Western Australian Department of Agriculture Submission to the House of Representatives Standing Committee on Agriculture, Fisheries and Forestry inquiry into the impact of pest animals on agriculture – Specific submission relating to invertebrate animals

RECOMMENDATIONS

The Western Australian Department of Agriculture plays an important role in improving the profitability and sustainability of primary production systems and the protection of environmental and urban areas via minimizing the impacts of pest animals. In achieving these goals, Western Australia (WA) seeks to work cooperatively with other State/Territory and Federal jurisdictions wherever possible. There are a number of national initiatives underway to provide a more coordinated approach to prevent the introduction of exotic pests and to improve the management of existing pests. Nationally there is a need for uniform policies, standardisation of responses to emergency plant pests (EPP's) and maintenance of expertise in critical areas. In developing this submission, the Department of Agriculture acknowledges the recent advances towards nationally standardised responses to these issues and the significant commitment by industry groups in developing national strategies. The recommendations which emerged in the development of this document indicates that there are still significant areas requiring attention and their resolution will involve further commitment of funds from all the stakeholders.

TERMS OF REFERENCE

House of Representatives Terms of Reference 1

To identify nationally significant pest animal issues and consider how existing Australian and State government processes can be better linked for more coordinated management of these issues across State boundaries.

Consideration should be given to the scope of Australian Plague Locust Commission (APLC) being expanded to include all the regions in Australia that are prone to Australian Plague Locust.

- A national research initiative is required to investigate options for management of slugs in broad-acre agriculture.

- A cropping systems approach is required to manage insecticide resistance issues in the cotton and associated crop (sorghum, maize, soy, sunflower, beans) industries.

- A Quality Assurance program for grain producers needs to be developed and implemented nationally to ensure correct on-farm fumigation practises as a means of managing phosphine resistance within the grain industries.

- Improved integrated pest management (IPM) strategies are required to address the issue of insecticide resistance in invertebrate pest animals of horticultural crops.

- Strengthened national initiative is required to develop alternatives to methyl bromide for pre-shipment disinfestation of produce or to develop recapture technology to prevent the release of methyl bromide.

- The existing expertise for the mass-rearing of fruit flies for use in Sterile Insect Technique (SIT) programs against pest insects needs to be maintained as a national resource so that it is available for future use.

- Forest surveillance for exotic pests is urgently required in all jurisdictions as a basic step towards developing responses to the inevitable incursion of exotic pests.

- Mandatory use of preservative-treated softwood timber to AS 1604 standards, where used structurally, needs to be considered as a component of a national strategy for protecting structures against serious exotic softwood timber pests.

- Australia-wide prohibition of the sale and use of timber susceptible to powderpost (lyctine) beetles is required.

- Development of effective strategies is required for the management of giant northern termite, *Mastotermes darwiniensis* needs to be examined.

- A national administrative framework is required for emergency responses to incursions of non-primary industry pests.

Improved 'Whole-of-Government' approaches to the emergency response to incursions of exotic pests needs to be developed.

- The skills of specialist taxonomists and practicing biologists need to be retained via long-term funding and 'employment conditions' for effective biosecurity planning and preparedness.

House of Representatives Terms of Reference 2

To consider the approaches to pest animal issues across all relevant jurisdictions, including:

- ***prevention of new pest animals becoming established;***
- ***detection and reporting systems for new and established pest animals;***
- ***eradication of infestations (particularly newly established species or "sleeper" populations of species which are considered to be high risk) where feasible and appropriate; and***
- ***reduction of the impact of established pest animal populations.***

- For new furniture, imported from overseas, individual items should be required to have affixed unique identifier codes so that post-border breaches of wood-boring insects can be traced back to shipments to enable overseas companies producing ineffective fumigations to be 'black-banned' thereby improving fumigations and reducing the risk of exotic wood-borers establishing in Australia.

- The current levels of breaches of exotic wood-boring insects via the regulated timber trade routes is unacceptable and effective measures need to be developed to remedy this situation.

- A national approach, via a centralised database, to breach/incursion analysis needs to be established so that the cause of each breach/incursion can be determined.

Opportunities for amendments to cost-sharing arrangements for responses to Emergency Plant Pests may be needed to take into account the 'due diligence' demonstrated by the State/Territory and/or industry affected by the incursion whereby a party not investing sufficiently in preparedness and prevention measures is required to pay a greater share of the emergency response program.

- A centralised breach database needs to be developed by AQIS in close cooperation with States/Territories so that States/Territories have free access to breach database records pertaining to their own jurisdictions as a minimum but preferably to have access to all records for Australia.

- The responsibilities of AQIS and States/Territories for breaches and incursions needs to be clarified to enable effective breach/incursion management responses to be undertaken.

- There is an urgent need to remove the disincentives to the reporting of breaches by the public and by the pest control industry, in the form of AQIS policy of cost-recovery for treatment of breaches.

- The APVMA needs to always respond in a timely manner and work cooperatively with Emergency Plant Pest response programs as a partner in granting permits for the use of chemicals required by response programs to incursions of exotic pests.

House of Representatives Terms of Reference 3

Consider the adequacy of State Government expenditure on pest animal control in the context of other conservation and natural resource management priorities, with particular reference to National Parks.

- WA needs to assess the Threat Abatement Plan (TAP) for Tramp Ants being developed by the Federal Department of Environment and Heritage and implement complementary programs to monitor and manage tramp ant species in natural ecosystems.

- National research is required into the impact of feral European honey bees on our fauna and flora and into the management of feral bees in national parks and nature reserves.

- Poison baiting to manage feral honey bees in national parks, native forests and nature reserves poses the risk of insecticide contamination of commercially harvested honey and access to these areas to commercial honey producers should be reviewed.

- There is a need to initiate research into the impacts and management of the exotic Bumble bee, *Bombus terrestris*.

House of Representatives Terms of Reference 4

Consider the scope for industry groups and R&D Corporations to improve their response to landholder concerns about pest animals.

- Industry R&D corporations need to develop longer term research plans in strategic areas as an aid to maintaining research and diagnostic expertise in critical areas.

House of Representatives Terms of Reference 5

Consider ways to promote community understanding of and involvement in pest animals and their management.

- Surveillance in urban areas (especially those with ports of entry) needs to be promoted for early detection of exotic pests. Engagement of the public in surveillance on a national level needs to be encouraged via the provision of free identification services and information.

- The pest control industry needs to be better engaged in surveillance for exotic pests on a national level. This can be encouraged via the provision of free independent identification services and information of use to the pest control industry.

- 'Cost-recovery' and 'user-pays' schemes introduced by governments for the identification of pests can deter participation of the public and pest control industry in surveillance for exotic pests. These schemes should encourage greater participation of public and pest control industry in reporting of suspect exotic pests.

INTRODUCTION

The Department of Agriculture, WA provides leadership, excellence and innovation in safeguarding the State's agriculture and natural resources from the risks associated with the entry, establishment and spread of plant pests, and helps industry in gaining (and maintaining) biosecurity-assisted access to interstate and international markets.

