SCIENCE AND RESEARCH DIVISION

Undertakes strategic science and research that underpins the growth, sustainability and biosecurity of primary industries in NSW.

Science and Research Division

Nature and scope of activities

NSW DPI, through the Science and Research Division, undertakes over 80 per cent of public sector research and development (R&D) for prmary industries in the State. Research conducted by NSW DPI is world class and was recently ranked in the top one per cent of world research institutions in agricultural science, and plant and animal science.

Our role is to develop innovative solutions and technologies to enhance the growth, sustainability and biosecurity of NSW primary industries. To achieve this, we coordinate research investment across hundreds of projects, foster alliances and cooperative ventures, conduct testing for industry at internationally accredited laboratories and lead agricultural policy development.

The Division employs over 800 professional and technical staff, who work from centres of excellence and research stations across the State. The Division comprises six branches:

- **Production Research** – provides research and develops improved technologies to enhance the productivity and sustainability of horticulture, viticulture, animal production and aquaculture industries in NSW.
- **Resources Research** – responsible for four major programs: Forest Resources, Salinity and Catchment Hydrology, Climate Sciences and Irrigation Research, and Soils, Recycled Organics and Remediation Technologies.
- **Systems Research** – responsible for five major programs: Aquatic Ecosystems, Northern Farming Systems, Pastures and Rangelands, Southern Farming Systems, and Wild Fisheries.
- **Health Science, Strategic Alliances and Evaluation** – responsible for five major program areas: Plant Health Sciences, Animal Health & Food Sciences, Vertebrate Pest Research, Weeds Research, and Economics Research, and also coordinates NSW DPI's strategic science alliances and economic evaluation.
- **Research Operations** – responsible for managing biometrics, taxonomy and, commercial diagnostic laboratories for veterinary pathology, analytical chemistry, residues analysis and plant health. The Branch also coordinates centres of excellence and animal ethics committees.
- **Rural Innovation** – delivers world class research and development in plant and animal genetics and biotechnology.

In 2005-06, our budget was $80.9 million, half of which came from external sources. The return on that investment is estimated to be, on aggregate, in the order of 15 to 40 per cent with additional environmental and social benefits of at least the same order.

Major outcomes achieved

Innovative technologies and practices

FutureDairy

The $10.6 million FutureDairy project, a partnership involving NSW DPI, Dairy Australia, Sydney University, DeLaval and industry partners, is delivering results. As part of the project, we are adapting and evaluating an automated milking system for Australian pasture-based dairy farm conditions, with a view to improving the working environment and lifestyle of dairy farmers.

Another FutureDairy module targets improvements to pasture and feeding management with the aim of increasing dairy productivity and profitability to well above current industry standards. Results to date include the finding that fodder production is significantly boosted when three complementary crops are grown in succession. Examples are nitrogen-fixing crops such as legumes, deep-rooted plants (eg canola), and a bulk crop (eg maize).

An automated milking system has been installed at the Elizabeth Macarthur Agricultural Institute and is being adapted for Australian conditions as part of the FutureDairy project.

Electronic sheep management

As a NSW DPI research scientist told growers at a 2006 conference, the 'modern face' of sheep farming is individual animal management. And, with recent research breakthroughs on the use of electronic tags, this is closer to becoming a reality.

NSW DPI and the Sheep Cooperative Research Centre achieved a number of advances in 2005-06 including:

- automated measurement options such as on-farm fibre measurement
- new measurement tools, such as walk-through weighing
- radio frequency identification, integrated with measurement systems, which allows for more efficient data capture, data storage and information recall
- the capacity to make selection decisions in real time that either eliminate the need for permanent identification and/or allow adding of further data to historical information so that decisions can be made on the spot.

One of the research components was a pilot project to test the use of electronic tags in determining pedigree in sheep flocks, normally a time-consuming and expensive process. The pilot found that ewes and lambs could be associated by their proximity on sequential reading of electronic tags at a single point.

Uptake of biometrics research

Multinational companies Pioneer and Monsanto are among 800 licensees of ASReml, a bioinformatics package that reflects the latest developments in residual maximum likelihood research. NSW DPI developed the first version of ASReml and prepared the mark II package for public release with IACR-Rothamsted. ASReml was originally developed because of a need to analyse large amounts of complex data arising in crop variety evaluation programs. The new version is relevant to both plant and animal breeding.

Crop and pasture variety releases

NSW DPI licensed seven crop and pasture varieties for commercialisation in 2005-06. Varieties released include:

- Yurambie – a high yielding, disease-resistant feed barley suitable for the south-western slopes of NSW and Victoria. The grower-owned Waratah Seed Company markets the barley.
- Pegasis – a high yielding lucerne variety that has excellent pest and disease resistance and is suitable for short-term rotational cropping systems. Pegasis is the first variety released by the Lucerne Alliance that comprises NSW DPI, the Grains Research and Development Corporation and SeedMark.
- Durum wheat line (line E) – a high yielding, disease resistant durum wheat cultivar for pasta and couscous production. Line E is suitable for all Australian growing regions.

Eradicating and managing risks posed by pests, diseases and chemicals

QX-resistant Sydney rock oysters

With funding from the Fisheries Research and Development Corporation, NSW DPI is investigating disease resistance mechanisms in collaboration with Macquarie University and working closely with the industry-based Select Oyster Company to promote adoption of selectively bred Sydney rock oysters resistant to QX disease. The project has released over 9.5 million resistant oyster spat to industry this year.

The project builds on NSW DPI's Sydney rock oyster breeding program, the success of which was demonstrated in experiments in the Hawkesbury River. These showed significant increases in oyster survival and growth rates in selectively bred oysters compared to controls, confirming earlier laboratory-based results. QX mortality was reduced to 13 to 20 per cent, compared to 70 to 80 per cent in controls, and the oysters were nearly a third larger.

