



Noise Injury Prevention Strategy for the Australian Farming Community



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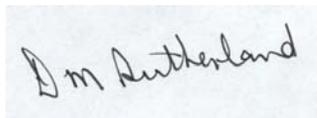
Foreword

The *Noise Injury Prevention Strategy for the Australian Farming Community*, is the result of extensive consultation between key individuals and organizations, concerned with the hearing health of Australian farmers, farm families and farm workers. The Strategy outlines the latest evidence to describe the nature and extent of the problem of noise injury and its associated hearing loss. It defines ten key elements in a strategic approach to addressing the problem. These key elements encompass noise injury prevention / promotion; service delivery; and quality of life issues, for all members of the farming community who may be already affected by noise injury or are at risk of hearing loss from noise.

Farmsafe Australia is a partnership of industry and government agencies with a mission to lead and co-ordinate national efforts to enhance the well-being and productivity of Australian Agriculture, through improved health & safety awareness and practices. Whilst primary responsibility for farm safety rests with individual farmers, farm families and farm-workers, Farmsafe Australia plays a key role in drawing together the experience and multi-disciplinary expertise necessary to form partnerships for a unified and co-ordinated approach to address farm safety issues.

As part of this mission, Farmsafe Australia is committed to enacting processes and programs which aim to reduce the incidence and impact of noise injury amongst families involved in agricultural production. The *Noise Injury Prevention Strategy for the Australian Farming Community*, has been developed by a reference group of farmer representatives and hearing / OHS professionals, assembled by the Australian Centre for Agricultural Health and Safety (ACAHS) on behalf of *Farmsafe Australia*. The Strategy aims to provide a structure whereby efforts can be focused to reduce the incidence, severity and impact of noise injury across all members of the farming community.

Farmsafe Australia will communicate the Strategy to its members; and endeavour to facilitate its implementation, by providing direction, support and advocacy in obtaining the resources necessary to enact individual program elements. The *Noise Injury Prevention Strategy for the Australian Farming Community*, will provide a basis from which activity to address noise injury will occur over the next five years and beyond.

A handwritten signature in black ink on a light blue background, reading "Don Sutherland".

Don Sutherland
Chairman, Farmsafe Australia

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Abbreviations

ATV	All Terrain Vehicle
ACAHS	Australian Centre for Agricultural Health and Safety
FSA	Farmsafe Australia
NSW	New South Wales
RIRDC	Rural Industries Research and Development Corporation
SA	South Australia

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Introduction

Nature and size of the problem

Noise injury is a significant problem in the Australian farming community. The two main sources of information about noise injury in the Australian farming community have been from databases of hearing screening programs conducted at agricultural field days in New South Wales (NSW) and South Australia (SA). Information from hearing screening in NSW indicates that two-thirds of participating farmers have a measurable hearing loss¹, compared to an estimated 22-27% for the general Australian community (Wilson *et al.*, in Williams, Forby-Atkinson, Purdy and Gartshore, 2002)². In a South Australian farm noise exposure study hearing loss in participating farmers was on average 10 to 15 years worse than that of the rest of the population (Williams *et al.*, 2002)². All those who are exposed to noisy farm activities are at risk of sustaining a noise injury. This includes farmers, farm-workers, bystanders and farm families - including children, who may be assisting with farm tasks (Australian Agricultural Health Unit, 1997)³.

Damage to hearing can be caused by prolonged and cumulative effects of noise over 85 dB over many years; or by instant trauma associated with peak noise levels over 140 dB (Clark and Bohne, 1999)⁴. The national standards for occupational noise exposure are an average noise level of ($L_{Aeq,8h}$) of 85dB(A) over an 8 hour working day, and peak noise (L_{Cpeak}) of 140dB(C) (NOHSC, 1007 (2000))⁵. However, risk of hearing damage is a product of both the loudness of the noise and the time exposed to it. Each 3dB increase in noise level doubles the energy and potential for harm over the same period of time. Therefore, to remain within recommended limits, exposure time to noise at 88dB(A) needs to be halved to 4 hours; at 91dB(A) it needs to be reduced to 2 hrs and so forth. This is why consideration of exposure time is important when assessing the risk of noise injury. Exposure to noise levels beyond these limits without protection, represent an unacceptable risk to the hearing health of the person exposed to the noise.

Noise injury in the farming community is due to the prolonged exposure to on-farm noise hazards such as tractors, chainsaws, firearms (Challinor, Franklin & Fragar, 1999)⁶. A recent survey⁷ of 298 items of machinery/activities from 48 NSW and QLD farms supports this view. Noise injury may result from exposure to hazardous noise from one source or a combination of one or more forms of hazardous noise in any one day. Typical on-farm noise levels from this study are presented

¹ Franklin RC personal communication, January 2002

² Williams, W., Forby-Atkinson, L., Purdy, S. and Gartshore, G. (2002) Hearing loss and the farming community *Journal of Occupational Health and Safety – Australia and New Zealand* 18(2),181-186.

³ Australian Agricultural Health Unit (1997). *Guidance Note 4*.AAHU. Moree

⁴ Clark, W and Bohne B (1999) Effects of noise on hearing. *JAMA*.281(17).1658-1659.

⁵ NOHSC (2000). *Occupational Noise: National Standard [NOHSC:1007(2000)]*

National Occupational Health and Safety Commission. Canberra

⁶ Challinor K, Franklin RC, Fragar LJ (1999).Noise injured farmers – the forgotten population. Unpublished report. Australian Centre for Agricultural Health & Safety. Moree

⁷ Depczynski J, Franklin RC, Challinor K, Williams W, Fragar LJ (2002). Farm noise hazards: noise emissions during common agricultural activities. RIRDC In press

along with the recommended exposure limits for individual activities in Table 1. Long hours of exposure to less obviously loud items (eg. tractors) are as hazardous as very loud/short exposure activities (eg. chainsaws). Unprotected use of firearms is never safe and is a noise hazard to others accompanying the shooter as well.