The main aim of the Department's Biosecurity Programs is to safeguard WA's plant industry from exotic and established Emergency Plant Pests (EPP'S) which include invertebrate pest animals such as insect pests. This is achieved via pre-border, border and post border policies and operations that are targeted to reduce the risk of introduction, establishment and spread of pests.

Broad estimates reveal that freedom from key EPP'S saves WA's plant industry over $0.6 billion per year in avoided control costs and, if these pests were to become established in the State, our producers would stand to lose a portion of the world market share. Growth and profitability facilitated by pest-free status and lack of pesticide application and residues increase over time.

Many invertebrate pest animals also pose a serious threat to the health of the community and the environment. The Department undertakes incident management of such pests (e.g. European wasps, drywood termites) that impact both on the community and the environment.

There are however significant factors and trends which impact and guide the effectiveness, management and control of invertebrate pest animals in WA:

- Growth of the global trading environment and technological progress in the transport of people, cargo and mail has greatly reduced the effectiveness of WA's natural protection against the entry of these pests. The 'clean and safe' reputation of WA's plant industry and environment is under continual threat posed by significant increases in the pathways for introduction of EPP'S.

- In accordance with the World Trade Organisation's Agreement on the Application of Sanitary and Phytosanitary measures (SPS Agreement) and standards set under the International Plant Protection Convention's (IPPC) International Standards for Phytosanitary Measures (ISPMs), it is obligatory that WA's quarantine policy and phytosanitary measures are consistent with the national and international standards and they are not an impediment to safe trade. The State's quarantine measures are under continual national and international scrutiny.

- Climate change has the potential to increase the suitability of WA environment for some invasive sleeper pest species which can threaten plant biodiversity and crop production. Landholders are looking at short term fixes to problems and are increasingly becoming dependent on chemicals to minimise pest-induced productivity and market losses.

Terms of Reference 1

To identify nationally significant pest animal issues and consider how existing Australian and State government processes can be better linked for more coordinated management of these issues across State boundaries.

Invertebrate pest animals impact significantly on the following primary production systems:

- Broad-acre agriculture
- Bulk grain storage

- Animal husbandry
- Horticulture
- Forestry

Additionally, there are significant impacts on:

- The natural environment
- Urban/Built environment

While there has been considerable effort and resources dedicated in recent years towards developing national approaches to the major invertebrate threats to Australia's agricultural production systems via the establishment of Plant Health Australia (PHA), Biosecurity Australia (BA) and Cooperative Research Centres (CRC), issues remain outstanding and the natural and urban environments are not yet well covered by current arrangements. **This submission focuses on outstanding issues.**

Broad-acre Agriculture:

- The Australian Plague Locust, *Chortoicetes terminifera*, is an occasional major risk to agricultural production systems in the south-west of WA. The Australian Plague Locust Commission (APLC) coordinates locust control in the eastern States and its role is to: "Manage outbreaks of the Australian plague locust, spur-throated locust and migratory locust which are considered an interstate threat." WA is not a member of the APLC because it is generally believed that the locust problems experienced within WA arise within WA and are not the result of locusts crossing the State border. Hence, WA is excluded from APLC by definition and consequently is not able to fully draw on APLC's experience and resources in managing locusts. However, WA does have good informal links with the APLC which has provided considerable cooperation in past locust incidents. WA would benefit from membership of the APLC.

- The increasing trends towards use of 'minimum and no tillage' farming methods and the incorporation of other crops, especially canola, into cropping systems in WA has directly contributed to increasing problems of slug damage to seedling crops. The increasing importance of pest slugs has been reported by other States including Victoria, South Australia and Tasmania. There are limited options for the management of slugs as there is a very restricted number of chemicals registered and agricultural practices (such as ploughing) which can reduce slug densities are diametrically opposed to reduced tillage. Industry funding has been used to research on management of slugs in recent times but such funding has tended to be sporadic and short-term in focus. The management of slugs requires a longer-term research approach with more stability of funding. It would benefit from a national approach since there are similar experiences across a number of states and obvious achievable efficiencies through reduction of duplication of research effort across the state approaches.

- At present the commercial production of cotton in WA is limited but, if the planned extension of the Ord River Irrigation Area Stage 2 proceeds, this situation could change. One of the major threats to the industry is development of resistance to insecticides by the crop's major pests (cotton bollworm, mites and whiteflies). In the eastern States, management of resistance in cotton pests is currently being coordinated on an industry basis. However, the major cotton pests are not host-specific and insecticide resistance can arise in other crops grown in the same area. In the past, cotton crops received the highest number of insecticide applications and were the primary site of the development of insecticide resistance. With the introduction of 'Genetically Modified' (GM) cotton, which reduces its susceptibility to pests, many other crops now have higher insecticide application regimes moving the

site of the development of resistance from cotton to other crops. These other crops include soy, sorghum, maize, sunflower, mung beans and navy beans. There is a need to move the focus of management of insecticide resistance away from the cotton industry towards a more national and multi-cropping systems approach.

Bulk Grain Storage:

- The Australian grain industry continues to rely heavily on the use of phosphine to disinfest stored grain. Phosphine is currently used to disinfest about 80% of Australian grain whereas grain protectants (contact insecticides) are now used on less than 20%. WA is particularly reliant on phosphine because contact insecticides have not been used on any export grain since 1990 and over 90% of central storage capacity is sealed. Fumigation in poorly sealed silos has the potential to select for resistant strains. The Cooperative Bulk Handling (CBH) of WA made the decision in the early 80s to move towards using phosphine as the sole insect control in bulk grain stores. They embarked on an ambitious program to seal all fixed storages to enable fumigation to be undertaken correctly. As phosphine became more important to the grain industry, attention was focused on the future of this material. The industry realised that loss of phosphine because of resistance would be a major disaster as there was no viable replacement. Resistance to phosphine had already been detected in some locations in Australia in the 1980s, but the incidence was low and the resistance level regarded as 'weak' and thought to be controllable if phosphine was correctly applied. In WA, continuous resistance monitoring has been conducted on grain insects since 1984 but from 1996 the Grains Research and Development Corporation (GRDC) made funds available to integrate state-based programs to provide a national approach. This has underscored the national dependence of all sectors of the grain industry on phosphine, along with the threat of much stronger resistances occurring. CBH (WA) has become increasingly concerned about the threat posed by phosphine resistance. They estimate the financial impact of the loss of phosphine to be at least $40 million in alternative product costs, with additional expenses expected in retraining and infrastructure costs. Grain insects intercepted at ports from overseas are also tested for resistance to phosphine. A high level of resistance was detected in a sample collected in a vacuum cleaner bag from Oman and last year a strain of *Tribolium castaneum* from southern China in polished rice showed strong resistance. This is of great concern to the industry because it demonstrates the risk of the accidental introduction of highly resistant strains of primary grain insects which could severely impact the Australian grains industries. The effectiveness of CBH's $120 million investment in sealed storage was highlighted at the recent International Controlled Atmosphere and Fumigation Conference in Queensland. WA has a relatively low level of resistance to phosphine (~40% samples with weak resistance and no strong resistance) compared to our national industry partners (in excess of 80% weak resistance and 5+% strong resistance) while internationally high levels of resistance to phosphine are common, especially in developing countries. It is highly desirable to develop a Quality Assurance (QA) Program for grain producers whereby they are required to undertake training in correct phosphine fumigation techniques and keep their on-farm grain storages adequately sealed for successful fumigation. This could be expanded into a system similar to the Safe Quality Food (SQF) 2000 accreditation scheme developed by the Department of Agriculture for other agricultural industries where compliance (and continued accreditation) is dependent on external auditing. SQF is now practised by thousands of organisations around the world.

