THE GOVERNMENT OF NEW SOUTH WALES

INQUIRY INTO BEEKEEPING IN URBAN AREAS

REPORT

AUGUST 2000

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EXECUTIVE SUMMARY

The Inquiry was prompted by the death in early March 2000 of a Stanmore resident as a result of multiple beestings by bees from managed hives. Concern arose about the appropriateness of beekeeping in densely populated areas and the attendant dangers that this may pose both to persons owning bees and to the broader community.

The Inquiry was asked to identify the extent to which bees are kept in urban areas in NSW and the risks posed to the human population, to evaluate the economic and other benefits arising from urban beekeeping, and to examine the adequacy of existing regulatory and non-regulatory measures. In addition the Inquiry was to make recommendations on any additional measures and to recommend an appropriate process for public consultation regarding such proposed regulatory changes.

The Inquiry was advertised in the press and all local government authorities were advised by email. A total of 167 submissions were received by email, facsimile and letter.

The NSW beekeeping register maintained under the *Apiaries Act 1985*, by NSW Agriculture records that at 13 April 2000 there were 3,821 beekeepers, with over 250,000 bee hives. The register records both hobby and commercial beekeepers. Beekeepers are located throughout NSW local government areas with significant numbers of beekeepers residing in the greater Sydney metropolitan area.

Human reactions to beestings range from very mild and transient to fatal. However, fatal reactions are rare. Including the recent tragedy, there have been only 2 recorded fatalities in NSW from beestings from bees in managed hives over the last 50 years.

The risk of death to individuals is statistically far greater in many workplaces or in the pursuit of many sporting, leisure or recreational activities.

Urban beekeeping is a hobby rather than a commercial pursuit. The social benefits include enjoyment of a hobby by individuals and/or families from all walks of life and all ages that is able to produce a healthy nutritious product for home consumption or sale.

The retail value of honey and beeswax produced by hobby beekeepers in NSW is over $5m annually. Support industries providing beekeeping equipment rely heavily on the business generated from hobby beekeepers.

Over 800 NSW beekeepers are members of beekeeping associations. These associations have a strong educational focus both through their members and the wider community.

There is a very low risk presented to the human population by managed bees in NSW.

Community concern over urban beekeeping is much broader than an analysis of risk to human life indicates.

Most nuisance from bee activity is caused by the propensity of bees to sting when they perceive a threat to their hive. However, bees away from the hive are also perceived by the public as a threat. Bees forage up to 4 km from the hive. They are attracted to flowering

plants as a source of pollen and nectar and collect water from pools or wet surfaces. Bee swarms, a form of hive reproduction, are often considered threatening. Both foraging and swarming bees are generally docile, and will not sting except under duress, however, swarming bees may settle in inappropriate sites, for example buildings and houses.

Complaints about nuisance bee activity are generally made to either NSW Agriculture or the local government authority for the area in which the problem arises. NSW Agriculture deals with nuisance from managed bees under the provisions of the *Apiaries Act 1985* whereas councils may make resort to their orders powers under the *Local Government Act 1993* in appropriate circumstances.

The Inquiry believes that managing the wider concerns of nuisance from managed bees may be assisted by some additional regulatory and non-regulatory measures.

Submissions from beekeepers suggest that the range of regulatory controls currently in place are poorly understood and may be causing unnecessary confusion. Some councils reported that the relationship of the Apiaries and Local Government legislation and their planning powers under the Environmental Planning and Assessment legislation were difficult to reconcile. Measures that will more clearly delineate areas of responsibility between NSW Agriculture and local government authorities will likely be welcomed by both councils and beekeepers.

RECOMMENDATIONS FOR THE IMPROVED MANAGEMENT OF BEES IN URBAN AREAS

1. **That NSW Agriculture continue to operate a register of beekeepers (but the register will be able to be accessed by local government staff).**

2. **That a condition of registration be compliance with a Code of Practice.**

3. **That a system for on-the-spot fines for non-compliance with registration and hive identification requirements be introduced, and that in conjunction with NSW Agriculture inspectors, local government rangers be empowered to issue infringement notices for these types of offences.**

4. **That NSW Agriculture supports councils in managing nuisance bee complaints by facilitating the training of council officers in bee management and nuisance bee control.**

5. **That a web site with information on procedures for nuisance bees and dealing with bees be developed by NSW Agriculture (with links to the DLG home page).**

6. **That a public education and awareness program be initiated wherein literature, including details of the Code shall be distributed to all bee keepers, bee keeping suppliers, and local government authorities.**

7. **That the Code and other literature relating to beekeeping is produced in a suitable range of community languages and made available through a range of outlets.**

1. ORIGIN OF THE INQUIRY

The Inquiry was prompted by a death in early March 2000 of a resident of Stanmore, Sydney who had suffered a fatal bee attack at her mother's home. The woman's 12 month old daughter also suffered serious injury from multiple beestings in the incident but was able to subsequently make a satisfactory recovery.

The woman and her daughter were stung by bees from managed hives located on the premises. These hives were owned by the child's grandmother.

The incident attracted considerable media attention. Significant concerns arose within the community about the appropriateness of beekeeping in densely populated areas and the attendant dangers that this may pose both to persons owning bees and to the broader community. In response, the Premier, the Hon Bob Carr MP, announced on Friday 3 March 2000, that an inquiry would be conducted into the practice of beekeeping in densely populated areas, and that this would be carried out by the Ministers for Agriculture and Local Government.

The Inquiry, including its terms of reference, was subsequently given extensive publicity primarily via advertisements that appeared in *The Sydney Morning Herald* and *The Daily Telegraph* on 25 March 2000.

2. TERMS OF REFERENCE OF THE INQUIRY

The terms of reference for the Inquiry were as follows:

1. *Identify the extent to which bees are kept in urban areas of New South Wales.*

2. *Assess the level of risk to humans posed by keeping of bees in these areas.*

3. *Identify the benefits of the current level of apiary activity in this area.*

4. *Identify and assess the adequacy of existing regulatory and non-regulatory measures.*

5. *Make recommendations on any additional measures which should be taken by State Government, local Government and/or industry and, if regulatory measures are recommended, an appropriate process for public consultation and development of the regulatory scheme.*

3. CORONIAL FINDING

The death in March became the subject of a coronial review. This review ran in parallel with, but entirely separate from, the Inquiry.

The Coroner noted that 8 hives had been located at the Stanmore premises at the time of the incident. Further, a report submitted to the Coroner by Mr Rob Bowman, a Regulatory Inspector with NSW Agriculture, had concluded that the number of hives were excessive and

would not meet the conditions of the current Code of Practice for Suburban Beekeeping. The Coroner noted that the Code was a voluntary code of practice.

On 16 May 2000, the Coroner dispensed with the inquest. In doing so, he furnished a recommendation to the Minister for Local Government that there be a regulation limiting the number of bees which can be kept or housed in suburban or residential areas.

4. CONDUCT OF THE JOINT MINISTERIAL INQUIRY

The Inquiry was conducted by officers of the Department of Agriculture (Dr Regina Fogarty, Executive Assistant to the Deputy Director-General, Mr Doug Somerville, Livestock Officer Apiculture) and Department of Local Government (Mr Anthony R P Garbin, Principal Policy Officer, Policy and Research Branch).

The following chapters of this report address the terms of reference approved by the Premier of NSW.

4.1 Consultation on the Inquiry

Advertisements were placed in the *Sydney Morning Herald* and *The Daily Telegraph* on 25 March 2000 outlining the Inquiry's terms of reference and inviting submissions from interested persons or organisations.

In addition, members of the Bee Industry Consultative Committee (BICC) which has representation from relevant government agencies and branches of professional and amateur beekeeper associations were informed of the Inquiry and invited to make submissions.