Table 1. Average noise levels and recommended exposure limits for common farm machinery / activity types

Machinery / Worker Position during normal operating conditions	Noise level at operator's ear Average & Range (95% CI) L_{Aeq} dB(A)	Recommended exposure limits without hearing protection. NB: Noise exposure risk for each activity in the day is cumulative toward the overall noise exposure risk.**.
Air compressors	86 (77- 95)	7 hrs (15 mins - 8 hrs+)
All terrain vehicles	86 (84 - 87)	7 hrs (4 - 8 hrs)
Angle grinders	98 (96 - 100)	20 mins (15 - 30 mins)
Others in workshop	90 (87 - 93)	2 hrs (1 - 5 hrs)
Augers	93 (89-96)	1 hr (30 mins – 3 hrs)
Bench grinders	99 (94 - 104)	18 mins (5 mins - 1 hr)
Others in workshop	89 (82 -96)	3 hrs (40 mins - 8 hrs)
Bulldozers	99 (97 - 100)	18 mins (15 - 30 mins)
Chainsaws	106 (104 - 107)	3 mins (2 - 5 mins)
Others stacking wood	96 (93 - 99)	40 mins (15 - 50 mins)
Circular saws	99 (98 - 101)	18 mins (10 - 20 mins)
Others in workshop	89 (84 - 94)	3 hrs (1- 8 hrs)
Cotton module presses	86 (85 - 88)	6 hrs (4 - 8 hrs)
Others in field (rakers)	84 (82 - 86)	8 hrs (6 - 8 hrs)
Cotton pickers	81 (78 - 85)	8 hrs (8 - 8 hrs+)
Av. <u>increase</u> with radio on*	1 - 3 dB	4 hrs - 8 hrs+
Others in field (machines idle)*	83 (77 - 89)	8 hrs (4 - 8 hrs+)
Others in field (picker turning) *	94	1hr
Dairies herringbone (24 bay) pit	73 (71 - 75)	no limit
Farm trucks	85 (83 - 88)	8 hrs (4 - 8 hrs)
Firearms	Lpk 140+ dB	no exposure
Forklifts *	84 (81-88)	8 hrs (4 - 8 hrs)
Harvesters	83 (75 - 91)	8 hrs (2 - 8 hrs +)
Av. <u>increase</u> with radio on *	2 - 5 dB	40mins - 8 hrs+
Others in field *	90	2 hrs
Irrigation pumps	100 (96 - 104)	15 mins (5 -30 mins)
Motorbikes - 2 wheel *	81 (70 - 92)	8 hrs (1.5 - 8 hrs+)
Packing shed workers	80 (78 - 82)	8 hrs+ (8 - 8 hrs+)
Pig handling - suckers *	109	1 - 2 mins
Pig sheds - manual feeding *	87 (74 - 99)	5 hrs (15 mins - 8 hrs+)
Shearers	86 (84 - 87)	7 hrs (4 - 8 hrs)
Others in shed	80 (77 - 83)	8 hrs+ (8 - 8 hrs+)
Sugarcane harvester *	86	7 hrs
<u>Increase</u> with radio on*	2	4 hrs
Tractors with cabins	76 (75 - 78)	no limit
Av. <u>increase</u> with radio on	3 - 5 dB	8 hrs - 8 hrs+
Others in field	85 (80 - 90)	8 hrs (2 - 8 hrs+)
Tractors without cabins	92 (90 - 93)	1.5 (1 - 2) hrs
Others in field	82 (78 - 86)	8 hrs (6 - 8 hrs+)

* Sample sizes less than 5

** For example: If exposed to a noisy activity for half the recommended daily limit {eg. Angle grinder for 10 min of a 20 min daily limit}, the remaining noise exposure in the day should not exceed half the recommended daily limit for another activity {eg. A limit of 4 hrs instead of 8hr on a tractor with a radio}.

a) Information from NSW Field Days

Between 1 January 1994 and 31 December 2001, 6,373 farmers participated in the NSW Rural Hearing Conservation Program. This program has been conducted at field days throughout NSW and provided farmers, farm workers and farm families an opportunity to have their hearing screened.

The farmers would present to the site where the hearing screening was being conducted, they are asked some general questions about themselves, their noise exposure and any noise reduction strategies, including how frequently they used hearing protection. After the questionnaire, their hearing is screened, followed by a session where their results were interpreted and explained. Noise injury prevention education and management strategies are provided to farmers, as well as recommendations for hearing protection. Participants were able to take home a copy of their hearing results, which is detached from the bottom of the questionnaire.

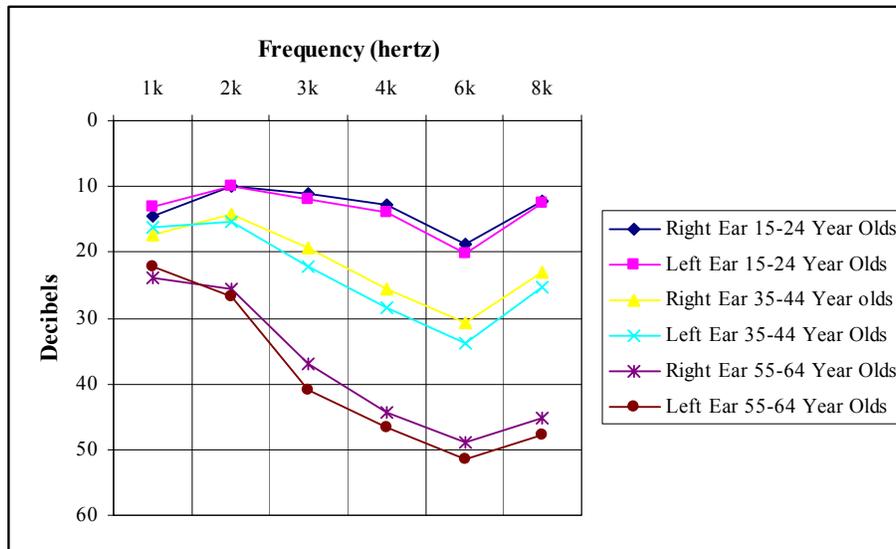
Of the farmers who had their hearing screened at NSW agricultural field days 82.6% were males and 17.4% females. The farmers' ages ranged from 7 years to 97 years, with the majority between 15 and 64 years. A range of farmers from different agricultural enterprises have participated in the program (Table 2).