Animal Husbandry:

- Apart from the existing primary blowflies, ticks and lice currently affecting livestock within Australia, the major outstanding exotic invertebrate pests with the greatest potential to impact on livestock industries are the screw-worm flies. Larvae of screw-worm flies are obligatory parasites of mammals, including humans. The larvae of the flies cause lesions known as myasis that can be fatal and can cause serious

production losses. There are two screw-worm flies, the Old World screw-worm fly, Chrysomia bezziana, and the New World screw-worm fly, Cochliomyia hominivorax. Screw-worm flies were eradicated in the USA using the 'sterile insect technique' (SIT) and their re-introduction prevented using the ongoing annual release of millions of sterile screw-worm flies in Central America. WA has modified a SIT program, developed for Mediterranean fruit fly, Ceratitis capitata, to eradicate an incursion of Queensland fruit flies, Bactrocera tryoni. Currently, South Australia contracts WA to produce sterile Mediterranean fruit flies in the event an infestation of it is detected within South Australia and requires eradication. It is important to maintain the technical capacity developed in such specialised programs so that it is available if required where an incursion of a serious pest such as screw-worm occurs.

Horticulture:

- The wide range of crops that fall under this heading preclude a detailed coverage of the potential threats posed by the introduction of invertebrate pest animals which are not yet present in Australia and in many cases present in Australia but not in WA. Such a subject is worthy of its own dedicated enquiry. However, the Department and major WA horticultural industries have been pro-active in developing industry specific biosecurity plans as a part of Department's HortGuard process. These plans identify and prioritise the major EPP'S threats and provide contingency plans in the event that these become established. The 'Guard' concept of the Department has been adopted by the Plant Health Australia (PHA) to develop national plan industry biosecurity plans. WA has follows science-based risk analysis approach to assess the pest risks posed by the importation of quarantine risk material such as horticultural produce into the State to facilitate safe trade and minimise biosecurity risk. There are however two outstanding risks to horticultural industries which are not currently adequately addressed. The first of these is pest resistance to insecticides. Horticultural pests in Australia which have demonstrated significant resistance to insecticides include corn earworm, *Helicoverpa armigera*, diamondback moth, *Plutella xylostella*, western flower thrips, *Frankliniella occidentalis*, silverleaf whitefly, *Bemisia tabaci* (biotype B), greenhouse whitefly, *Trialeurodes vaporariorum* and green peach aphid, *Myzus persicae*. Industry funds via HRDC have supported some research into horticultural pests with resistance to insecticides but industry funding tends to be directed into short-term projects concentrating on replacement chemicals. What is required is a longer-term, national approach towards understanding the pests' biologies and moving towards pest management which is less reliant on chemicals. Research overseas has demonstrated the practical application of 'integrated pest management' (IPM) techniques and points the way towards where research in Australia should be directed.

- The second area requiring attention is the lack of an obvious replacement/s for the fumigant methyl bromide. Under the Montreal Protocol on Substances that Deplete the Ozone Layer, to which Australia is a signatory, all horticultural uses (apart from exemptions for quarantine and pre-shipment) of methyl bromide have been phased-out over the period 1998 – 2005. While quarantine and pre-shipment uses are currently exempt, there is pressure to remove these exemptions. The loss of these uses could increase the risk of EPP'S entering Australia and reduce the markets available to Australian horticulturalists thereby impacting on the economic viabilities of horticultural enterprises. Under the direction of Environment Australia, a Methyl Bromide Consultative Group, involving the horticultural industry, methyl bromide importers, researchers and Government was formed and produced the National Methyl Bromide Response Strategy. This has seen the successful phasing-out of the horticultural uses of methyl bromide completed in 2005. However, the strategy has not addressed the pre-shipment uses of methyl bromide where horticultural produce is disinfested thus allowing access to overseas markets. There exists a need for a nationally coordinated strategy to develop alternatives to methyl bromide for pre-shipment disinfestation of produce or to develop recapture technology to prevent the release of methyl bromide.

- WA has undertaken a number of fruit fly eradication programs using the 'Sterile Insect Technique' (SIT) as a component. Originally developed as a technique to assess the potential to eradicate the serious EPP'S, Mediterranean fruit fly (Medfly), *Ceratitis capitata*, established only in WA within Australia, this technique was modified to eradicate an incursion of the Queensland fruit fly (Qfly), *Bactrocera tryoni* in WA. In the event of incursions and subsequent eradication programs, public support for the eradication program is critical. Where operations need to be undertaken on private property, often the use of insecticides is a sensitive issue and non-insecticidal options are required where opposition to pesticide use is strong. South Australia experienced this type of opposition which forced them away from an insecticide-based approach in their annual programs to prevent the establishment of Medfly incursions. South Australia has now contracted WA to produce sterile Medfly for use when an incursion is detected in SA. The SIT can be modified for use with other fruit flies and other flies such as the screw-worm flies referred to above. It is essential that the expertise currently available is maintained as a national resource as a contingency for the future incursion of a significant EPP'S to which the SIT can be adapted.

Forestry:

- In WA, Government involvement in forestry is via a commercial marketing arm, the Forest Products Commission (FPC). Significant plantations of softwoods (predominantly *Pinus* spp.) and hardwoods (predominantly Tasmanian Bluegum, *Eucalyptus globulus*) are in private ownership through large companies or as part of farm production systems. Threats to the forest industries can be to: (i) the production systems or (ii) the end use products. There are significant EPP'S which pose a serious threat to timber production systems. These include the Asian gypsy moth, *Lymantria dispar* (and other members of the family Lymantriidae) and the Asian longicorn beetle, *Anoplophora glabripennis* (and many other members of the family Cerambycidae). These pests have very broad host ranges and can seriously impact on native and exotic trees with forestry, environmental and amenity tree impacts. Sirex wasp, *Sirex noctilio*, is present in eastern States' softwood plantations but WA is free of this pest. The Japanese pine sawyer beetle, *Monochamus alternatus*, was recently detected by the Australian Quarantine Inspection Service (AQIS) in Brisbane in crates ex China and demonstrates the continuous threat that EPP'S pose to Australia and its industries. Within WA there is limited investment in surveillance for EPP'S in natural forests or plantations. The detection of European house borer (EHB), *Hylotrupes bajulus*, in the Perth metropolitan area in January 2004 generated a widespread forest surveillance exercise which not only helped delimit the extent of the infestation of EHB but also detected a number of insect pests not previously known to be established in WA. It is not known if this situation with forest surveillance is repeated across Australia.