Furthermore, on 27 March 2000, an e-mail advice was sent to the General Managers of all 175 local government authorities throughout the State by the Department of Local Government inviting submissions to the Inquiry from the local government sector. The advice also sought the cooperation of councils in bringing attention to the Inquiry within their local communities so as to create greater awareness of the opportunity for individuals to make a submission to the Inquiry. Simultaneously, advice was sent to all Regional Organisations of Councils throughout the State.

4.2 Submissions to the Inquiry

A total of 167 submissions were received by email, facsimile and letter. In summary, 87% of the submissions supported beekeeping in urban areas and 6% opposed beekeeping in urban areas. The submissions included:

- 136 from beekeepers or beekeeping associations (120 from amateur keepers, 7 amateur associations, 7 commercial beekeepers, 2 professional associations);
- 6 letters in support from people who were not beekeepers;
- 3 petitions in support of beekeeping - signed by 64 people;
- 10 letters of complaint regarding bees or the current regulatory systems;
- 1 letter from a registered pest controller; and
- 9 responses from local government authorities (Randwick City Council, Coffs Harbour City Council, Eurobodalla Shire Council, Penrith City Council, Fairfield City Council, Corowa Shire Council, Newcastle City Council, Wyong Shire Council, Narrandera Shire Council).

5. IDENTIFY THE EXTENT TO WHICH BEES ARE KEPT IN URBAN AREAS OF NEW SOUTH WALES (TOR 1).

5.1 Beekeeping in Australia

In order to have a clear appreciation of the extent of beekeeping in modern society, some understanding of the economic, social and other benefits of beekeeping is required together with an understanding of the physiology and habits of managed bees.

Honey bees (*Apis mellifera*) are housed in bee hives. Each hive may contain a colony of up to 30,000 bees that includes a queen bee, worker bees, and seasonally, drone bees. Field worker bees gather nectar and pollen from flowering plants and, in the process, act as pollination agents. The bees convert the nectar into honey which is the energy food source for the colony. Pollen is the protein component of a bee's diet. Field bees also collect water, principally for cooling the hive.

While Australia has a large number of native bee species, honey bees were introduced to Australia in 1810. Honey bees provided an important food sweetener and have played a critical role in the pollination of many economic species of horticultural and agronomic crops. Honey bees have also been able to take advantage of the quantities of nectar and pollen produced by many native plant species and, as such, were well established in the native forests of Australia by the mid-1800s.

Honey bees that colonise trees or other structures are referred to as feral bees.

The potential large colony size, propensity to produce large quantities of honey in well managed hives, ability to actively pollinate many economic crops and the general docility of honey bees have facilitated the development of bee keeping as both a commercial industry and a hobby in most countries of the world. The art of beekeeping has been practiced for many thousands of years.

Commercial bee keeping in Australia relies heavily on native (mainly eucalypt) species and the ability of beekeepers to strategically move bees to capitalise on suitable flowering species to maintain the strength of the bees and to harvest honey. Commercial beekeepers move beehives throughout NSW and across state borders pursuing nectar and/or pollen sources.

The commercial industry in NSW produces about 45% of the Australian honey crop. Australia produces approximately 30,000 tonnes of honey per year of which 9,000 to 12,000 tonnes is exported (Gibbs & Muirhead 1998) principally to markets in the United Kingdom, Germany and Singapore.

Commercial beekeeping operations manage between 350 to 700 hives at an average of 500 hives per person (Hornitzky, McDonald & Kleinschmidt 1993). Beekeepers with 40 to 200 hives are considered semi-commercial.

Gross value of the beekeeping industry nationally has been estimated at $60 to $65 million per annum, with $45 million from honey production (Gibbs & Muirhead 1998).

While the main direct product of beekeeping is honey, beekeepers may also profit from sale of queen bees and package bees or other hive products such as beeswax, comb honey, propolis, royal jelly and pollen. In NSW, bees are used commercially to pollinate apples, pears, cherries, plums, kiwifruit, strawberries, blueberries, rockmelons, almonds, lucerne,

faba beans, cotton, sunflower, white clover, canola, watermelons and pumpkins, with farmers paying beekeepers a fee to locate hives within the crop/orchard.

In reviewing the value of crop pollination by honey bees in Australia, Gibbs and Muirhead (1998) supported estimates of the total value of paid and unpaid pollination of around $1.2 billion annually.

A large number of individuals keep bees for recreation and enjoyment.

5.1.1 Swarms

While the Inquiry is directed at bees kept in a managed state, both managed and feral bee populations may have the propensity to swarm at certain times of the year. Often, it is bee swarm activity that results in public concern about the danger to personal safety and nuisance to property where a swarm has settled.

A bee swarm is a cluster of bees containing a queen that has split from an established colony to start a new colony. Swarming is a natural phenomenon that occurs each year in spring or early summer. The queen leaves the hive with a proportion of the adult worker bees. In the original hive new queen cells hatch, queens mate with drone bees and continue in the role of the previous queen. Swarms are usually the size of a football and contain half the original colony.

Swarms are not inherently dangerous to the public. The bees are in transit between “homes” and do not demonstrate a need to defend the colony. They are also gorged with nectar or honey which makes it physically very difficult for the bees to sting on purpose. Swarms are usually very easily handled, even by inexperienced beekeepers.

Swarming bees are readily collected by bee keepers and can be used to establish new hives. However, skilled bee keepers try to prevent hives from swarming as this severely reduces the numbers of worker bees and therefore potential honey production. Methods of controlling swarming may include regular replacement of old queens with young stock which exhibit a lower inclination to swarm, remove full combs of honey and brood from hives and remove nucleus colonies.

For further information on bee swarms and their control, refer to NSW Agriculture’s advisory Agnote: *Bee Swarms and their Control*, available on the Department’s website: www.agric.nsw.gov.au.

5.1.2 Swarm Control

Swarming bees frequently concern members of the public in spring and early summer. Unwelcome swarms must be either collected and removed or killed. Pest control agents provide professional services to kill or remove swarms. In a submission to the Inquiry, one licensed pest controller reported that from September to January he would average about 10 bee related calls a day. While this submission was the only information received from the pest control industry it is interesting to note that the writer considered that 95% of the calls received by his business related to controlling feral bees, and only 5% to backyard beekeepers.

Many pest control agents are reluctant to kill colonies of bees that are easily collected by beekeepers. Killing a swarm of bees may attract a service fee of $100 from a registered pest controller.

During the swarming season, the public often find it difficult to contact a suitable person to remove or collect swarms.

The Inqury is aware that a telephone hotline has been initiated and is run by the NSW Amateur Beekeepers Association (ABA) to put persons with problems with swarms in contact with beekeepers willing to collect and remove swarms. Beekeepers wishing to participate in this voluntary scheme are able to register their contact details with the ABA and stipulate the areas or geographic regions within which they are willing to collect swarms.

Callers to the bee swarm hotline (1900 925 222) are guided through steps to identify their area by postcode and the system replays recorded messages from collectors who are willing to collect in their area. Callers can then contact the beekeeper/collector by phone who best suits their needs. The cost of these calls is 95¢ per minute from standard phones, with some beekeepers charging a fee for swarm removal. It was reported that in the last 12 months, the bee swarm hotline received between 800–1000 enquiries. An analysis of this service has not been undertaken.

5.2 Numbers of Registered Beekeepers

All persons keeping one or more hives in NSW are required to be registered as beekeepers under the *Apiaries Act 1985*. This legislation is administered by NSW Agriculture. In April 2000, the NSW bee register recorded that over 265,000 hives were kept by 3,821 registered beekeepers.