Table 2. Farming enterprise type of people screened at field days in NSW, 1994-2001

Farming Enterprise by ANZIC Classification	Frequency	Percent
Poultry Meat	48	0.8
Poultry Eggs	22	0.3
Grapes	51	0.8
Plantation Fruit	96	1.5
Orchard Other Fruit	176	2.8
Potatoes	23	0.4
Other Cereal Grains	62	1.0
Cereal Grains	467	7.3
Sheep/Cereal Grains	879	13.8
Meat Cattle/Cereal Grains	984	15.4
Sheep/Meat Cattle	788	12.4
Sheep	308	4.8
Meat Cattle	1045	16.4
Milk Cattle	331	5.2
Pigs	60	0.9
Sugar Cane	49	0.8
Peanuts	3	0.0
Tobacco	5	0.1
Cotton	216	3.4
Nurseries	72	1.1
Agriculture NEC	685	10.8
Unknown	3	0.0
Total	6372	100.0

The following figure shows the average hearing thresholds for farmers in the 15-24 years, 35-44 years and 55-64 years age group. A distinct pattern can be seen where the hearing ability in the higher frequencies (4K to 8K) decline significantly as the person ages (Figure 1). This pattern is consistent with progressive exposure to excessive noise. One concern of note is the early indication of hearing loss in the 15-24 year old age group - in particular, the characteristic ‘noise notch’ at the 6K point.

Figure 1. Mean values for hearing thresholds for people age 15-24 years, 35-44 years, 55-64 years - people screened at field days in NSW, 1994-2001



Information about noise exposure was collected as part of the pre-screening session, including the person’s current ability to hear. Of those screened over half (53%) had difficulties hearing in meeting and conversation, 41% had problems hearing the television and one quarter had problems hearing the telephone and in the working environment (26% and 27% respectively). However, the most common situation where farmers had difficulty hearing was when there was background noise present (Table 3).

Table 3. Problems hearing in specific situations of people screened at field days in NSW, 1994-2001

	Yes	%	No	%	Total
Television	2597	40.8	3776	59.2	6373
Telephone	1651	25.9	4722	74.1	6373
Meeting / conversation	3384	53.1	2989	46.9	6373
Working Environment	1724	27.1	4649	72.9	6373
Classroom*	152	5.5	2608	94.5	2760
Background Noise	4293	67.4	2080	32.6	6373

* This item was only included for later years.

Tinnitus, which is noises/ ringing in the ears or head⁸, is a common symptom of excessive noise exposure. Half (48%) of all farmers screened at field days experienced tinnitus intermittently (36%) or on a continuous basis (12%). The effects of tinnitus on the person ranged from nil (25%); to annoyance (20%); to life patterns disturbance (2%).

Typical noise situations that farmers had been exposed are presented in Table 4. The most common situations were workshop tools, chainsaws and tractors without cabins.

Table 4. Typical situation in which farmers are exposed to noise, people screened at field days in NSW, 1994-2001

	Yes	%	No	%	Total
Tractor (No cabin) (Noise exposure)	4616	72.4	1757	27.6	6373
Firearms (Noise exposure)	3992	62.6	2381	37.4	6373
Chainsaw (Noise exposure)	5316	83.4	1057	16.6	6373
Workshop tools (Noise exposure)	5355	84.0	1018	16.0	6373
Heavy machinery (Noise exposure)	3469	54.4	2904	45.6	6373
Tractor (cabin) (Noise exposure)	3084	48.4	3289	51.6	6373

The type of hearing protection most commonly used by people at field days are ear muff (45%); followed by earplugs (10%). Twenty eight percent of farmers did not wear any hearing protection at all.

In 1997, a question was added to the hearing questionnaire about how often hearing protection was worn in common noisy situations on the farm. This showed some disappointing results with very few people wearing hearing protection all the time when exposed to a particular piece of machinery or activity. However, there were a lot of people who had hearing protection available and did wear it sometimes, at least. Further work needs to be undertaken in understanding why some people only wear hearing protection sometimes and for some activities more than others (Table 5).

Table 5. Frequency with which people wear hearing protection in selected situations, people screened at field days in NSW, 1997-2001

	Always	%	Sometimes	%	Never	Total
Driving a tractor without a cabin	612	27.6	643	29.0	961	43.4 2216
Operating a chainsaw	851	35.5	554	23.1	992	41.4 2397
Using firearms	275	14.5	360	19.0	1264	66.6 1899
Using workshop tools	436	18.1	643	26.8	1324	55.1 2403
Other situations	234	11.3	237	11.4	1602	77.3 2073

Williams et al.² suggest that frequency of use for different activities may partly be due to how loud the noise is perceived. Chainsaws, whilst a serious noise hazard, were

⁸ Australian Tinnitus Association (NSW) Ltd (undated pamphlet) *Brief Information about tinnitus – we hope it helps*. Darlinghurst.

more likely to be recognised as noisy, so that farmers are more likely to use hearing protection when using them. This is supported by the evidence from NSW (Table 5) and SA (see below). The need for hearing protection may not be as obvious for tractors without cabins than it is for chainsaws, but exposure time is longer (Table 1), so the risk of hearing damage is just as real.