- Forest industries can also be affected by EPP'S which impact on the end-use products. The detection of EHB in WA demonstrates the potential repercussions. EHB is a serious pest of softwood timber, especially *Pinus* spp, and can re-infest seasoned timber until it is structurally destroyed. The use of pine timber in building construction in WA has increased dramatically over the last decade to the point where the majority of domestic dwellings have pine timber as the structural component of roofs. Furthermore, the great majority of this is untreated and susceptible to attack from a range of serious pests including EHB and drywood termites (Family Kalotermitidae). It is estimated that there is $2.8 billion of timber in building construction at risk in WA alone. Since in WA, most house construction is double-brick, the only structural timber at risk is that in the roof. However, house construction in eastern Australia is predominantly brick-veneer so the impact of seasoned softwood timber pests will be potentially far more serious. WA has detected 12 separate incursions of exotic drywood termites since 1997, some of which have remained undetected for over 10 years since importation. There is little doubt that more infestations exist undetected. Queensland has an incursion of West Indian Drywood Termites, *Cryptotermes brevis*, considered the most damaging drywood termite pest in the world, which is not

considered eradicable but it is contained via a State Government-based program. The most obvious solution to this problem long term is to commence building 'future-proof' houses now, using softwood timber treated with preservatives complying with Australian Standards (AS 1604) or other materials not deemed structurally susceptible to wood borer or drywood termite attack. If this approach is taken, future houses will be non-susceptible to attack and existing susceptible houses over time will eventually become a much smaller proportion of the total number of buildings. Since wood-borers and drywood termites have long developmental times (2-10 years) they take many years to develop into infestations that affect a large number of buildings by which time the proportion of buildings at risk could be quite low. This action would be best taken at a national level via the Australian Building Codes Board (ABCB) with modifications to the Building Code of Australia (BCA).

- The implications for this approach are to the cost of housing with increases of $750-2,000^{+}$ per standard residential dwelling. This cost increase via mandation to use timber treated to AS1604 may be opposed by the building industry and considered unjustified. However, without 'future-proofing' buildings against wood-borer and drywood termite attack, there is a very large risk that the majority of buildings within Australia could be susceptible to attack on the 20 – 50 year horizon. An outbreak of a serious wood-borer or drywood pest would have the effect of depressing house values to the point where the mortgage owing may well be higher than the property value resulting in downstream social issues. Another issue requiring consideration is the chemicals used to provide protection against insect attack via AS1604. The main chemical used for pine timber is CCA (copper-chrome-arsenic). However, there is developing opposition to the use of this chemical preservative overseas with restrictions on its use and disposal. Overseas, the concept of "Cradle-to-Grave" is being invoked where producers need to not only consider the safe production and use of CCA-treated timber but have stewardship in place to ensure the product is properly disposed of. With CCA-treated timber this can involve burying the timber in extensive vinyl-lined pits to enable the CCA residues in the leachates to be captured and disposed of correctly. Other options for preservation of softwood timber include borates and Light Organic Solvent Preservative (LOSP with the synthetic pyrethroid insecticide permethrin as the preservative). However, at present there is not sufficient capacity within these other treatment systems to enable all current structural softwood to be treated. Clearly an intention to mandate the use of treated timber in buildings will require a sufficient lead-up period to allow capacity to build.

- Just as softwood timber is classified as Hazard Level 4 (non-durable, perishable) under standardised durability ratings, so too is the sapwood of many hardwood trees, including many of Australia's Eucalyptus species used for timber production. Sapwood is the immature outer wood and lacks the decay-inhibiting deposits which are present in the heartwood while containing higher levels of starch which are fed on by specialised timber-boring insects. Trees grown in tropical and sub-tropical climates generally contain a greater proportion of sapwood and with a higher concentration of starch thereby making them susceptible to attack by wood-destroying insects. In Queensland, "…attack by powderpost (Lyctine) beetles on susceptible timber is almost inevitable" (Peters, King and Wylie 1996). Consequently, legislation was introduced in Queensland to protect against such attack. The Timber Utilisation and Marketing Act 1987 (TUMA) mandates the following:
  - The sale of Lyctine-susceptible timber is prohibited.
  - The use of Lyctine-susceptible timber in buildings or in the manufacture of articles is an offence.
  - All timber sold in Queensland as impregnated with an approved preservative at a timber preservation plant must carry a registered brand.

Similar legislation exists in New South Wales but not in other States/Territories. The reason for this is that, historically, the sapwood from old-growth trees used for timber from more southern and temperate forests contains a much lower proportion of sapwood and this sapwood contains a lower concentration of starch and is not so susceptible to attack. However, the trend towards protection of old-growth forests and to plantation production of timber has meant that fast-growing species of trees are used and these contain a higher proportion of sapwood and this sapwood demonstrates greater susceptibility to attack from powderpost beetles. The use of this susceptible sapwood in building construction has increased markedly in WA in recent years. Further, there has been a concomitant increase in the importation of timber from south-east Asia which, being tropical is almost 100% sapwood with very high starch content. This is also extensively used in house construction. In addition, there has been a steady increase in the amount of furniture imported from south-east Asia and this is found, post-barrier, to be infested with exotic powderpost and other beetles with monotonous regularity. The volume of furniture imported and the high frequency of infestation make the establishment of these exotic woodborers a certainty if they are capable of establishing in this environment. The concomitant increase in the use of timber containing susceptible sapwood and the likelihood of establishment of exotic powderpost beetle species (specifically evolved to attack it) highlights a future increasing risk to substantial quantities of building fixtures. Already the start of this has been observed in WA with pantry shelf cleats and floating wooden floors reported as being attacked with increasing frequency. The insects involved include the Malaysian powderpost beetles, *Mynthea rugicollis*, *Mynthea reticulata*, the widely established *Lyctus brunneus* and the very damaging *Lyctus africanus*. Clearly, it would be prudent to reduce the amount of damage to future buildings and reduce the opportunities for the exotic species to become established via the mandatory treatment of timber containing susceptible sapwood.

- The giant northern termite, *Mastotermes darwiniensis*, is considered the world's most damaging termite in terms of its capacity to damage timber-in-service and the rate to which it can inflict that damage. Fortunately, it is limited to certain Tropical regions in Australia with only a single successful introduction into New Guinea. Apart from its destructive ability to structural timber, it is also unusual in its attack on living plants from mango and cashew plantations to tomatoes, sweet potatoes, watermelons, amenity trees/palms and plantation timber trees. Despite this reputation, very little research is conducted on it because it inhabits areas of low human population density and comparatively few people are affected. *Mastotermes* is of no commercial interest to the multi-national companies which hold the patents to the world's termiticides and baits and hence the interest in research into its management is stunted. However, there is increasing interest in privately funded extensive forestry projects in northern Australia, in particular the production of mahogany, teak, ebony and sandalwood. These projects are jeopardised from the lack of research into effective management strategies and lack of effective control agents registered through the APVMA. This is especially so for food crops which require expensive residue testing to ensure produce, such as mangoes, are safe for human consumption. Past research has attracted some Rural Industries Research and Development Corporation (RIRDC) funding but this has been sporadic and limited. Stable, long-term funding is required to ensure effective management strategies are developed for *Mastotermes darwiniensis*.

