.91	\$0.56	\$0.47	\$0.40

Appendix 4

A comparison of overseas standards

An analysis of the range of standards in use overseas reveals that no other standards meet all of the specifications of the voluntary Australian bicycle helmet standard. However, some of these differences may prove to be comparatively minor. It is possible that although these specifications might diverge from Australian requirements, some standards are of sufficiently similar effect that they may nevertheless be acceptable. It should also be noted that most standards have at least some specifications that are either equal to or better than the Australian equivalent.

A comparison of the latest Australian and New Zealand voluntary standard (AS/NZS 2063:1996) with leading overseas standards reveals that the overseas standards that diverge least from the Australian are the three Snell standards Snell B90, Snell B95 and Snell N94, of which Snell B95 is the least divergent, the US Consumer Product Safety Commission (CPSC) standard and the European standards for adult and child bicycle helmets. The Swedish standard is also worthy of consideration in a functional comparison of overseas standards, given that it is the only standard that shares the Australian Standard's specification for localised load distribution, even though certain aspects of the standard are comparatively less well-defined or absent.

The key divergences from the Australian standard are shown in tabular form below. This table divides the divergences into the broad headings of "construction", "testing", "performance", and "other".

The table below does not, however, attempt to make any judgements as to which specifications are critical, and which ones are peripheral or 'tradeable'. This paper is seeking comment on the desirability or otherwise of Australia recognising any other overseas standards. To this end we are seeking comment as to which divergences between standards might be acceptable for the Australian market, recognising both industry and consumer concerns, and which divergences might significantly compromise the standard of safety and protection conferred through the existing standard.

The table and the appendices below were developed out of a comparative analysis prepared by the Bicycle Helmet Safety Institute. The BHSI paper compares overseas standards with the earlier Australian standard which was current at the time. Where the Australian standard is discussed the information has been updated so as to compare the overseas standards with the latest Australian voluntary standard. The main changes have been an alteration to the way the point loading test has been specified, replacing it with load distribution specifications, and the revision of certain requirements from mandatory to advisory. The full BHSI paper is available on their website at <http://www.bhsi.org/webdocs/stdcomp.htm>.

The Department of Industry Science and Tourism does not necessarily warrant the accuracy of this comparison but accepts that as an indicative comparison it is useful for the purposes of this paper. If any corrections to the table below are necessary DIST would welcome comment.

Divergence of overseas standard from the Australian standard							
Specification	CPSC (US)	CEN (EU)	CEN child (EU)	Snell B90 (US)	Snell B95 (US)	Snell N94 (US)	KONVFS (Sweden)
Construction							
Mass of helmet	All unspecified, except European and Swedish standards recommend low weight. AS specifies weight range for size.						
Materials (see also light aging below)	similar to AS	skin contact only, no durability specs (except under UV light aging specs)		similar to AS	similar to AS	similar to AS	same as for CEN
Construction	All with similar specifications, perhaps Swedish standard less specific. Is there any reason for excluding any?						
Coverage	All similar to AS, though defined differently - are there any that are not acceptable?						less well defined
Ventilation	AS, CEN and KONVFS require ventilation, Snell B90 mentions it, all others - no mention						
Visors and Accessories	AS specifies some visor performance, CPSC requires tests both with and without, CEN requires safe design, Snell requires must not lessen effectiveness of protection, KONVFS provides for performance.						
Testing							
Drop Apparatus	Standards vary according to specifications - are there any which are preferable or any which are not acceptable?						
Impact Energy Management	Standards vary according to specifications - are there any which are preferable or any which are not acceptable?						
Testing Instrumentation	Standards vary according to specifications - are there any which are preferable or any which are not acceptable?						
Positioning on the Headforms	Standards vary according to specifications - are there any which are preferable or any which are not acceptable?						
Record of tests	Similar to AS	Similar to AS	Similar to AS	Not specified	Not specified	Not specified	Similar to AS
Impact Sites	Specifications are similar- are there any which are preferable or any which are not acceptable?						
Certification Process	All standards except Sweden specify a certification process - are the specified certification processes sufficient for Australian purposes.						not specified
Lab Environment	similar to AS	not specified	not specified	not specified	not specified	not specified	similar to AS
Sequence of Testing	AS is the only standard that specifies impact tests before retention system tests. Arguments pro: approximates real life crash situation, con: too many impacts in test to approximate real life crash situation.						
Test Laboratories (AS specifies)	not specified	not known	unknown	specified	specified	specified	not known

Divergence of overseas standard from the Australian standard (continued)							
Specification	CPSC (US)	CEN (EU)	CEN child (EU)	Snell B90 (US)	Snell B95 (US)	Snell N94 (US)	KONVFS (Sweden)
Performance							
Light aging	not specified	similar to AS	similar to AS	similar to AS	similar to AS	similar to AS	similar to AS
Load distribution	Not tested	Not tested	Not tested	Not tested	Not tested	Not tested	similar to AS
Positional Stability	AS specifies limit of helmet shifting - all others specify the helmet must not come off, except Sweden, which does not specify. How critical is the positional stability test?						
Sliding Resistance of shell	No standards require a test, but AS and Snell require smooth fairing of projections.						
Other							
Labels on helmet	similar to AS	less info than AS	less info than AS	less info than AS	similar to AS	similar to AS	less than AS (in Swedish)
Labels on packaging	similar to AS	similar to AS	similar to AS	not specified	not specified	not specified	not specified
Conspicuity	No mandated specifications in any standards - some recommendatory standards. (In effect all similar)						
Instructions for use and care	similar to AS	less info than AS	less info than AS	similar to AS	similar to AS	similar to AS	less info & in Swedish
Replacement Interval	AS specifies replacement after a severe blow and that helmet has a limited life. Snell advises replacement after severe blow and 5 years. All others advise after severe blow only.						
Vision Impairment	All with similar specifications except for KONVFS which only specifies use with spectacles						