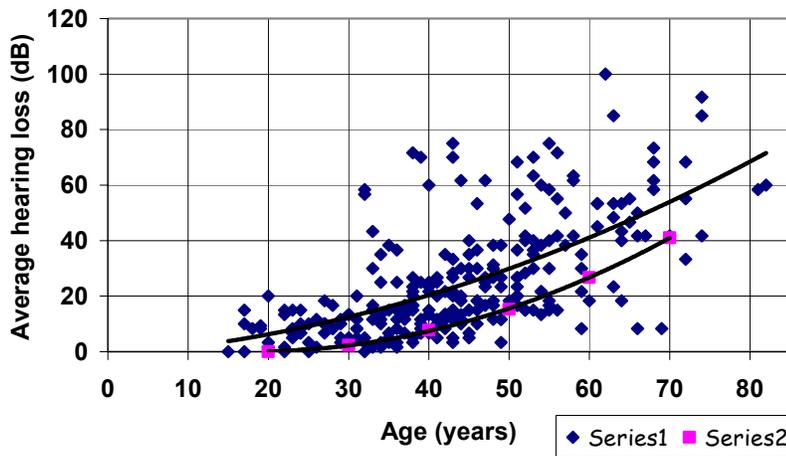
b) Information from SA Field Days

A similar rural hearing conservation approach which included a pre-test questionnaire hearing screening and post-test interpretation of results was conducted at Field Days on the Northern Yorke Peninsula, by members of the South Australian Farm Noise and Hearing Network. A range of options to reduce damage to hearing from excessive noise was discussed and information leaflets provided. Figure 2 shows the average hearing loss in this sample of 260 farmers over the 3K, 4K and 6KHz frequency range (higher frequencies where noise injury is most apparent), compared to standardized hearing thresholds. These were published by the International Organization for Standardization (ISO),⁹ and represent the hearing levels expected at a given age providing that there has been no decrease in the ability to hear except that caused by ageing itself.

The upper curve in Figure 2 represents the trend line of the South Australian farmers' hearing, while the lower curve represents the expected levels as given by ISO..⁹ The average hearing loss is stated in decibels. It can be seen that hearing loss in the South Australian farmers commenced much earlier than would be expected and remained much greater for all ages². This has been expressed as farmers hearing at these frequencies being equivalent to someone in the general population 10-15 years older. This greater loss has significant social consequences for the farmers concerned their families and the wider farming community.²

⁹ International Organization for Standardization (ISO) 2000 *ISO 7029 Acoustics – Statistical distribution of hearing thresholds as a function of age*

Figure 2: Average hearing loss (3k, 4k, 6k Hz) in better ear for 260 randomly selected male farmers/farm workers



When analysing screening data from younger farmers, Franklin et al¹⁰ found that farmers self-reporting of difficulties hearing was a good indicator of measurable hearing loss. Two thirds (70%) of the South Australian farmers self-reported having mild to profound hearing loss². This may be an accurate indication of the prevalence of hearing loss in the farmers who presented to the field days, as it compares closely to findings in NSW where two thirds of NSW farmers¹ had a measurable hearing loss, contrasting with the estimated one-third (27%) of general Australians with a hearing loss. Whilst field day participants may be more likely to present for screening if they have a hearing problem (self-selection bias), it nevertheless indicates that hearing loss is a real problem for many in the farming community. This is supported by the self-reported incidence of tinnitus. Fifty-nine percent of SA farmers reported some form of tinnitus, compared to 48% of the NSW farmers.

Results from South Australia regarding the inconsistent use of hearing protectors with different farming activities is also comparable to the NSW data. Pattern of use for SA farmers was slightly better than the NSW program participants, but only marginally so. Sixty three percent of SA participants *never* wore hearing protectors whilst using firearms². This compares with 66% of the NSW program participants (Table 5). Of the SA farmers, 41% *always* wore hearing protectors whilst using chainsaws compared to 36% of NSW farmers. For tractors without cabins, 38% of SA farmers *always* wore and 27% *never* wore hearing protectors². This compares with the NSW program where 28% *always* wore and 43% *never* wore hearing protectors using uncabined tractors (Table 5). Similar to NSW, earmuffs were the most popular choice of hearing protection for farmers in SA (50%).

¹⁰ Franklin RC, Depczynski J, Challinor K, Fragar LJ (2002). Noise exposure, hearing protection and noise injury in young adult farmers. RIRDC In press

These studies provide the most recent and comprehensive description of noise injury in the Australian farming community. Two thirds of the farmers screened reported or displayed evidence of a hearing loss compared to an expected one third of the general Australian population. About half reported some form of tinnitus, a common symptom of exposure to excessive noise⁸. Many reported difficulties with hearing conversation, TV and telephone and in social / work situations with background noise. The secondary effects of hearing loss on the person and their immediate family include communication difficulties—stress, social isolation, fatigue and low self-esteem². Noise injury through exposure to noise from firearms, chainsaws, uncabined tractors and most other common farm machinery, presents as an occupational health and safety and public health issue, requiring immediate and comprehensive attention at all stages to reduce the incidence, impact and severity of this debilitating condition.

Framework

Farmsafe Australia and its member agencies are committed to the development and implementation of a national strategy. Farmsafe Australia also acknowledges existing strategies, Child Safety on Farms: A framework for a national strategy in Australia, National Farm Machinery Safety Strategy, the National Strategic Plan for Injury Prevention and Control, and the Managing Farm Safety Program. Where appropriate commonalities between these strategic approaches will be utilised to ensure that the issue of noise injury is addressed efficiently.

It is noted that there is a very large gap between developing a strategy at national and state level and the practicalities of implementing it at a local level. Resources at the ground level are minimal and local groups often demand that their issues be addressed without any long term commitment to resource development – both financial and human. If prevention is to be achieved, long term commitment from government agencies and other sectors to shift resources into areas of prevention is required. It is planned that this strategy will provide the platform from which a range of action programs will be launched to ensure this long term vision.

Policy Statement

Farmsafe Australia, has established the *Noise Injury Prevention Strategy for the Australian Farming Community*, through the formation of a reference group (NIPSAFC Reference Group) with representation from across rural industry, OHS professionals and hearing specialists. The Strategy was developed by the reference group for the Australian farming community. Farmsafe Australia, through the NIPSAFC Reference Group, accepts the challenge of developing and implementing strategies which will reduce the incidence, severity and implications of farm noise injury, amongst families involved in agricultural production.

Commitment to Action

Farmsafe Australia is committed to enacting processes and programs which aim to reduce the incidence and impact of farm noise injury, amongst families involved in agricultural production. Member organisations of Farmsafe Australia will communicate the Strategy to their members and will advocate for resources for / provide direction to those responsible for its implementation.