The Environment

- Exotic invertebrate pests have a considerable potential to deleteriously impact on the unique Australian environment. Asian gypsy moth, *Lymantria dispar* and other lymantriid hitchhikers and the Asian longicorn, *Anoplophora glabripennis* have demonstrated wide host-ranges and can directly attack trees, both in the urban environments and in our natural forests. Other invertebrates such as the Red Imported Fire Ant (RIFA), *Solenopsis invicta* and yellow crazy ant (YCA), *Anoplolepis gracillipes*,

have the potential to seriously impact ecosystems and both have been declared as 'Key Threatening Processes" under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). The latter species has received world-wide coverage for its effects on the famous red crabs of Christmas Island while RIFA has proven impacts on native invertebrates, small ground-dwelling vertebrates and large vertebrates including deer and alligators. RIFA was detected in Brisbane in January 2001 and a $175.4 million eradication program, under national cost-sharing arrangements, is nearing completion. The RIFA eradication program is interesting in that it has been conducted under the existing primary industries arrangements for emergency plant pests (EPP'S) even though only 11% of its estimated economic impacts are agricultural with the rest being impacts on infrastructure, the urban environment and the natural environment. However, for incursions of exotic pests without an agricultural impact there is no clear system or arrangement for incursion management. The Natural Resource Management Standing Committee (NRMSC) established a Task Group on Invasive Species with a National Workshop on Invasive Species held in May 2005. The need to establish a framework under which eradication programs could be undertaken with a mechanism to enable national cost-sharing was recognised as a high priority. The workshop also recognised that there is a general lack of legislative ability, both at State and Federal level, to undertake action against non-agricultural pests especially if action is required on private property. There is generally ability to take action on Crown land and within National Parks and Reserves but most programs will require the ability to take management operations on privately owned land. A need therefore exists for complementary legislation at both State and Federal levels to allow this to be achieved.

Urban/Built environment

- Incursion management of exotic invertebrate pest animals which impact on the urban and/or built environments is not covered under existing arrangements. The RIFA program described above exemplifies the problem. Even though the major economic impacts of this pest are to infrastructure and urban areas, it was only because of the existing primary industry frameworks that enabled action to be taken and the eradication program initiated and nationally funded. If RIFA did not have any proven impacts on agricultural production, it is unlikely that the eradication program could have been implemented and this most serious pest would have become established with subsequent serious impacts on the urban community in addition to the irreversible damage to natural ecosystems.

  EHB in WA attacks dead timber and Crown Law advised that action could be taken under the Agricultural and Related Resources Protection Act (ARRPA) because the pest attacked the end product of the forest industry and therefore impacted the industry. However, because it did not attack living plants no action could be taken under the Plant Diseases Act. Legislation varies from State to State and there is need for legislation to be sufficiently broad to enable action to be taken against serious pests which do not have an agricultural impact.

General:

- The Department has developed a semi-quantitative computer-based model for the assessment of the potential impact of EPP'S on various industries and systems. The model, known as the 'Pest Threat Questionnaire' employs a standard 'questionnaire' approach with the 18 questions and responses weighted for importance to enable an overall 'score' to be determined for each EPP'S. This allows EPP'S to be ranked so that those with potentially the greatest risk/impact can receive the highest priority in terms of preparedness planning. This semi-quantitative approach replaces the previous 'gut-feeling' approach previously used to rank the importance of EPP'S. The model allows EPP'S to be assessed across a range of industries or to rank the importance of EPP'S within a particular industry. It has been adopted nationally by

PHA as a planning tool. This tool is accessible at: http://www.planthealthaustralia.com.au/our_projects/PTQ/logon.asp.

A major issue facing the entire field of biosecurity, preparedness and emergency response to EPP'S is the diminishing resource of taxonomists and experienced biologists. If Governments and Industry do no provide 'security-of-tenure' into the future and invest in the long-term development of specialists, the basic technical support required for biosecurity planning, preparedness and response will not be developed. It is often said that DNA-profiling technology will make obsolete the need for specialist taxonomy as simple tests will be able to replace such skills. However, this doesn't answer the question as to how simple DNA-based tests would be validated. If no-one knows how to identify an EPP'S from old-technology taxonomic descriptions, how can a positive (or negative) test be validated? This fundamental flaw in thinking was recognised by the great biologist E.O. Wilson when he stated: "Molecular biologists, as they promised, have taken up evolutionary studies, making important contributions whenever they can find systematists to tell them the names of organisms." The trade implications of being totally reliant on tests, mostly manufactured overseas, for the identification of EPP'S with no means of validation cannot be over-estimated.

Terms of Reference 2

To consider the approaches to pest animal issues across all relevant jurisdictions, including:

- ***prevention of new pest animals becoming established;***
- ***detection and reporting systems for new and established pest animals;***
- ***eradication of infestations (particularly newly established species or "sleeper" populations of species which are considered to be high risk) where feasible and appropriate; and***
- ***reduction of the impact of established pest animal populations.***

Prevention of new pest animals becoming established:

Pathway analysis of potential avenues for the introduction of pests into Australia is a logical and effective strategy for reducing the risk of exotic pests gaining entry into Australia.

One such regulated trade route which is considered a high-risk for the introduction of exotic pests is the importation of furniture, both new and as personal effects imported when migrants settle in Australia. The standard method of reporting by AQIS, which concentrates on interceptions of pests at the border by its inspectors, to be not sufficiently analytical and developed its own 'Breach Database' which recorded the incidents where exotic pests were detected post-border. During a 20-month period, the breach database recorded 273 possible barrier breaches of which 147 involved exotic insects (many of which are already established in Australia). Of the 147 breaches that involved exotic insects, 145 (98.6%) were associated with wood, cane or bamboo products imported into Australia. In WA, it is almost a weekly occurrence that borers are reported in furniture. Several species of *Sinoxylon*, two species of *Minthea*, two species of *Dinoderus*, several species of *Heterobostrychus* and the serious dry hardwood pest, *Stromatium barbatum* are regularly identified from these breaches. The vast majority of these cases relate to furniture imported from south-east Asia. AQIS has taken action through the implementation of training programs to teach correct fumigation methods to fumigation companies in south-east Asia.

While this approach is commendable, infestations of wood-boring beetles and drywood termites often take many months or even years to come to the owner's attention. Despite a theoretical capacity of AQIS to 'black-ban' fumigation companies whose fumigations fail, in practice this is impractical and ineffective because there is currently no capacity to trace an

infested item back to a particular shipment and therefore to a failed fumigation and hence the fumigation company cannot be identified. For new furniture at least, unique identifying codes are required to be fixed to each individual item to enable this 'trace-back' with resultant 'black-banning' of companies who consistently fail to provide effective fumigations.

- In the case of personal effects, AQIS standard operating procedures (SOP) are considered inadequate to satisfactorily manage the risk of exotic invertebrates entering Australia. The case for this assessment can be summarised as follows:
  - Personal effects are the recognised prime pathway for the spread of drywood borers and drywood termites.
  - AQIS allows the importation of personal effects from countries it knows are infested with serious wood boring pests including EHB and West Indian drywood Termites (WIDT).
  - AQIS protocols for personal effects only require visual inspection on arrival in Australia.
  - AQIS knows that visual inspection is an ineffective method for the detection of wood boring insects.