The beekeeping register records residential addresses of beekeepers. In April 2000, beekeepers resided in 172 local government authority areas (as listed in the 1985 database of shires, councils and municipalities) in NSW. Beekeepers registered to have less than 40 hives resided in 167 of these local government areas. On average, each of these 172 local government areas would have 22 beekeepers managing a total of over 1500 hives, however the size and scale of beekeeping operations is significantly skewed (Table5.1)

Table 5.1 Local government authority areas in NSW with the highest number of registered beekeepers as at 13 April 2000.

Registered Beekeepers		**Registered Hives**	
Lake Macquarie	94	Inverell	14,009
Shoalhaven	88	Kempsey	9,544
Gosford	78	Yarrowlumla	7,335
Hornsby	70	Dubbo	7,054
Lismore	70	Gundagai	5,888

Commercial beekeepers can be defined as those managing 200 hives or more. They represent less than 9% of the registered beekeepers in NSW, however they account for over 70% of the registered hives (Table 5.2) Conversely registered beekeepers with 40 or fewer hives manage just under 10% of the registered bee hives in NSW.

Table 5.2 Registered Beekeepers in NSW at 13 April 2000.

Hives Registered	Beekeepers		Total Hives	
	No	%	No	%
less than 11	2,296	60.1	9,924	3.7
11-40	667	17.4	15,015	5.7
41-200	519	13.6	53,809	20.3
more than 200	339	8.9	186,607	70.3
Total	**3,821**		**265,355**	

The beekeeping register does not identify where the hives are located. Addresses in the register are residential addresses of beekeepers. The register does not attempt to record hive location. For many beekeepers management of their apiaries requires that hives be moved throughout the year to sources of nectar and/or pollen. Typically commercial beekeepers may move hives 4 to 6 times per year.

However, for non-commercial beekeepers, particularly those with less than 40 hives, there is a high probability that some of the hives will be located at their residential address.

Over 30 local government authorities in the greater Sydney area have registered beekeepers. They include the City of Sydney itself (with 8 registered beekeepers), Bankstown City Council, Drummonye Council, Lane Cove Council, Leichhardt Municipal Council, Mosman Municipal Council, North Sydney Council, Parramatta City Council, Randwick City Council, Ryde City Council, Warringah Council and Woollahra Municipal Council. The Shire of Hornsby with 70 registered beekeepers, Sutherland Shire with 64, Baulkham Hills Shire with 60, Penrith City Council and Blacktown City Council with 52 each had the highest number of registered beekeepers as at April 2000.

5.3 Unregistered Beekeepers

Even though there is a statutory requirement under Section 6 of the NSW *Apiaries Act 1985* for all beekeepers to be registered there are many unregistered persons keeping bees in the State. Keeping unregistered bees is an offence with the provision of financial penalties under the Act of up to $2,200. However, this penalty is only recoverable through court proceedings and has never been successfully pursued.

There is no way to reliably estimate the number of unregistered beekeepers. For this Inquiry an analysis of the registration status of beekeepers against whom a nuisance bee complaint was lodged with NSW Agriculture, has been used to provide some estimate of the total number of beekeepers.

Under the Apiaries legislation, complaints about nuisance from managed bees must be made in writing to the Director-General of NSW Agriculture. Following investigation by inspectors, a report is prepared which may recommend that the Director-General issue an order to prohibit or limit the number of beehives kept on particular premises. NSW Agriculture also receives telephone enquiries and complaints in relation to both managed and feral bees, that are not considered as nuisance bee complaints under the legislation.

From January 1996 to March 2000 a total of 134 complaints of nuisance bees were submitted in writing to NSW Agriculture. Of these complaints, 130 were made against a beekeeper or were complaints associated with a identifiable beekeeper. The remaining complaints included one swarm of feral bees, one against European Wasps and two cases where no hives could be associated with the complaint.

Of the 130 beekeepers against whom complaints were made, 60 were registered beekeepers at the time and 70 were unregistered at the time the complaint was laid.

If this analysis could be extrapolated as an indicator of the proportion of unregistered beekeepers then it would be reasonable to estimate the number of beekeepers in NSW to be just over twice the number recorded in the State beekeeping register. Such an extrapolation would require there to be no difference in the likelihood of registered and unregistered beekeepers to be associated with nuisance bee complaints.

5.4 Location of Bee hives

The conditions of registration have not required beekeepers to formally report the location of their hives, although they are required to maintain a record of hive movements. Therefore, the beekeeping register cannot be used to determine where managed bees are actually located.

However, in submissions to the Inquiry, commercial and amateur beekeeping associations emphasised that many beekeepers do not keep all or even some of their bees at their residential addresses. The NSW Apiarists' Association stated that the majority of members "keep only one or two hives at their residential address" with the rest of their hives being moved regularly following honey flows in rural NSW.

Verifying this information is difficult. However, in a number of the submissions received by the Inquiry, beekeepers stated how many hives they managed and how many of these they kept in urban areas. A review of 50 of these submissions supports the contention that many non-commercial beekeepers, locate a significant proportion of their hives away from urban environments.

The 50 beekeepers volunteered that they owned on average 14.2 hives, but kept on average only 4.6 hives of these hives in urban areas. Some of the hives were kept at the homes of friends or relatives of the beekeeper.

Just under half of the beekeepers kept at least some of their hives in non-urban areas with six beekeepers reporting that all of their hives were kept in non-urban areas. Approximately two thirds of the 711 hives kept by the 50 beekeepers were not located in urban areas.

5.5 Conclusions

The beekeeping register records there are 3,821 beekeepers in NSW with over 250,000 beehives. While an analysis of nuisance bee complaints suggests that there may be twice as many persons keeping honey bees in NSW, it is unlikely that there are twice as many semi-commercial and commercial beekeepers (those having over 40 hives) than that recorded in the register.

However, if the true number of hobby beekeepers and hives was double that currently registered then there would be an additional 2,963 beekeepers and 24,939 hives. **Based on this extrapolation, the total number of beekeepers in NSW could be over 6,700 and the number of hives could be over 290,000.**

Beekeepers live throughout the State, with a high proportion residing in urban and metropolitan areas. While most beekeepers are likely to maintain some hives at their residential address, there is evidence to suggest that both commercial and hobby beekeepers keep only a small number of hives at their residence, with the majority of hives being located in non-urban areas.

With the frequent movement of the hives a feature of productive hive management it is not practical to introduce a requirement on beekeepers to formally report the location of hives. Such a requirement would also create a major administrative burden.

6. ASSESS THE LEVEL OF RISK TO HUMANS POSED BY KEEPING OF BEES IN URBAN AREAS (TOR 2).

This chapter concentrates on assessing the level of risk posed to humans from bee stings associated with the keeping of managed bees in urban areas. It also raises issues relating to nuisance experienced by members of the community from managed bees.

6.1 Risk to humans posed by bee stings

Human reactions to beestings range from the very mild and transient to fatal. The vast majority of reactions reported are immunological in nature, and are commonly classed as allergic reactions. Severe toxic reactions to bee venom are reported but are rare in comparison to allergic responses. An overview of bee venom allergy has been provided in Appendix 1 by Dr Sheryl van Nunen, Head, Department of Allergy, Royal North Shore Hospital, St Leonards for this Inquiry.

The risk of a fatal allergic response to a bee sting is very, very low. Allergies to penicillin cause more deaths than bee venom and individuals in Australia have a greater likelihood of being killed by lightning than by bee venom.

Dr van Nunen considers that " there are only one or two people per annum who succumb to bee venom allergy in Australia."

Once a person has been identified as having a high risk to bee venom, a course of immunotherapy is available and very effective.

In a submission to the Inquiry, Mr Bruce White, Technical Specialist in Apiculture with NSW Agriculture reported that the recent death in Sydney due to bee stings was only the second known to have occurred in NSW over the last 50 years as a result of stings received from bees from managed beehives. It was also the first recorded fatality in a residential area as a result of stings from bees from managed hives. Most fatalities have occurred as a result of disturbing feral bee colonies.