Aim and Scope of the Strategy

The *Noise Injury Prevention Strategy for the Australian Farming Community*, aims to provide a structure whereby efforts can be focused to reduce the incidence, severity and impact of noise injury across all members of the farming community.

- Incidence - To prevent noise injury occurring
- Severity - Intervention at an early stage to reduce the degree of hearing loss
- Impact - Management, rehabilitation, appropriate education and funding to lessen the impact of existing hearing loss through noise injury, upon the quality of life of the person and their family.

The Strategy encompasses noise injury prevention / promotion; service delivery; and quality of life issues, for all members of the farming community who may be already affected by noise injury or are at risk of hearing loss from noise.

There are other sources of noise injury amongst those in rural areas apart from that received on-farm (eg. off-farm recreational use). Whilst these may not be under the direct control of farmers, they do lie within their sphere of influence. That is, the farming community may advocate for 'safer' forms of participation in noisy off-farm activities (eg. motor-cross, rock concerts, shooting), such as the provision of hearing protection. The principles of noise injury prevention discussed may be carried forward into different aspects of people's lives. However, the Strategy, whilst recognising these and other rural noise hazards, will focus more specifically upon noise injury sustained through exposure to excessive noise during activities normally associated with living and working on Australian farms. This focus reflects the more direct responsibility of the farming community and Farmsafe Australia organisations, for reducing the incidence and impact of noise injury and hearing loss from an occupational health and safety standpoint.

Structure of the strategy

The remainder of the strategy is divided into ten components. These components are:

1. Establish a national framework for action
2. Identification of key noise exposure risks and other factors
3. Identification of effective controls for selected problems
4. Education and training
5. Legislation / regulations / standards
6. Monitoring of people's hearing
7. Awareness and promotion of strategies
8. Access to services and devices for people with hearing impairment
9. Identification of further research needs
10. Evaluation of the implementation of strategy

Each of these components will be addressed separately in this document. However, it is acknowledged that there will be considerable overlap between them, and that action in all components will be necessary if there is to be a significant reduction in noise injury in agriculture. It is envisaged that the following plan would be based on a timeframe of five years.

Element 1 Establish a national framework for action

Aim:

To develop a nationally coordinated framework of key stakeholders to reduce the incidence, severity and impact of noise injury across all members of the farming community.

Rationale:

Noise injury with its accompanying hearing impairment and tinnitus are rarely acknowledged injuries in the farming workforce, although work undertaken by the Australian Centre for Agricultural Health and Safety and the Farm Noise and Hearing Network (SA) has shown that farmers suffer significant loss of hearing. The development of a national strategy should use a multi-layered approach, based on consultation with farmers, peak organisations, government, and professionals. There needs to be a long-term commitment to the development and resourcing of a strategy for noise injury prevention for the farming community, which can be effectively initiated or incorporated into existing/ongoing programs.

A communications system needs to be established that allows information to flow between all stakeholders and establishment of relevant partnerships for action.

Objectives:

1. Establishment of a National Reference Group under the auspices of Farmsafe Australia with state representation to:
 - Determine the goals and objectives for the strategic plan
 - Develop strategies to achieve the goals and objectives
 - Prepare or review resource materials as required
 - Distribute draft material to the wider reference group
 - Pilot and evaluate proposed programs
 - Monitor the implementation and evaluation of the strategy
2. Establishment of a wider Advisory Group representing the key stakeholders. The role of the Advisory Group will be to:
 - Assist the Reference Group by defining problems and proposing solutions
 - Review resources developed by the Reference Group
 - Receive information from the Reference Group and feed back relevant information
 - Act as advocates for the programs, projects and resource materials included in the strategy
3. Commitment of key agencies to work within the National Noise Injury Prevention Strategy for the Australian Farming Community framework.
4. Development of functional communication mechanisms to ensure the free flow of information and input into the strategy from all key stakeholders.

Potential Partners:

- Member organizations of Farmsafe Australia
- Member organizations of the National Farmers Federation
- Member organisations of the National Rural Health Alliance
- Rural Health Education Foundation
- Rural Health Branch of the Commonwealth Department of Health and Ageing
- National Indigenous Disability Network
- Federal & State government departments for health & human services
- Community Nurse Audiometrists Association Inc. (CNAA Inc.)
- Australian Acoustical Society
- Association for Australian Acoustical Consultants
- Australian College of Audiology
- Audiological Society of Australia
- Federation of Ethnic Communities Councils of Australia
- National Ethnic Disability Alliance
- Rural Area Health Services
- Australian Medical Association
- Royal Australian College of General Practitioners
- Teachers Federation
- Departments of school education
- Universities, Agricultural Colleges and TAFEs
- Employment agencies in rural areas
- Local Government Areas in rural localities
- Relevant unions
- Deafness Forum of Australia
- Existing rural-located organisations in the hearing impairment sector
- Service clubs located in rural areas
- State based workers' compensation organisations
- Agricultural machinery and rural traders organisations
- Hearing Aid Manufacturers and Distributors Association of Australia
- Industry association for Private companies dealing in personal hearing protection

Program indicators:

- Establishment of reference group to develop the strategy
- Formation of a wider advisory group of key partners committed to implementing particular elements of the Strategy
- Annual reviews by the reference group to monitor and evaluate the progress of the Strategy in meeting component element objectives

Element 2 Identification of key noise exposure risks and other factors

Aim:

To gather all relevant data to examine the nature, scope and cost of noise related injury (defining key agents) and to recommend priorities for action based on this data.

Rationale:

Currently available data does not define or describe the extent of noise related injury amongst the farming community. However, work undertaken in NSW and SA indicates that different noise exposure exists between different producer groups. This is related to the duration of use and types of equipment utilised on the farm. Work is required to further define the key agents of injury; influencing factors; points of intervention; and to standardise the collection and collation of relevant injury data.