  The detection of 12 live infestations of drywood termites post-border in imported items in WA since 1997, 2 infestations of exotic subterranean termites and the incursion of EHB plus the other 145 cases of breaches in wood, cane or bamboo products reported above all indicate that an inappropriately high level of risk exists with imported wood and timber products.

- Presently there is insufficient analysis of each breach or incursion that is detected to allow strategies to target high risk avenues to reduce the risk of the introduction of exotic pests. A national approach to breach/incursion analysis needs to be established so that the cause of each breach/incursion can be determined (or at least the most probable cause guessed) and how each incident was detected (e.g. survey, targeted surveillance, public report etc). This needs to be recorded on a central database along with other pertinent information.

Detection and reporting systems for new and established pest animals:

Early detection of exotic pests is the key to increasing the chances of an eradication program being successful and in reducing the cost of any eradication program. Post-border surveillance has targeted and crop-based methods undertaken and funded by Government and/or industry bodies and also generalist methods involving the public in reporting suspect pests and diseases.

Targeted surveillance is an effective strategy and has been used to good effect in WA. The detection of Queensland fruit fly (Qfly) is an example. When the first incursion was detected in WA in 1989 following a report from a member of the public, the resultant eradication program cost the State $8.2 million. Following that eradication program, a grid of Qfly traps was deployed in the metropolitan area. A second incursion, this time detected by the trapping grid in 1995, was eradicated but cost to the State was less than $250,000 (or ~3% of the original program).

- In nationally funded eradication programs for EPP'S, funding is shared by the Australian Government, the States/Territories and industries on an agreed basis, either population or proportion of national production of a certain crop. It is unequivocal that early detection leads to lower costs of eradication. 'Due diligence' can be defined as sufficient investment in surveillance and other preparedness activities such that the pest was unlikely to have been detected significantly earlier with current knowledge of methods of detecting it. Investigation is required as to the benefits of mechanisms

under which States/Territories and industry sectors would have an incentive to invest in surveillance.

- The breach database, developed in WA due to the perceived need to increase the ability to analyse risks posed by barrier failures, has now been accepted by AQIS as a useful tool and is being further developed. Given the 1996 Nairn review of quarantine strongly recommended quarantine being a shared responsibility and given that State/Territory jurisdictions supply 50% of the funding of eradication programs resulting from barrier failures, it is important that States/Territories are consulted in the development of the breach database and other issues in which they are stakeholders. Once the outputs of the centralised breach database have been agreed, States/Territories need access to the database for records pertaining to their own jurisdictions. Preferably, however, all records should be accessible by all States/Territories as the total data would provide a more complete intelligence picture of risks posed by imports from various parts of the world. Additionally, AQIS should provide an annual report, as per a pre-agreed format with the States/Territories, on the outputs of the breach database and recommended changes to protocols.

Eradication of infestations (particularly newly established species or "sleeper" populations of species which are considered to be high risk) where feasible and appropriate:

- WA has an enviable record in eradicating incursions of exotic pests. This has been assisted by its geographic isolation and its investment in surveillance leading to the early detection of exotics. National programs and initiatives developed, or under development, by Biosecurity Australia and Plant Health Australia are considered positive steps towards a more national and organised approach which should lead to earlier detection of exotics and an improved preparedness and response capability. The obvious gap in existing structures is the lack of administrative machinery and legislation (both at a State/Territory and Federal level) to deal with exotics with purely environmental or urban impacts. This is currently being addressed by the NRMSC Working Group on Invasive Species.

- WA has serious concerns relating to current arrangements associated with AQIS/State-Territory responsibilities to 'breaches' and 'incursions' of exotics. These are based on the following definitions:

    - Breach – The post-border detection of an exotic organism in an imported item and not established outside of that item.
    - Incursion – The post-border detection of an exotic organism established outside of an imported item.

  Despite the 1996 Nairn review of quarantine recommending a 'shared responsibility' and 'continuum of quarantine' approach there is still confusion and lack of agreement of where AQIS responsibilities end and State/Territory responsibilities begin. The smooth 'baton-changeover' of responsibility from AQIS to States/Territories is critical in being able to mount effective responses to breaches and incursions. It is commonly accepted that AQIS is responsible for breaches and States/Territories (and, where appropriate, Federal Government via OCPPO) are responsible for incursions. However, historically, there has been an inconsistent response to breaches/incursions. In some cases AQIS has provided significant staff and resources to delimiting surveys and treatment costs (e.g. response to the finding of the Giant African Snail, *Achatina fulica*, in Queensland) while at other times AQIS has provided little support. In 2004, AQIS management informed the WA Department of Agriculture: "In the event of an incursion or breach, the resultant action is outside AQIS's normal powers and falls within the jurisdiction of the relevant State or Territory Government." This throws into

confusion who is responsible and has authority to act in this most critical area of the 'quarantine continuum' and obviously requires immediate clarification.

Further, even if the above division of responsibilities is confirmed along the lines of AQIS being responsible for breaches and States/Territories for incursions, there are still areas requiring prescription. Firstly, the costs of treating a breach need to be all-encompassing and include actual treatment costs, transport costs (if furniture needs to be transported to and from a fumigation facility for example) and costs of surveillance to delimit the infestation and confirm it is confined to the imported article/s. Secondly, there is an operational/practical gap in the definition of a breach. Between an infestation of an exotic being confined to an imported item and proven to be established outside of an imported item and therefore an incursion, there is an unknown zone where there is a risk the exotic is established outside the imported item but cannot be detected. Such an example currently exists in WA. Winged reproductive termites were reported exiting a lounge suite by a member of the public. The Department entomologists identified the termites as Western Drywood Termites, *Incisitermes minor* – a native to North America and responsible for damage and protective treatments in excess of $100 million annually in the USA. The lounge suite had been brought from America as personal effects more than 8 years previously. While the cost of treating the lounge suite was quite small (less than $200) there is a serious risk that the flying reproductives have been able to establish incipient colonies in other susceptible timber within the building. As the termite colonies of this species can take 10 years to reach maturity and full size, the likelihood of detecting an infestation/s, if it has successfully established, is very low in this time period. Therefore, the sensible approach is to prophylactically fumigate the building. The cost of this can be in the range of $30,000 to $50,000. This is the second incident since 2000 in WA where 'whole-of-house' fumigation has been required. AQIS has not provided funds for these fumigations. In such cases, if AQIS is to be responsible for the management of breaches, this should include the costs associated with treatment, delimiting surveys and prophylactic measures to ensure the incident does not become an incursion. The prophylactic measures should be undertaken in conjunction with the affected State/Territory authority which should be in agreement with the adequacy of the AQIS response. AQIS should also be responsible for follow-up monitoring to confirm the breaches have been eradicated.