6.1.1 Why and how bees sting

Bees will only sting as a result of a stimuli received indicating a perceived threat to the colony or accidentally as a result of physical contact, for example, a bee is trodden on by a bare foot.

Only the worker bee is able to sting to defend itself or the colony when confronted with human interference. When the worker bee inserts its sting into the victim it may be able to retract it if the target is another bee or an insect. In the case of soft-bodied animals (humans),

the sting remains in the victim due to the barbed shape of the stinging apparatus. The bee pulls away from its victim and leaves the barb with poison sac attached. The bee eventually dies as a result of the detachment of the stinger. The sting is driven into the victim via the action of involuntary muscles contained within the sting and the poison sac is drained into the victim. The level and potency of venom will usually increase with the age of the individual bee.

6.1.2 Avoiding bee stings

Much can be done by the beekeeper and general public to reduce or avoid being stung. Beekeepers could limit their work with hives during times of the day when there is little other human/neighbour outdoor activity, or work hives late in the afternoon during late spring and summer so the colonies are not excited the next morning. Beekeepers also use an apparatus called a smoker to subdue bees, significantly reducing the number of stings likely to be received. Stimuli likely to increase bee sting numbers include dark clothes, velvet or hair fabric, noise, vibration, erratic movement and some odours including petrol fumes.

Some colonies are more inclined to sting than others. Beekeepers can do a lot to minimise the potential of a colony to sting by selecting quieter stock, for example, replacing queens from colonies exhibiting an unacceptable level of aggression.

Bees tend also to be more aggressive when there is no nectar flow, at a night time and during windy days or periods of low temperatures.

6.1.3 First aid for bee stings

Treatment for a bee sting includes the fast removal of the sting apparatus and poison sac by scraping it out, usually with one's fingernail. This reduces the amount of venom injected into the victim. The area may then have a cold compress applied to it.

Localised pain usually results, followed by local swelling of the stung area. The pain usually subsides after a few minutes to an hour. The swelling may remain for a number of hours, gradually reducing. In some cases localised itchiness may be present for a day. This would be deemed a normal reaction to most bee sting events. This is not an allergic reaction, as sometimes described by the public.

6.2 Bee Activity that Causes A Nuisance

Many people in the community have an inbuilt fear of bees, similar to fears experienced with spiders and snakes. Even the sight of empty bee boxes can create concern in some people.

Bees are attracted to flowers to collect nectar and pollen being active in the warmer parts of the day. Neighbours working in gardens may complain of the presence of large numbers of bees. Flowering plants in lawns (eg clover) may also attract bees. Bees may forage many kilometres from their base, as such it is difficult to state categorically from which hive the bees originate. A colony will forage over a 4 km radius in spring, thus potentially covering an area of 50 square km.

In some cases, bees may be attracted to bright lights. They are also attracted to water, which they collect and transport to the hive to allow for evaporative cooling in hotter weather. Swimming pools, wet concrete, fish ponds, water troughs, watered lawns, gardens and pot plants and damp washing can attract bees. Complaints have been received about bees near swimming pools and bees being caught up in washing. Complaints have also been received about soiling of washing, in particular, by bee excreta.

Nuisance bee activity may involve either managed bees or feral bees. As the Inquiry's terms of reference are limited to an examination of beekeeping in urban areas, the Inquiry has primarily directed its focus towards issues associated with managed bees, not feral bees.

Management of hive location, placement, hive numbers, hive activity, docility of the bees and provision of suitable water can reduce the cause of complaint. Working at maintaining good relationships with neighbours can do much to ameliorate complaints of bee nuisance.

6.3 Conclusions

In Australia, deaths resulting from beestings, while always tragic, are very rare. The risk of death or injury to individuals is statistically far greater in many workplaces or in the pursuit of many leisure, sporting or recreational activities.

The inappropriate or accidental disturbance of feral bees presents a much greater risk to persons than managed bee hives.

Community concern over urban beekeeping is much broader than the analysis of real risk to human life identified would indicate. These concerns relate to nuisance.

7. IDENTIFY BENEFITS OF APIARY ACTIVITY IN URBAN AREAS (TOR 3).

In submissions to the Inquiry a number of beekeepers have listed benefits from apiary activity in residential areas. The submissions stress the social benefits from a hobby that is able to be enjoyed by individuals and/or families from all walks of life and all ages and that is able to produce a healthy nutritious product either for personal consumption or for sale.

Submissions have noted the very strong support and interest from the general public at Agricultural shows as well as a growing community interest in the beneficial medicinal properties of honey. A number of educational institutions, both secondary and tertiary keep managed bees, incorporating apiculture in educational programs. Well managed bee hives require little land, can be easily secured (relative to other livestock), provide good teaching opportunities and have relatively low maintenance requirements particularly over holiday periods. A number of secondary schools have maintained hives over a period of many years.

Submissions to the inquiry contend that many of the commercial beekeepers in NSW were introduced to beekeeping in urban areas.

Over 800 NSW beekeepers are members of beekeeping associations. These associations include the Amateur Beekeepers Association of NSW with the following seven branches: Hunter Valley, Illawarra, Nepean, North Shore, Parramatta, Central Coast and Macarthur, the North Shore Beekeepers Association at Turramurra, the ACT Beekeepers Association at Woden which covers the Queanbeyan district of NSW and the NSW Apiarists' Association with the following 11 branches: Inverell, Tamworth, North Coast, Central Tablelands, Western Plains, Southern Tablelands, Sydney, Riverina, Manning Great Lakes, Hunter Valley and mid North Coast.

These associations have a strong educational focus both through their members and with the wider community. They produce regular newsletters for members and conduct meetings and field days.

Many submissions stated that honey bees located in urban areas play a major role in the pollination of fruit and vegetable crops in home gardens. Bees are used commercially to pollinate commercial crops and many of these crops are grown commercially in urban areas.

Most urban bee hives are considered to be non-commercial because of the small scale of the operation. As stated earlier, full time commercial beekeepers manage at least 200 hives and usually between 350 and 700 hives. While small scale and hobby beekeepers are unlikely to achieve the same level of production from their hives, the large number of hives located in residential areas will produce a considerable quantity of hive products that are either personally consumed, gifted or sold. An estimate of the production and retail value of production of hive products by beekeepers in residential areas is provided in Table 7.1.

Table 7.1 Volume and value of hive products produced by managed hives in residential areas.

Hive Products	**Hive Numbers**		
	<10 20,000 hives	10-40 30,000 hives	Total 50, 000 hives
Honey - Wt (kg)*	400,000	600,000	1,000,000
Honey - $Value	$2,000,000	$3,000,000	$5,000,000
Beeswax - Wt (kg)**	15,000	22,500	37,500
Beeswax - $Value	$150,000	$225,000	$375,000
Total $ Value	$2,150,000	$3,225,000	**$5,375,000**

* estimate 20 kg average honey production per hive per year (honey value $5 per kg)
** estimate 0.75kg average beeswax production per hive per year (beeswax value $10 per kg)

Another direct commercial benefit to the NSW economy is the maintenance of a support industry suppling tools and equipment for the bee industry. A phone poll of the seven beekeeping suppliers or equipment manufacturers located in NSW and the ACT estimated a workforce 20.5 Full Time Equivalent positions. These suppliers are all located within urban areas and rely heavily on the business generated from hobby beekeeping activity.

8. IDENTIFY AND ASSESS THE ADEQUACY OF EXISTING REGULATORY AND NON-REGULATORY MEASURES (TOR 4).

This chapter sets out to identify the legislated and non-regulatory measures that manage the keeping of bees in residential areas, and then assess the adequacy of those measures to reduce the real risks posed to humans from managed bees in urban areas as well as the adequacy of these measures in resolving conflict over nuisance caused by managed bees. It also introduces a number of suggestions for changes to the existing regulatory measures.