Objectives:

1. A formal review of data, published reports, articles and web based information on hazardous noise sources and noise injury in the farming community.
2. Development of a standardised system of data collection which includes, consistent data formats, guidance on the collection of data and ways of disseminating data on noise injury and hazardous noise sources amongst farmers and others.
3. Publication of regular reports which highlight the scope, size and cost of noise injury and distribution of these to key networks.
4. Define within such reports, all agents of injury within their environmental context; the associated human risk factors which interact to cause noise injury; and identify those risk groups to be prioritised for immediate action.

Potential Partners:

- National Farm Injury Data Centre
- National Acoustic Laboratories
- Farmer peak bodies
- Rural based General Practitioners
- South Australian Farm Noise and Hearing Network
- State Work Health Authorities
- National Occupational Health and Safety Commission
- Rural Area Health Services
- Audiology/audiometric services in rural localities
- Australian College of Audiology
- Audiological Society of Australia
- Australian Acoustical Society
- Association for Australian Acoustical Consultants
- Community Nurse Audiometrists Association Inc.

- Hearing Aid Audiometrists Society of Australia
- Hearing Aid Audiologists in Private Practice
- Speech Pathology Australia
- Otolaryngological Society of Australia
- Environmental Protection Authorities

Program indicators:

- Development of a standardised tool for data collection, recording and dissemination of information on the incidence and prevalence of noise injury in the farming community.
- Publication and distribution of annual reports to all stakeholders (Element 1) by working group of key partners (Element 2).
- Reports to describe the incidence and nature of noise injury and set priorities for action to address noise injury within those risk groups identified.

Element 3 Identification of effective controls / solutions for selected problems

Aim:

To identify effective solutions in addressing key noise hazards and contributing factors which place the farmer, farm worker or bystanders at risk of noise injury.

Rationale:

Injury prevention models in occupational health, road safety and other arenas use strategies that include a mix of environmental, engineering, regulation or enforcement, management systems, and education and training. These use the principle of a hierarchy of control for injury prevention.

The effectiveness of solutions to reduce noise are readily measurable but are often not easily achieved. Often personal hearing protection is considered to be the only solution, however other strategies such as maintenance of equipment, rearrangement of workshop, and purchasing of quieter equipment, can effectively reduce the amount of noise produced or reduce the exposure to workers.

The role of key partners in implementing effective strategies is of vital importance. This can occur at various points in the progression from design and manufacturing of equipment; to servicing and distribution points; to strategies involving the use of equipment on the farm. Possibilities may include, for example, incentive schemes for purchase of quieter equipment.

Objectives:

1. Catalogue currently available, evidence based solutions of the common causes of noise injury.
2. Dissemination of information on evidence based solutions to key partners at all stages of the production chain.

Potential Partners:

- National Occupational Health and Safety Commission
- National Acoustic Laboratories
- Commercial noise and acoustics consultants
- State workers compensation authorities
- Tractor and Machinery Association
- Industry association for Commercial providers of personal hearing protection devices
- Machinery and Rural Traders Associations
- Farmer peak bodies
- Australian Centre for Agricultural Health & Safety

Program indicators

- A ‘directory’ of evidence based solutions to noise injury which are:
 - noise injury specific, and
 - practical to implement on farm, or
 - feasible to implement during the production, distribution and servicing phases
- Establishment of a working group to meet annually to assess progress in the delivery of ‘directory’ recommendations to member organisations.

Element 4 Education and Training

Aim:

To identify and develop effective educational resources and programs on noise injury for use in a variety of informal and formal settings, including the curricula of rural training organisations and rural-based service providers.

Rationale:

The current lack of comprehensive education programs to address noise injury across the farming community and within professional courses, would indicate the need for greater coverage of such programs and resources. This applies not only to programs targeted at farmers per se, but to individuals and organisations which provide professional services within the health, education and agricultural sectors.

Greater awareness and understanding of the effects of noise injury needs to be incorporated into formal curricula of training courses involving the agriculture, audiological/audiometric, OHS, teaching and health professions. Ideally, education about noise injury in rural areas should also occur through all stages of formal schooling. These formal resources need to meet relevant competency standards and be in line with curricular objectives.

Informal resources/programs need to be tailored to particular circumstances, be of a standard quality, with programmers being mindful of simultaneous data collection opportunities from which to measure program gains.

Objectives:

1. Identify information gaps in education and training about noise injury in the farming community.
2. Identify existing resources and collate.
3. Develop an integrated package on noise injury prevention for farmers.
4. Develop a training package for program staff for use in various settings (eg. field days, farms, educational institutions, info hotline, media etc).
5. Develop farm noise injury prevention modules aimed toward specified target groups, in consultation with relevant agencies, for use within the curricula of educational/training institutions.

Potential Partners:

- Departments of Education
- National Council of Independent Schools of Australia
- National Catholic Education Commission
- Primary school teachers
- Secondary school teachers – agriculture
- Rural Training Council of Australia
- Universities, agricultural colleges and TAFEs

- Farmer peak bodies
- Farmsafe Australia
- Agricultural extension officers
- Australian Nurses Federation
- Australian Centre for Agricultural Health and Safety
- Health and community workers including Aboriginal community workers
- Rural based General Practitioners
- Employment agencies – itinerant workers
- Rural Health Education Foundation
- Farm tourism operators

Program indicators

- Generation of reports identifying information gaps in farming community and progress toward meeting program objectives.
- Establishment of a library of all existing and newly developed resources.
- Development of integrated packages for farmers and program staff for use in informal settings.
- Development and adoption of farm noise injury prevention modules for formal use within the curricula of educational/training institutions.

Element 5 Legislation, regulatory standards and codes of practice.

Aim:

To identify relevant legislation, regulations and codes of practice which are supportive of the reduction in impact of noise on farms; and aspects of these to which there are barriers at the implementation phase.

Rationale:

A hierarchy of legislation, regulations and codes of practice exist across all states encompassing the minimum requirements and best practice principles for the management of workplace noise. In general, minimum requirements are at the legislative top of this hierarchy, with increasing detail on how to meet these requirements presented by advisory codes of practice at the base.