- AQIS policy is to recover the costs of its operations. AQIS seeks to recover the costs it incurs in its response to breaches. Hence, when members of the public report infestations to AQIS of exotic insects (something which they are asked to do in AQIS publicity such as those TV advertisements using the popular Steve Irwin) in items they have legally imported, AQIS then orders the items into quarantine and then recovers the cost of treatment from the owners who have reported the breach. This is not the expectation of the public who believe they have done the right thing only to be penalised with the cost. In some cases this cost can be substantial. Examples from WA include the cost of fumigating motor launches (several thousand dollars each in two separate incidents) where the owners, or the PCO'S they had contracted, reported the presence of exotic termites. Needless to say, this type of approach provides a serious disincentive for the public to report exotic pests. It also damages the client-PCO relationship where, by the PCO reporting the exotic pest, the client is forced to pay the cost of treatment and hence is unlikely to provide further contracts to that PCO. On a national level these costs are miniscule, but they effectively dissuade the public and pest control industry from reporting breaches when it is at the breach level that eradication programs are most successful and least costly. Where substantial costs are involved, such as those associated with 'whole-of-house' fumigations, it is unrealistic to mandate that costs be recovered from individuals. Therefore there is an urgent need to remove the disincentives, in the form of AQIS policy of cost-recovery, to the reporting of breaches by the public and by the pest control industry. WA has

invested substantially in engaging the public and pest control industry in surveillance and views the current AQIS cost-recovery policy as jeopardising that investment.

- When eradication programs are initiated under national cost-sharing arrangements, it is important that all government agencies involved cooperate to assist in achieving the goal of eradication. A 2004 Scientific Review of the RIFA eradication program made the following recommendation:

  "The Red Imported Fire Ant Consultative Committee to make recommendations to the appropriate National body to have the delays to the granting of permits for the use of pesticides, experienced by the RIFA Eradication Program, fully investigated as part of a national approach for developing effective strategies for responding to biosecurity threats."

  This recommendation resulted from the finding that the final granting of a permit to use baits for the eradication of fire ants in wetland areas did not occur until two years into the 3-year eradication program which at that stage had agreed funding of $145 million. Given that the type locality of RIFA is the Pantanal wetland region of South America, this was considered a serious flaw in the RIFA Eradication Program. This problem was identified in the first Scientific Review of the RIFA Eradication Program in 2002 with the following recommendation: *"A single point of contact needs to be established between QDPI and the NRA with responsibility for ensuring registration permits are available for treatment of imported fire ants on all land use types*." This was considered so serious at that time that the Science Review Team made the following comment: *"Resolving registration issues may require communication at the QDPI Directorate to NRA Directorate level*." What was concerning to the Science Review Team was that at least one of the active ingredients of the RIFA baits, the Insect Growth Regulator (IGR) s-methoprene, was registered for use in wetland areas for the management of mosquitoes and that registration extended to its use in rainwater tanks. Even accepting that the formulation of s-methoprene was markedly different from that used in the management of mosquitoes, the length of delay in granting of the permit was unacceptable and jeopardised the $145 million investment in the eradication program. The slow approach of the Agricultural and Veterinary Medicines Authority (APVMA) in this case is considered unacceptable and needs to be addressed so that future eradication programs are not unnecessarily delayed or placed at risk.

Reduction of the impact of established pest animal populations:

- The eighth meeting of the Prime Minister's Science, Engineering and Innovation Council (PMSEIC) in May 2002 identified invasive species as one of four areas of investment above all others which are likely to return the greatest impact in heading off the decline of Australia's natural systems and biodiversity. As discussed above, it is in the area of environmental and urban impacts of exotic pests that there are deficiencies in the legislation and administrative framework to enable the implementation of a national response to exotic animal threats.

  In the primary industry sphere there are opportunities to improve existing arrangements. Where an exotic pest has become so well established it is considered past the point of being eradicable, studies have demonstrated that the most cost-effective strategy is to move to aggressive containment. The West Indian Drywood Termite (WIDT) is considered the most damaging drywood termite species and is established in south-east Queensland. An eradication program was initiated in 1968 but was changed to a containment program from 1979 onwards. Approximately 300 houses have been fumigated with 15-30 houses fumigated annually in recent years. While this containment program involves ongoing expenditure, external review has demonstrated that it is the most cost-effective approach. Under existing cost-sharing arrangements for national funding of primary industry responses to exotic

pests, only eradication programs are funded. Therefore, while the rest of Australia benefits, through the reduced risk of the infestations spreading to other States/Territories, from the aggressive containment program undertaken by the Queensland Government, the entire cost is borne by that single State. Similarly, if EHB is found not to be eradicable in Perth, an aggressive containment program would undoubtedly be the most cost-effective response from an overall community perspective. All of Australia would benefit greatly from this approach as the eastern States have the most to lose, by far, given their far higher populations and the much greater proportion of softwood timber used in their standard brick-veneer house constructions. It is, therefore, logical that other States may consider investment in a containment program in another State as the most cost-effective risk management strategy open to them. Hence, national funding of containment programs needs to be considered as an extension of the current national cost-sharing funding of eradication programs.

Terms of Reference 3

Consider the adequacy of State Government expenditure on pest animal control in the context of other conservation and natural resource management priorities, with particular reference to National Parks.

- State Government expenditure on invertebrate pest animal control for the purposes of conservation and natural resource management is relatively small. There is significant State Government expenditure on the prevention of the establishment of the exotic European wasp, *Vespula germanica*, in WA. All the expenditure is borne by the Department of Agriculture because of the agricultural impacts of this pest, despite there being significant urban, tourist, human health and environmental benefits arising from the exclusion of European wasps from WA.

  Nationally, there appears to be little surveillance for known exotic EPP'S (for example the serious pests Asian gypsy moths and Asian longicorns) which could impact on native forest health.

- Feral European honey bees, *Apis mellifera*, pose a significant environmental threat via their occupation of tree hollows for their nests, their competition with native bees (which have co-evolved with our unique flora) and their inability to pollinate some unique Australian plant species. Further, they are more effective pollinators of introduced weeds than native bees as they have co-evolved with many of the weed species in Europe. Hanley and Goulson (2003) report that "There is clear evidence for a positive link between the spread of weeds and the presence of introduced bees" (Weed Biology and Management Vol 3). Without the presence of the feral bees, some weed species would be less weedy and less of a problem. One study in WA found that the average age of trees, whose hollows were used by native birds for nesting, was 230 years. The combination of land clearing, harvesting of natural forest timber and tree-decline in farming areas has led to a reducing resource of trees with hollows suitable for the nesting of native bird species. Alone, this situation is sufficiently serious, but the occupation of many hollows by feral bee hives means that feral bees are in serious competition with many of our native birds, including icon species. Therefore, there is a need for national research into the impact of feral bees on our native fauna and flora and into feral bee management in National Parks and nature reserves.

- There are some chemicals available, such as fipronil, indoxacarb and acephate, which can be used in baits to poison feral bee hives. There is significant potential with these methods to develop effective management techniques for large areas of reserves. However, in WA, commercial bee keepers can access natural forests and nature reserves for commercial honey production. If poison baiting is undertaken in

these areas there is a risk that subsequent commercially harvested honey may become contaminated with insecticide residues and hives may be adversely affected by the bee's known habit of collecting honey from abandoned hives.