8.1 Regulatory Measures Controlling Beekeeping

The regulation of urban beekeeping in NSW is carried out by two authorities. These are NSW Agriculture via the *Apiaries Act 1985,* and local government authorities primarily through the planning instruments they adopt under the *Environmental Planning and Assessment Act 1979,*

and to a much lesser extent through their orders powers under the *Local Government Act 1993*.

Submissions to the Inquiry from beekeepers complained that the regulatory controls and the coordinating authority over their industry/hobby are not clear stating "if there are regulatory controls imposed upon urban beekeepers then a decision has to be made as to who will control them". These submissions also infer that there are three bodies regulating beekeeping, that is NSW Agriculture, local government authorities and the Department of Urban Affairs and Planning (DUAP).

A 1999 survey by NSW Agriculture of regulatory measures employed by local government authorities that might impact upon beekeeping activities showed considerable variation in approach. Outside the major metropolitan centres there was a tendency towards the use of less restrictive local environmental plans (LEPs) and many of the 116 respondent councils said that they imposed no direct controls over beekeeping. Other councils reported that the conduct of beekeeping activities was subject to development consent, and some councils had either specified limitations on the numbers of hives or had instituted prohibitions on beekeeping in certain designated land zonings within their LEPs. Of those councils that limited the number of hives, the number of hives permitted ranged from 1 (Armidale Dumaresq Council) to 5 (Lithgow City Council).

The following sections describe the legislative instruments currently regulating beekeeping in urban areas and how complaints made under each Act are currently addressed.

8.2 Apiaries Act 1985

The Act regulates the honey bee industry with the primary purpose of preventing the spread of bee diseases. The legislation is administered by NSW Agriculture, with an inspectorate created by the Director-General.

The Apiaries legislation applies to both commercial and non-commercial beekeepers and requires all beekeepers to register their hive numbers, with renewal every two years. Registration of beekeepers has the prime objective of facilitating the provisions of the Act relating to disease control to be undertaken.

The Inquiry looked at legislation in other Australian states, and found most other states have similar apiaries legislation.

8.2.1 Provisions that may be utilised to manage beekeeping in urban areas

There are two sections which allow the Director-General to prohibit beekeeping.

- Section 19 relates only to areas where beekeeping may interfere with fruit drying and is not relevant to the Inquiry.

- Section 18 relates to the suitability of premises on which bees are being kept. Under Section 18(1)(b), the Director-General may prohibit the keeping of bees or a number of bees on the grounds of public nuisance or a danger to public health and safety. Under Section 18(1)(c) the Director-General may prohibit the keeping of bees if under any other specified reasons the premises are considered unsuitable.

8.2.2 Imposing standards on beekeeping

The Apiaries legislation does not contain provisions requiring that bees be kept in accordance

with commonly accepted principles of good husbandry or management. However, the Act does make provision to impose such a requirement as a condition of registration (Section 9 requires that registration be "subject to such conditions and restrictions … as are prescribed", however none have been prescribed).

8.2.3 Suitability of persons

The Act does not specifically regulate the suitability of persons to be beekeepers. The Inquiry noted that the problem of unsuitable persons being registered as beekeepers was presumably intended to be addressed at the registration stage. However, Section 8 limits the circumstances in which the registrar may refuse an application for registration to, those in which the registrar "is not satisfied that the applicant is a fit and proper person to be registered". "Fit and proper" refers to character not competence.

Once a person has been registered the registration may only be cancelled on one or other of the grounds set out in Section 12, which are extremely limited and none of which relates to competence.

8.2.4 Procedures for dealing with complaints made to NSW Agriculture

Under the *Apiaries Act 1985*, complaints of nuisance caused by managed bees may be made to the Director-General of NSW Agriculture. This regulatory program does not address complaints that originate from feral bee activity. A form has been developed to record the details of the complaint. This form has been included in Appendix 2.

The nuisance bee complaints are investigated by regulatory inspectors trained in dealing with apicultural issues including disease investigation and nuisance bees. The Department of Agriculture has 21 inspectors trained in bee regulatory activities (plus 6 more currently undergoing training). These inspectors are located throughout the State, principally in agricultural areas. Inspectors undertake an extensive range of regulatory duties as required under the State's plant and animal health legislation. Bee work forms only part of their responsibilities.

Members of the public who initiate a complaint about managed beehives or bees are required to record the complaint in writing. Once this occurs, an inspector investigates by interviewing the persons making the complaint, other neighbours and the relevant beekeeper, if one can be identified and located.

Inspectors then prepare a report with recommendations for the Director-General of NSW Agriculture. Inspectors occasionally seek advice on individual cases from beekeeping advisory specialists from NSW Agriculture. When the Director-General is satisfied that the best possible solution is suggested he may issue an order for the removal of all or part of the apiary. The Apiaries legislation contains provisions for appeal.

A review of the 134 nuisance bee complaints that had been submitted in writing to the Department from January 1996 to March 2000 shows that 130 complaints were made against an identifiable beekeeper. Of the four remaining complaints, one was found to relate to a swarm of bees and another to European Wasps. The other two were not associated with either an identifiable beekeeper or hives.

In most cases a compromise is reached between the parties involved, for example, the relocation of hives in the yard or the beekeeper agrees to move the hives away from the area causing the concern and no formal orders are issued by NSW Agriculture.

8.3 Local Government Act 1993

The *Local Government Act 1993* provides councils with wide-ranging authority to administer their areas. Under Part 2 'Orders' of Chapter 7 'Regulatory Functions of Councils', councils have been provided with powers to order a person to do or to refrain from doing specified activities. This includes the power to order the cessation or abatement of nuisances relating to land use activities. These nuisances include activities that affect the health, safety and/or amenity of persons.

8.3.1 Provisions that may be utilised to manage beekeeping in urban areas

Councils' orders powers are primarily contained in sections 124 and 125 of the Act.

- Section 125 provides that a council "may abate a public nuisance or order a person responsible for a public nuisance to abate it". The capacity of councils to use these powers is limited if only one complaint is received because of the need to prove "public nuisance". This power duplicates in some respects the powers in existence under section 18 of the *Apiaries Act 1985*.

- Order No 18 of Section 124 of the *Local Government Act 1993* empowers councils to order a person not to keep birds or animals on premises, other than of such kinds, in such numbers or in such a manner as specified in the order where birds or animals kept on premises are of an inappropriate kind or number or are kept inappropriately. It would not be necessary for a council to prove that the animals are a public nuisance, or a danger to public health or public safety or that the premises are unsuitable for keeping them. The only test is that the animals kept "are of an inappropriate kind or number or are kept inappropriately". Section 124 is similar to the power in Section 18(1)(c) of the *Apiaries Act 1985* but it allows consideration of not only the suitability of the premises for beekeeping, which Section 18(1)(c) is limited to, but also the nature of the animals being kept and the manner of their keeping. This section would apply to beekeeping.

- Sections 158 to 167 of the Act further allow councils to develop policies which will guide the application of the orders powers in section 124. Section 159 gives councils the power to specify what may be considered an appropriate number of animals (including bees) on a property, or the manner in which they are best to be kept. These matters would be considered in deciding whether an order is to be pursued in each individual case.

A local orders policy, or any other form of council policy such as a code is not able to specify standards which may then be enforced as a blanket rule. Council must consider whether the circumstances in each situation which arise are such that the making of an order is justified, using policies as a guide.

8.4 Environmental Planning And Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) is the major land use planning legislation of NSW. This Act, via the mechanisms of Local Environmental Plans (LEP), and development consent is frequently used by local government authorities to control the keeping of animals on land.