This structure presents some difficulties for small businesses such as many Australian farms. Often farmers do not have the resources or knowledge to implement best practice standards, yet they are nonetheless required to meet the minimum standards for workplace noise. Some confusion also exists as to what is compulsory and what is advisory, as these vary between the regulations of different states. Difficulty in accessing certain services (eg. audiometric screening, noise consultancy) which are required in some states to either meet legislative requirements or measure performance against it is also a considerable problem for many farmers.

A full inventory of both minimum legislative requirements and best practice needs to be undertaken for each state, in order to highlight their strengths in supporting noise management on farm. Barriers to meeting regulatory requirements and recommendations (eg. lack of access to services, lack of information about machinery noise levels / exposure limits, infrastructure costs, confusion about requirements vs. recommendations, lack of national consistency) also need to be identified where they exist, so that ways of overcoming these may be addressed in both the government and private sectors.

Objectives:

1. A review of current legislation, regulatory standards and codes of practice as they relate to on farm occupational health & safety and management of on-farm noise.
2. To identify practical ways recommended within the regulations / codes of practice to meet these requirements, which can be applied on-farm by farmers.
3. To identify common barriers to meeting the regulatory requirements as a basis for recommendations to be made to government agencies and commercial interests.

Potential Partners:

- Australian Centre for Environmental Law (Australian National University)
- Farmer peak bodies

- Standards Australia/New Zealand
- State Work Health Authorities
- Agencies providing audiometric screening services
- Agencies providing OHS and noise consultancy
- Agricultural machinery and rural traders organisations
- Industry association for commercial providers of personal hearing protection devices

Program indicators

- A report on the current legislation, regulatory standards and codes of practice as they relate to on farm occupational health and safety and management of on-farm noise for each state.
- Distribution of this report to farmer peak bodies for dissemination of this information to their members to assist them to manage on farm noise.
- Formation of a working group to identify measures for overcoming the barriers to implementing regulatory requirements/recommendations on farm noise management.
- A report on these recommendations to be sent to relevant government and private agencies.

Element 6 Monitoring of people's hearing

Aim:

To ensure that all people have access to hearing screening/testing services and that people at high risk use such services across all areas and states of Australia.

Rationale:

The distribution and provision of hearing screening/testing services to farmers and farm families is at present patchy and haphazard. Confusion about whether audiometric testing is required or not (different requirements in different states), is confounded by the scarcity of available testing facilities. There is a need to better define the standards requirements for audiometric screening/testing services, and how to meet those requirements in order to make hearing screening/testing more widely available to the farming community. Provision and promotion of such services also needs to be facilitated by the relevant service providers, including state regulatory bodies who stipulate the use of hearing screening to fulfil statutory obligations (some states).

Objectives:

1. To define the services required to monitor farmers' hearing
2. To develop a hearing screening tool which includes questionnaire and participant details relevant to the agricultural sector.
3. Establish a Directory of hearing screening and assessment service providers.
4. Identify gaps in service provision, including the mapping of high risk locales, in order to prioritise and develop plans to make hearing screening/testing available to the greatest number of Australian farmers and farm families.

Potential Partners:

- National Occupational Health and Safety Commission
- National Acoustic Laboratories
- Australian Hearing
- Speech Pathology Australia
- Federal & State government departments for health & human services
- Farmer peak bodies
- Standards Australia/New Zealand
- State workers' compensation agencies
- Agencies providing audiometric screening services
- Agencies providing OHS and noise consultancy.
- Industry association for Companies dealing in personal hearing protection
- Rural based General Practitioners
- Community Nurse Audiometrists Association Inc.
- Rural Area Health Services
- Office of Hearing Services, Department of Health and Ageing
- Audiological Society of Australasia
- Australian College of Audiology

- Young Farmers / Rural Youth organisations
- Hearing Aid Audiometrists of Australia
- Australian association of Audiologists in Private Practice

Program indicators:

- A guideline outlining standard requirements of a good audiometric service to the farming community.
- A hearing screening tool relevant to agriculture.
- A directory of hearing screening and assessment service providers.
- Establishment of a working group to look at ways to improve availability of hearing screening services to farmers.
- Widespread establishment / expansion of innovative strategies of service delivery including field day programs, mobile services, social venues and remote videoconferencing.

Element 7 Promotion of strategies

Aim:

Promotion of effective strategies in the management of on-farm noise for specific target groups and amongst the entire farming community.

Rationale:

Promotion of farm noise management strategies may be optimised using a variety of means. Specific target groups such as young shooters and bike riders might be reached through school/tertiary institution programs. Older farmers might be reached through field day programs or through rural service/social clubs. The rural media/publications and the internet are other areas of possibility. Existing programs and community driven awareness campaigns may need to occur on a more regular and structured basis. These activities need to be promoted in positive and innovative ways, with the roles of particular organisations being established to ensure that promotional strategies are comprehensive.

Objectives:

1. Identify key promotional strategies.
2. Identify specific target groups within the farming community groups amenable to particular promotional strategies.
3. Develop a catalogue of promotional programs already in existence.
4. Identify roles of individual organisations in promotion.
5. To develop new opportunities to promote noise injury prevention strategies in an informative and positive manner.
6. To incorporate effective strategies to reduce machinery noise emissions, into the *Farmsafe Australia Machinery Safety Strategy*.

Potential Partners:

- Australian College of Audiology
- Audiological Society of Australia
- Community Nurse Audiometrists of Australia
- Office of Hearing Services, Department of Health and Ageing
- Farmer peak bodies
- Deafness Forum of Australia and its member organisations operating in rural areas
- Rural Training Council of Australia
- Speech Pathology Australia
- National Acoustic Laboratories
- Hearing Aid Audiometrists Society of Australia
- Hearing Aid Audiologists in Private Practice
- Otolaryngological Society of Australia
- Australian Acoustical Society
- Association for Australian Acoustical Consultants

- State Health Departments.
- State Education Departments.
- National Farmers Federation and state farmers associations
- National Occupational Health and Safety Commission
- State Work Health Authorities
- Tractor and Machinery Association
- Agricultural and rural traders organisations
- Relevant unions
- OHS sector organisations and injury prevention organisations
- Rural Health Education Foundation
- Rural Deaf Initiative for Hearing-Impaired People (Vic)

Program indicators

- A catalogue of promotional programs appropriate for different target groups.
- A catalogue of key agencies and contact persons involved in promotion of farm noise management strategies and the activities of these agencies.
- Feedback from farmer organisations as to the effectiveness of promotional activities from members.
- Incorporate of effective strategies to reduce machinery noise emissions, into the *Farmsafe Australia Machinery Safety Strategy*.