- The exotic Bumble bees of the genus *Bombus* have the potential to increase the weediness of many benign or sleeper exotic plants through much improved pollination. One such example is the recent introduction of the exotic Bumble bee, *Bombus terrestris* into Tasmania with an already observed concomitant increase in the weediness of the invasive plant, *Lupinus arboreous*. It is inevitable that *Bombus terrestris* will eventually establish on mainland Australia and there is a need to initiate research now into its impacts and management. At this stage this work will need to be undertaken in Tasmania.

Terms of Reference 4

Consider the scope for industry groups and R&D Corporations to improve their response to landholder concerns about pest animals.

- The industry groups, such as GRDC and HAL, have invested significantly in biosecurity planning, short term research into high-priority pest issues and identification guides for landholders. Through WA's initiatives of Hortguard and Grainguard, there has been substantial investment in developing preparedness for EPP's in cooperation with PHA. GRDC has contributed to the production of a 'Ute Guide' to assist landholders in the identification of pests of crops. The guide, titled "Crop Insects: the ute guide, Western Grain Belt Edition" was published in 2005 and was a cooperative project between the Department and GRDC. GRDC has also cooperated in educational projects to develop better 'on-farm' fumigation practices as a strategy for tackling resistance of grain insects to fumigants. Similarly, HAL has funded research into pre-shipment disinfestation procedures to expand overseas markets for its industry. It has also invested in research into projects aimed at the management of insecticide resistance within the horticulture production system.

- The R&D corporations have been actively involved in the new CRC for National Plant Biosecurity which aims to address the research and training related issues of plant pests including the invertebrate pest animals. This approach is considered a move in the right direction towards a longer term view of research investment by industry R&D corporations. To date industry R&D corporations have tended to invest in very short term directed research with very restrictive narrow goals. There is a need for industry funding of research to include longer term issues and to invest in the training and maintenance of expertise in those areas of value to the industries.

Terms of Reference 5

Consider ways to promote community understanding of and involvement in invertebrate pest animals and their management.

- Pre border and border security are intended to be the front line of defence against biological threats but achieving zero incursions is impossible. It is therefore necessary to have a post-border strategy for the detection of EPP's. To detect barrier breaches, it is essential to have surveillance and reporting systems in place to detect EPP'S since early detection increases the chances that an eradication program being successful and ,additionally, decreases the cost of any resultant eradication program.

  National, State and Local Government authorities require the assistance of the community in detecting EPP'S and in cooperating with any subsequent eradication programs. As undetected animal and plant pests, diseases and weeds pose a threat to the agricultural industries, the environment, the structure of rural communities, the economy of the nation and the welfare of every Australian family, communities, organisations and individuals must be encouraged to appreciate, recognise,

understand and assist in the reporting of exotic and invasive organisms. The eyes and ears of the community are critical.

In order to meet this goal, a sound understanding must be developed of biological threats, practices and standards for all Western Australians regardless of age, culture and profession.

Awareness, education and training are critical components for promoting sustainable development and improving the capacity of people to address biological threats and to encourage compliance with biosecurity guidelines, and also a strong culture of accountability and responsibility.

With the above in mind, a comprehensive communication strategy has been developed and implemented that engages, not only the Department, but related public and private organisations, community and community groups.

The communication strategy achieves its objectives via a number of channels i.e. media releases, regional and metropolitan field days and key events, seminars and conferences, websites and publications that demonstrate plant health best management practices and process improvements.

Central to the approach in WA is the provision of a free identification and advisory service to the public, pest control industry and some agricultural industries. In this way the community is encouraged to participate in surveillance for exotic pests. The Department's, 'Pest and Disease Information Service' (PaDIS) has the basic tenets of encouraging people to submit suspect specimens which are identified free of charge. Early detection is fundamental to improving the probability that an eradication program will be successful. This basic approach is considered very effective in achieving the goal of engaging the community in surveillance, the third and final tier in the 'quarantine continuum'.

In WA, key exotic pests have been prioritised through the industry 'Guards' initiatives (e.g. GrainGuard, HortGuard) thereby allowing surveillance to be targeted. WA has targeted surveillance programs for Qfly, other exotic fruit flies around ports of entry, mosquito surveillance about ports of entry, screw-worm flies, Codling moth, Asian Gypsy Moth (and other Lymantriids), resistant grain insects, grain borers *Trogoderma spp*, EHB, RIFA and European wasps, *Vespula spp*.

WA has greatly benefited from the active engagement of the public in surveillance for exotic pests. The European Wasp Program has successfully prevented the establishment of European wasps in WA since the first nests were detected in 1977. WA is the only State/Territory, with a suitable climate, where European wasps are not established. The program has been very reliant on the vigilance of the public in reporting the presence of this pest. The Department has achieved this through media coverage, provision of a free identification service and the provision of information via leaflets and its website.

The Department engages the community in surveillance by providing free identification service. WA has benefited from its investment of resources in engaging the public in surveillance. At least 7 cases of drywood termites (all eradicated) have been reported by the public since 2001 and the major pest, European house borer (under an eradication/containment program), was detected as a result of a public report. Other exotic pests detected as a result of public enquiries include garden weevil, *Phylctinus callosus*, yellow paperwasp, *Polistes dominulus*, citrus leafminer, *Phyllocnistis citrella*, American carpenter ants, *Camponotus modoc* (eradicated), the ant *Monomorium floricola* (eradicated) and Tropical Fire Ant, *Solenopsis geminata* (eradicated).

Urban surveillance is considered extremely important because:

- Cities are transport endpoints – the portal through which most exotic pests enter a country.
- Cities contain a great diversity of plant hosts (especially exotic species) capable of acting as hosts for exotic insects and diseases.
- Cities contain a great diversity of habitats from natural ecosystems through to highly artificial irrigated and reticulated gardens.
- High value vegetable and fruit crops are grown on the outskirts of major cities.
- If a pest is going to be a problem it is likely to be a problem first in someone's backyard in the city.
- Cities also have one other feature – a high human population which we can engage in surveillance.

- WA has targeted professional pest control operators (PCO'S) as a special group which can be engaged in surveillance for exotic pests. Apart from encouraging interaction with this group via the provision of a free identification and information service, the Department makes presentations on a regular basis to industry meetings including the annual national meetings. Since 1997, this interaction has paid off with PCO'S reporting two species of exotic termites on private boats (both eradicated), 5 cases of drywood termite infestations (all eradicated) and a case of Tropical Fire Ant (eradicated).

- There is a national trend towards cost-recovery for Government services via a 'user-pays' philosophy. In some States, the pest control industry is seen as a 'user' of Government services and so PCO'S are charged an identification fee for insects they submit. This can only act as a disincentive for PCO'S to use Government identification services and actively participate in surveillance thereby reducing the opportunities for exotic pests to be detected. In States/Territories where a service is either not provided or the public is charged for identifications made by Government personnel, there is little incentive for the public to engage in surveillance for exotic pests and diseases. Costs data for the RIFA and Papaya Fruit Fly eradication programs in Queensland demonstrate how an investment in surveillance activities, both targeted and via engagement of the public, has the potential to provide large returns on investment. At $175.4 and $35 million respectively in terms of national funding, small reductions in the time to detection of these pests would have the potential for considerable savings in expenditure. Additionally, the probability of achieving eradication would be increased.