8.4.1 Provisions that may be utilised to manage beekeeping in urban areas

The Local Environmental Planning process, outlined in Part 3 of the EP&A Act, provides local government authorities with the opportunity to manage beekeeping in urban areas. The options for managing beekeeping in a LEP range from allowing it as a development that does not need consent, to requiring consent in urban/village areas (for example, above a threshold number of hives) to classifying beekeeping as agriculture and prohibiting the activity in areas not zoned for agriculture. Development Control Plans pertaining to specific zoning could also address management of beekeeping by providing guidance on appropriate standards.

The 1999 NSW Agriculture survey of local government authorities showed that all these options are currently in use.

In common with other similar pursuits in urban areas, the current policy direction of DUAP favours allowing local government some discretion over controls at a local level.

However, DUAP considers that 'sanitising' urban/village landscapes by more rigorous application of planning instruments and development controls, with regard to beekeeping, is unrealistic, and could serve to further distance urban dwellers from their agricultural heritage.

8.4.2 Procedures for dealing with complaints made to local government authorities

Councils have primary responsibility for the administration of both the *Environmental Planning and Assessment Act 1979* and the *Local Government Act 1993* within their own areas.

Anecdotal information indicates that where complaints about nuisance from managed bees are made to a local council, the council will usually refer the complainant to NSW Agriculture. Councils generally provide the standard complaint form developed by NSW Agriculture specifically for that purpose. This acknowledges NSW Agriculture’s expertise and experience in bee management. Referral also assists to avoid potential for duplication and waste of resources.

Where a complaint investigation reveals that bees or beehives are being kept on premises contrary to the provisions of an LEP, council could seek to enforce the requirements of the LEP. This could involve the council using the orders provisions of the *Local Government Act 1993* to require the cessation of beekeeping and the removal of the bees and hives from the land.

Comprehensive review and/or appeal rights are available to persons aggrieved by the planning and regulatory decisions of councils.

8.5 Non-Regulatory Measures Controlling Beekeeping

Non-regulatory measures have played a significant role in diffusing nuisance bee complaints. In a submission to the Inquiry, a NSW Agriculture regulatory inspector stated:

> “Non-regulatory measures are the first approach in any nuisance bee complaint and

> many cases are successfully resolved by way of a non-regulatory approach. Advice is provided on the basis of the Code of Practice for Urban Beekeeping. This relies on the beekeeper on complaint taking a responsible and conciliatory approach."

Experience with handling nuisance bee complaints from the public over many years indicates that roughly 90% of initial complaints can be resolved by conciliatory dialogue between the complainant and the beekeeper. In the past this has been facilitated by NSW Agriculture staff.

A Code of Practice for Beekeeping has been developed by an industry committee (the Bee Industry Consultative Committee) in consultation with government agencies. The Code addresses bee management issues including appropriate numbers of hives for different sized urban blocks and practices to avoid conflict. The Code has been adopted by beekeeping associations but there has not been any systematic distribution of the Code to the 3,800 registered NSW beekeepers.

There is also a considerable quantity of educational material and advice available to beekeepers through the networks of beekeeping clubs and associations. Beekeeping goods and service providers are another important information source to beekeepers.

NSW Agriculture provides advisory services and has produced an advisory AgNote series on beekeeping covering such issues as beekeeping in urban areas and nuisance bee complaints. This series is available on the internet.

8.6 Adequacy of Existing Measures

The Inquiry notes that the State Coroner has recommended to the Minister for Local Government that "there be a regulation limiting the number of bees which can be kept or housed in suburban or residential areas". However, the Inquiry has found that managed bees have been associated with only two human deaths in NSW. Feral bees and other insects pose a greater risk to members of the community than managed bees.

However, the Inquiry believes that managing the wider concerns of nuisance from managed bees may be assisted by some additional regulatory and non-regulatory measures.

The adequacy of existing measures in managing nuisance bee complaints is in part, tied up with the public's capacity to understand and to operate within the constraints that those measures apply. Submissions from beekeepers suggest that the range of regulatory controls currently in place are poorly understood and may be causing unnecessary confusion.

Among other things, some beekeepers were concerned that the capacity for councils to use their planning powers to limit the number of hives could result in different approaches in neighbouring local government areas.

This concern appears to reflect some reluctance to accept:

- that councils are autonomous bodies that are responsible to their local communities, and;
- that the existence of some differences in the environmental, planning and related policies and practices of the 174 councils within the State stems from differences in local conditions and community aspirations; and,
- councils' interpretation of the issues and choices for resolving problems may vary.

The Inquiry noted that persons aggrieved by either the planning or regulatory decisions of councils have a comprehensive range of review and appeal rights. It was also noted that very little use of these mechanisms has been made by beekeepers.

The nine submissions that were received from NSW councils expressed a range of views, some calling for more empowerment for councils in dealing with nuisance bees and for access to the State bee register. Some council's responses reflected the complexity of the inter-relationship of the Apiaries and Local Government legislation and their planning powers under the Environmental Planning and Assessment legislation.

Measures that will more clearly delineate areas of responsibility between NSW Agriculture and local government authorities will likely be welcomed by both councils and beekeepers.

Difficulties in managing nuisance bee complaints were raised by NSW Agriculture regulatory inspectors. These include the lack of provisions in the Apiaries legislation to order the immediate removal of bees from a site where this is deemed desirable by the inspector.

The presence of a significant number of unregistered beekeepers and unidentified hives particularly in urban areas impacts on the resolution of nuisance bee complaints. Identification and registration of all beekeepers would not only aid the rapid resolution of complaints but should also lead to an improved awareness of good bee management practices.

In summary, the Inquiry supports the call for a number of improvements in the regulation of beekeeping in densely built up areas.

8.7 Considerations of Improved Regulatory and Non-Regulatory Measures

To achieve the objective of improving the regulations applicable to beekeeping in urban areas to better manage community concerns with bee nuisance, the Inquiry looked at general approaches including:

- introducing a state wide planning policy on bee hive numbers in residential zones
- introducing a state wide policy on bee hive numbers linked to apiary registration
- promoting policies on bee hive numbers at a local and state government level

The Inquiry noted that DUAP strongly favoured the application of best practice guidelines, in conjunction with a requirement for beekeeper registration, as the primary control over beekeeping in all areas. Concurrently, DUAP did not support an increased role for state planning instruments in beekeeping activities.

The promotion of good management practices by all beekeepers through a Code of Practice was suggested in many of the submissions as valuable in reducing the occurrence of nuisance complaints. Such a Code could form the basis of a uniform approach from both regulators across the State and beekeepers in setting appropriate standards for hive numbers and management practices to reduce the likelihood of nuisance.

Beekeeper submissions expressed concern that the regulatory controls over their industry/hobby fall between three bodies ie. NSW Agriculture, local government authorities and the Department of Urban Affairs and Planning. Submissions argued that, "It makes sense to suggest that this (regulation of the industry) would be the domain of one body, the most likely one being NSW Agriculture, as they are also the body dealing with bee disease and have the expertise in the area of beekeeping".

While this proposal has some appeal, it would involve the removal of some of councils' environmental and planning, and associated regulatory functions and powers. Another approach would be to remove the nuisance bee provisions from the Apiaries legislation, leaving councils as the authority regulating the keeping of bees. The Inquiry does not support either of these proposals.

In regard to the Apiaries legislation, NSW Agriculture's position is that disease control is the main focus of the legislation and that under the current legislation the management of nuisance bees is an addition to that focus.

The Department of Local Government (DLG) also supported the need for a system of beekeeping registration. Having access to a current database linking identified hives to their owners was seen as a valuable aid in resolving complaints received about potentially dangerous or nuisance beekeeping activities

Submissions from beekeepers agreed with DUAP and DLG on the desirability of maintaining a register of beekeepers under the Apiaries legislation.