Element 8 Access to services and devices for people with hearing impairment

Aim:

To ensure all those who require hearing services and devices have access both physically and financially.

Rationale:

Noise injury is progressive and permanent. Many farmers exposed to years of excessive noise have already sustained a significant hearing loss requiring services and devices to improve hearing function. These include hearing aids, tinnitus treatments, TV captioning, rehabilitation programs and hearing augmentation systems such as volume controlled telephones.

Whilst TV captioning and volume controlled phones are available in rural areas, many other services which require personnel to provide the service (eg. rehabilitation programs) are not readily available away from metropolitan and major regional centres. Many farmers also miss out on financial assistance for these due to eligibility limitations that do not consider the “asset rich / cash poor” nature of many farming enterprises. Affordability and geographical access to hearing services needs to be improved in order to reduce the impact of noise injury upon farmers and their families.

Objectives:

1. To develop a catalogue of currently available evidence based management solutions for hearing impairment.
2. To develop a detailed catalogue of current items and services available to noise injured farmers, including availability and access to information relating to assistive devices, hearing loss management solutions, hearing/rehabilitation services.
3. Review and advocate for increased access to free / subsidised hearing services.
4. To ensure financial and geographical impediments are not restrictive in accessing hearing services.

Potential Partners:

- Office of Hearing Services, Department of Health and Ageing
- Deafness Forum of Australia
- Farmer peak bodies
- National Acoustic Laboratories
- Australian College of Audiology
- Audiological Society of Australasia
- Community Nurse Audiometrists of Australia
- Speech Pathology Australia

- Federal & State government departments for health & human services
- Hearing Aid Audiometrists Society of Australia
- Hearing Aid Audiologists in Private Practice
- Otolaryngological Society of Australia
- Area Health Services in rural localities
- Rural based General Practitioners
- Otolaryngological Society of Australia
- Hearing Aid Manufacturers and Distributors Association of Australia
- Health Insurance Commission
- Private Health Insurance Administration Council
- Isolated patients travel and accommodation assistance schemes (State Health Departments)
- Commonwealth Rehabilitation Service (CRS)
- Community based / not for profit organisations (eg. Hearing Solutions (SA), Self Help for Hard of Hearing SHHH groups, hearing aid banks)
- Rural Deaf Initiative for Deaf and Hearing Impaired People (Vic)

Program indicators

- A catalogue of currently available evidence based management solutions for use by noise injured farmers.
- A catalogue of current services available for noise injured farmers.
- Establishment of a working group to advocate for improved access to services.
- A report by the working group on current access to hearing services and devices to the Farmsafe Australia Reference group and key agencies responsible for their provision.

Element 9 Identification of further research needs

Aim:

To ensure that research needs identified through the course of the Strategy's implementation, are placed on the agenda for consideration by relevant research agencies.

Rationale:

The incidence and effects of hearing loss upon certain groups within the farming community are in need of further investigation. For example, noise injury in children and the effects of stress and farm chemicals on hearing are emerging OHS issues. Some information provided through general population surveys, could be further analysed to better describe the prevalence of noise injury and hearing impairment caused by other farm-related factors. Further research into noise management strategies; availability of services; education; and promotion needs outlined under each program, are integral to the progress and effectiveness of the strategy.

Objectives:

1. Define information gaps under each program in need of attention.
2. Identify further avenues of research into hearing loss within the farming community.
3. To facilitate research undertaken in these areas by appropriate institutions.

Potential Partners:

- Office of Hearing Services, Department of Health and Ageing
- Hearing Services Advisory Committee
- Deafness Forum of Australia
- Australian Centre for Agricultural Health and Safety
- Universities
- Rural Training Council of Australia
- National Acoustic Laboratories
- Speech Pathology Australia
- Federal & State government departments for health & human services
- Australian Bureau of Statistics
- Farmer peak bodies
- Australian College of Audiology
- Audiological Society of Australasia
- Hearing Aid Audiometrists Society of Australia
- Hearing Aid Audiologists in Private Practice
- Hearing Aid Manufacturers and Distributors Association of Australasia
- Macquarie University
- Otolaryngological Society of Australia
- Rural Industries Research and Development Corporation

Program indicators

- Formation of working group to report to the Farmsafe Australia reference group on research needs and advocacy.
- An inventory of research undertaken and that proposed into hearing loss in the farming community.

Element 10 Evaluation of the strategy

Aim:

To evaluate the effectiveness of the Strategy by measurement against outcome and process performance indicators over the next 5 years.

Rationale:

The purpose of this Strategy was to provide a framework for action toward the common goal of reducing the incidence, impact and severity of noise injury amongst Australian Farming Community. Progress toward this goal needs to be assessed against measurable outcomes. Channels of communication between those responsible for each program also need to be kept open, to maintain a co-ordinated and national approach to addressing the problem of noise injury amongst farmers.

Objectives:

1. Assess the progress of the overall Strategy toward reducing the incidence, impact and severity of noise injury in the Australian farming community.
2. To maintain a co-ordinated approach to addressing noise injury in farmers through annual meetings of the Farmsafe Australia reference group representing partners from the component elements.
3. To provide annual progress reports by the reference group to Farmsafe Australia and all stakeholders on efforts to meet component element objectives.

Potential Partners:

- All those represented within the working groups of each component program

Program indicators

- A Farmsafe Australia reference group to meet annually to assess performance against program indicators
- Production of an annual report to Farmsafe Australia in respect of such progress.