DLG supports, in principle, the introduction of a capacity under the Apiaries legislation for NSW Agriculture inspectors, and council rangers, to impose on the spot fines in a limited range of circumstances (e.g. for failure by a person keeping bees to have a valid current registration, or for owning hives that are not identified). The introduction of such a system is more likely to ensure compliance with the requirement for all beekeepers to be registered. This should assist in dealing with nuisance bee complaints and in disease control activities under the Apiaries legislation.

Retention of the revenue from fines imposed by council rangers by councils would assist to offset some of the administrative and regulatory enforcement costs that would otherwise have to be borne by the residents and ratepayers. It is not proposed that council rangers would have any other enforcement powers under the Apiaries Act.

8.8 Conclusions

Under the current arrangements, regulation of urban beekeeping in this State is carried out by both state and local government authorities. The Apiaries legislation, managed by NSW Agriculture has specific provisions relating to the management of nuisance bees. Local Government Authorities, under the Local Government legislation are provided with more general but similar powers to address instances of bee nuisance. Local plans developed under the EP&A legislation may or may not specifically address urban beekeeping.

The Inquiry believes that some additional regulatory and non-regulatory measures would assist in managing the wider concerns of nuisance from managed bees.

Submissions have also suggested that clear delineation of the areas of responsibility between NSW Agriculture and local government authorities will likely be welcomed by both councils and beekeepers.

9. RECOMMENDATIONS ON ADDITIONAL MEASURES FOR MANAGEMENT OF BEE NUISANCE (TOR 5).

1. That NSW Agriculture continue to operate a register of beekeepers.

2. That a condition of registration be compliance with a Code of Practice. The Inquiry team noted that the Bee Industry Consultative Committee has already developed a voluntary code through an extensive consultative process. The Code contains recommendations on hive numbers and on management practices. The Inquiry proposes that a modified version of the BICC code (Appendix 3) be considered for this purpose.

3. That a system for on-the-spot fines for non-compliance with registration and hive identification requirements be introduced, and that in conjunction with NSW Agriculture inspectors local government rangers be empowered to issue infringement notices for these types of offences. The Inquiry team envisages that council rangers will contact the NSW Agriculture bee registrar in relation to particulars on the register rather than making the register available to councils – this is consistent with current practice used by NSW Agriculture inspectors, State Forests and NP&WS when conducting field enquiries.

4. That NSW Agriculture supports councils in managing nuisance bee complaints by facilitating the training of council officers in bee management and nuisance bee control.

5. That a web site with information on procedures for nuisance bees and dealing with bees be developed by NSW Agriculture (with links to the DLG home page).

6. That a public education and awareness program be initiated wherein literature, including details of the Code shall be distributed to all bee keepers, bee keeping suppliers, and local government authorities.

7. That the Code and other literature relating to beekeeping is produced in a suitable range of community languages.

10. PROCESS FOR PUBLIC CONSULTATION IN THE DEVELOPMENT OF REGULATORY PROPOSALS

Implementation of the recommendations in Chapter 9 would require a number of changes to the existing regulations in particular, the provisions of the *Apiaries Act 1985*. These changes would impact on all beekeepers in NSW not only on those beekeepers with hives in densely populated urban areas.

If the recommendations of Chapter 9 are endorsed by the NSW Government, then suitable amendments to the legislation should be drafted in consultation with key stakeholders. These stakeholders include:

- all those who made a submission to the current Inquiry
- all local government authorities
- the Coroner's Office

- emergency services such as the Police and SES
- the beekeeping industry via the Bee Industry Consultative Committee.

APPENDIX 1 - REPORT ON BEE VENOM ALLERGY

BEE VENOM ALLERGY

Dr Sheryl van Nunen
Head, Department of Allergy
Royal North Shore Hospital, St Leonards NSW 2065

Dr van Nunen has been Head of the Department of Allergy at Royal North Shore Hospital since 1985. Prior to this she was an Associate Physician at Royal Prince Alfred Hospital, where she trained as a Clinical Immunologist and Allergist. She is the Convenor, Clinical and Laboratory Practices Committee, Australasian Society of Clinical Immunology and Allergy (ASCIA) and a member of the National Council of ASCIA.

Individuals can be sensitive to any immunologically recognisable entity which is not "self" (this can be human but non "self" e.g. women with semen allergy). Common allergens in adults comprise the inhalants (house dust mite, cat, grass, tree and weed pollens and moulds). Less common allergens include various foods (90% of food allergies are to peanuts, tree nuts, fish, shellfish, eggs, cow's milk, soy and wheat), insect venoms (bee venom, paper wasp and European wasp venom) and insect saliva (mosquitoes and ticks) and drugs (particularly the penicillins).

In general, allergic reactions may include "hayfever"(allergic rhinitis), asthma, eczema, "hives" (urticaria), or gastrointestinal symptoms (vomiting and diarrhoea).

More rarely, allergic responses can be life-threatening, for example an anaphylactic reaction, with the patient exhibiting one or more of the following:

- closing over of the airway;
- grade III or IV asthma (graded from I-IV);
- a severe fall in blood pressure (hypotension); and/or
- loss of consciousness.

These events are brought about by the release of mediators of inflammation (e.g. histamine) resulting from IgE antibody (the "allergy" antibody) binding to allergen on the surface of mast cells within the body. Histamine and the other mediators of inflammation cause blood vessels to widen to such an extent that they leak fluid into surrounding tissues, thereby causing swelling and a drop in the blood pressure if the loss of fluid from the blood is severe. Severe swelling of the airway (laryngeal level) can physically cut off the supply of oxygen to the body, as will the provocation of grade III or IV asthma in airways lower in the bronchial tree. A very marked drop in blood pressure will mean that the brain, heart and other vital organs will be starved of oxygen, which, if prolonged, will result in death. Occasionally death can be almost instantaneous, and this is most likely due to a disturbance of the heart rhythm or to a
non-allergic venom-induced activation of an inflammatory mediator (PAF-platelet activating factor) which paralyses the left ventricle of the heart. This latter type of reaction, it appears, can occur as either a toxic reaction or as an idiosyncratic reaction (a reaction peculiar to a minority of otherwise normal people).

A normal bee sting involves the intracutaneous injection of 50 micrograms of bee venom. Some of this venom will circulate through the body, however, the symptoms are limited to

pain, some itch and redness at the sting site.

Bee venom is a complex mixture, containing several proteins. Ninety percent of people who have allergic reactions to bee venom have IgE antibody directed against one enzyme in bee venom, phospholipase A2. Ten percent of individuals allergic to bee venom will have IgE directed against other proteins in the bee venom (e.g.hyalouronidase).

Allergic reactions to bee venom range from local allergic reactions at the sting site, through generalised urticaria ("hives" or welts on the skin), to life-threatening anaphylactic reactions and fatal anaphylaxis.

Usually, there are only one or two people per annum who succumb to bee venom allergy in Australia.

From figures extracted from the Australian Bureau of Statistics years ago, you are more likely to die from being struck by lightning than from an allergic reaction to a bee sting, and less likely to be taken by a shark. Penicillin allergy caused more deaths than bee venom during the time I surveyed. A more recent analysis is about to be published in the Medical Journal of Australia.

Many other insects can induce allergic reactions. Yellow jacket (European wasps) stings are more common in Victoria, than in New South Wales, due possibly to their wider distribution in that state. Paper wasp venom allergy is less common than bee venom allergy in this state. Jumper ants are a more worrying cause of anaphylaxis, as there is no commercially available vaccine currently, a situation largely due to funding cuts. Other ants, March and horse flies, mosquitoes, midges, etc can also induce allergic reactions. People sensitive to these insects have no vaccine to overcome their allergy at present.

It is recommended that adrenaline auto-injectors be carried by those who have had an anaphylaxis. Some of my colleagues would offer venom immunotherapy to adults with any sign of generalised reaction. Certainly, any individual with any of the life-threatening features will be offered venom immunotherapy, providing the allergic basis of the reaction is confirmed by a positive venom skin test. Those who have large local reactions may receive benefit from early use of corticosteroids and antihistamine which they should carry with them and use, ideally, within an hour of being stung (ideally). Children usually are only treated with venom immunotherapy if there has been a potentially life-threatening reaction. Venom immunotherapy usually extends for 5 years, and can be recommended for longer periods in affected males over 45 years of age. Immunotherapy is effective. There is a low risk of allergic reaction, which can even be life-threatening, with each injection of venom.

Most teaching hospitals in Australia would have 20-30 people receiving venom immunotherapy (bee, wasp or European wasp). At Royal North Shore Hospital, bee venom allergy is the commonest venom allergy for which patients are receiving treatment.

While an allergic reaction cannot be entirely discounted as a cause of the tragic death leading to this Inquiry, it is my opinion that death is more likely to have resulted from a toxic reaction due to the extraordinary number of bee stings, which I am given to understand, this woman received. Even if a postmortem examination found evidence of the presence of bee venom specific IgE in the blood, my view would not alter as to her probable mode of death, as approximately 6% of the Australian population will demonstrate this finding, with or without a history of bee venom allergy. Notwithstanding, death from venom toxicity appears to be

rarer than deaths due to allergic reactions to bee venom.

11. APPENDIX 2 - NUISANCE BEE REPORT FORM

Apiaries Act 1985

To: Director General
NSW Agriculture
Locked Bag 21
ORANGE NSW 2800

Report on Bees Creating a Nuisance

Complainant

Name
Address
Telephone (home) (business)
Date occupied premises

Owner of bees

Name
Address
Date bees introduced

Why do you consider the bees are creating a nuisance?

How long have the bees been a nuisance?

What attempts have been made to resolve the problem?

(PLEASE COMPLETE THE REVERSE AND SIGN AS INDICATED)

Draw a plan showing the source of the bees which are believed to be causing the nuisance, including the location of relevant buildings, swimming pools, and other relevant points. Indicate the nearest cross street.

Signature of Complainant:

Date

Complainants are requested to attempt resolution of the problem by amicable discussion with the owner of the bees before submission of this report.

NSW Agriculture

12. APPENDIX 3 - MODIFIED BICC CODE OF PRACTICE

CODE OF PRACTICE FOR BEEKEEPING NSW

Aims

To allow the keeping of bees in a manner compatible to the area in which they are located and to encourage the keeping of bees in such a way as to be acceptable to the general public.

Objectives

To ensure public safety and social amenity.
To encourage good beekeeping practice.
To maintain public and neighbourhood relations.

Number of permanent hives

Definition: A hive is a colony of bees headed by a queen bee.

Small block		2 hives
Average block	up to 1000 m^2	4 hives
Roomy	up to 2000 m^2	12 hives
Rural		no limit

DISCLAIMER
The number of hives is a guide only and circumstances may require less hives to be kept or, in some circumstances, the keeping of bees may be inappropriate on some locations, as determined by an appropriate regulatory authority.

Method to help achieve aims and objectives listed above:

- Flight paths should be above 2 m when crossing the property boundaries. This may be achieved by using screens, shrub, walls, hedges, fences, etc., therefore setting distance between hives and buildings is unnecessary.
- Hives should be sited in a warm sunny location to enhance the health of bees.
- A docile strain of bees should be kept in all hives.
- Water should be provided for the bees.
- Consider others when manipulating hives and plan work to cause the least impact.
- Control swarming options include:
  - requeening;
  - population control;
  - splitting into smaller hives (temporarily).
- Keep apiary neat and tidy.
- Take care when mowing around hives. Mow when hives are not active. If the hives are active use a smoker.
- Communicating with neighbours about beekeeping.
- Bee hives should not be positioned in the front yard of suburban houses.

Beekeepers must be registered with NSW Agriculture and comply with Apiaries Act, 1985. Beekeepers are encouraged to increase and update their knowledge by attending field days, study courses and/or belonging to a beekeeping association.

13. APPENDIX 4 - REFERENCES

Gibbs, D.M.H. and Muirhead, I. F. (1998) *The Economic Value and Environmental Impact of the Australian Beekeeping Industry.* A report prepared for the Australian Beekeeping Industry. Http://www.honeybee.com.au/gibsmuir.html

Hornitzky, M., McDonald, R. and Kleinschmidt, G. (1993) *Commercial beekeeping in New South Wales.* A report produced by the Honey Bee Research & Development Council.

14. APPENDIX 5 - GLOSSARY OF TERMS

Apiary:
Refers to a hive or group of hives. The location of the hive is referred to as the apiary.

Apiculture:
Is the practise, art and science of keeping and studying bees.

Beeswax:
Is a by-product of honey production. Worker bees produce beeswax in their wax glands. This wax is then used to construct comb and cap ripe honey.

BICC:
Beekeeping Industry Consultative Committee. This is an inter-government and industry committee that meets every six months. The Committee comprises representatives from the NSW Apiarists' Association, the Amateur Beekeeping Association, the North Shore Beekeepers Association, Crop Pollination Association, Australian Queen Bee Breeders Association, NSW Agriculture, State Forests, the National Parks & Wildlife Service and the Department of Local Government. Periodically, other organisations may be represented at BICC meetings.

Brood:
Brood is a combination of eggs, larvae and pupae of bees located in combs, usually referred to as brood combs. The area of brood varies due to seasonal influences.

Colony:
Is the combination of the queen bee with a number of worker bees, perhaps up to 30,000 in late spring and less than half this number in winter. A colony may also contain drones (male bees) from spring through to autumn.

Comb Honey:
Comb honey has not been extracted and is sold in its original wax comb.

Feral Bees:
Unmanaged honey bee colonies found in hollow trees or buildings.

Hives:
Are the boxes within which colonies of bees are kept. Bee hives contain a set of removable frames to allow management of the colony and extraction of honey.

Managed Bees:
Bee colonies contained in bee boxes or hives. Managed bees are the property of a beekeeper.

Nectar/Honey:
Nectar is collected by field bees and returned to the hive where it is converted to honey through a chemically assisted process by the bees and the moisture content is significantly reduced. This is the carbohydrate portion of a bees' diet.

Nuisance Bees:
Bee hives or bees identified as creating a nuisance, causing annoyance, bother or concern.

Package Bees:
Are an artificial swarm where bees are shaken into a wire cage, a queen is included. This is a method of shipping large numbers of colonies over long distances, usually associated with the export of live bees from Australia.

Pollen:
Is a substance collected by field bees from the male part of flowers which constitutes the protein, amino acid, fat, mineral and vitamin components of a colony's nutritional requirements.

Propolis:
Is a plant material bees collect to glue and gum up cracks and crevices in their hive to protect the colony from intruders and the weather.

Queen Bee:
She is the only fertile female in the colony. She lays all the eggs and produces pheromones that enables the colony to function properly. Queen bees carry the genetic finger print of the colony and, as such, careful selection of breeding stock can produce queens that demonstrate progeny with quiet temperaments, disease resistance and enhanced honey gathering potential.

Royal Jelly:
Produced by glands in the worker bee, it is used to feed young larvae and the queen. Through various management practices, it is able to be harvested.

Swarms & Swarming:
Swarming is a process of reproduction of a colony where half the original colony leaves their existing location with the old queen. Swarms are in transit and in the process of locating a suitable location to establish a new home. They are normally gorged with nectar and not inclined to sting. Swarming normally takes place in spring and early summer.

Worker Bees:
These are the work force of the colony. They perform all functions associated with the survival of the colony except reproduction, which is the function of the queen and drone bees.