Integrated pest management for lettuce

NSW DPI is leading a national integrated pest management (IPM) project, funded in part by Horticulture Australia and AUSVEG, to control the currant lettuce aphid. This is an exotic pest that has become established in Australia. The aphid could be potentially devastating for the lettuce industry because it prefers to shelter within the lettuce head and hence is difficult to reach with foliar insecticides. It has also developed resistance to all chemicals previously used against it elsewhere in the world.

The national project aims to develop and demonstrate IPM of currant lettuce aphid and other lettuce pests, identify regional barriers to IPM adoption, and address some of those barriers. This financial year the project focused on evaluating IPM strategies on demonstration sites in Tasmania and Victoria. Use of an IPM strategy over a single season was shown to be effective in Tasmania; however, further testing is needed in a wider variety of conditions and growing areas.

Controlling disease in pigs

In 2005-06 the Australian Research Council announced a $1 million grant for a research project to find an antibiotic-free control of proliferative enteropathy, commonly known as ileitis, a significant disease in pigs. The three-year project, to be conducted jointly by NSW DPI, the University of Sydney and a German pharmaceutical company, will develop management options, including vaccination, to control the disease that affects nearly 56 per cent of Australian pig herds.

Carp management

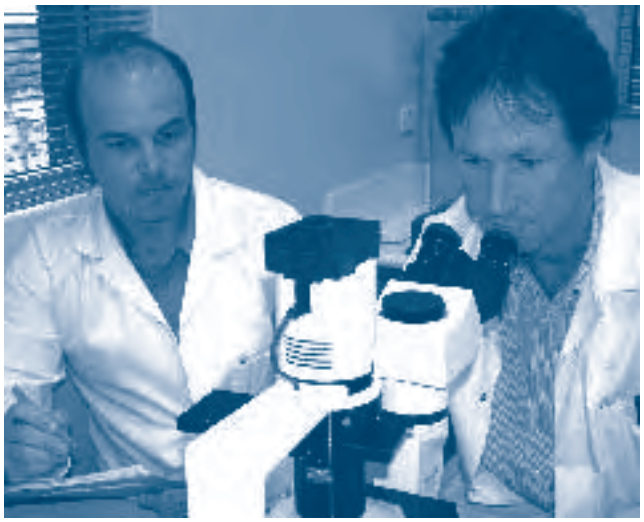
Under a Pest Animal Control Cooperative Research Centre project, NSW DPI made some important findings on the population dynamics of carp in NSW. We found that carp

reproduction is restricted to a small number of key spawning areas rather then widely spread throughout river systems. This has important implications for carp management, as we can now target carp control activities at a relatively small number of 50-kilometre reaches.

A new project funded by the Invasive Animals Cooperative Research Centre will use the Barmah-Millewa Forest on the Murray River floodplain as a demonstration site for targeted carp control. The forest covers 70 000 hectares upstream of Moama-Echuca and has been identified as the source of most carp recruitment in the Murray – Riverina.

Accreditation for dioxin testing

NSW DPI laboratories at Wollongbar received internationally recognised NATA accreditation for a new DR CALUX® test for dioxins and dioxin-like contaminants in food and the environment. The test, which is cheaper and faster than traditional tests, will improve the management of contaminated sites and potentially increase food safety. It gives an extremely accurate measure of the dioxins and dioxin-like polychlorinated biphenyls that may be present in fish, animals, soils, sediments and food. The NSW DPI laboratory is the only laboratory in Australia to have received NATA accreditation for this test.



Senior Research Scientist Lukas Van Zwieten (left) and Environmental Scientist Steve Kimber evaluate cells used in the CALUX test licensed by NSW DPI to accurately detect dioxins in seafood.

Agricultural scientific collections

NSW DPI completed over 15 000 identifications of insects and mites including identification from samples gathered in surveys for exotic fruit flies, yellow crazy ants, red imported fire ants, currant lettuce aphid, western flower thrips, Asian gypsy moth, wheat curl mite and grape phylloxera. This produced over 8000 additional records for the Agricultural Scientific Collections Unit insect and mite database.

Samples examined for the presence of suspected exotic species resulted in the detection of the currant lettuce aphid in NSW and an incursion of verticillium wilt in lucerne seed.

Sustainable development

Conservation farming

Commercialisation of NSW DPI's StubbleStar® invention is proceeding through the Weeds Cooperative Research Centre. StubbleStar® is a novel seeding attachment that reduces weeds by up to 30 per cent and fuel use during sowing by up to 60 per cent, thereby reducing the risks that pests and chemicals pose. The StubbleStar® team was successful in obtaining additional funding for commercial prototypes, market analysis and business planning. ABC TV's New Inventors program featured the invention in the November 2005 finals.

Salinity management

Collaborative research led by NSW DPI with contributions from the Department of Natural Resources on the causes of salinity is delivering results that challenge conventional thinking on effective salinity management in NSW. The findings are from an intensive study of eight key sites that represent a variety of climate, geology and land uses across the State. One of the sites has quantified that conversion from annual crops to perennial pasture with tree belts has reduced recharge to below measurable levels and halved the amount of salt and water leaving the catchment. Other sites are showing that:

- introducing perennials to cleared land will not necessarily address salinity
- salinity investments must be based on a thorough understanding of local hydrology and geology
- salt movement to streams can be significantly reduced by managing soil health and ground cover – both of which will improve farm productivity
- removal of annual crops from some alluvial flats would allow encroachment of saline aquifers onto prime agricultural land.

Role of recycled organics in mine site rehabilitation

Recycled organics are proving to be very effective amendments for use in the rehabilitation of open cut mine spoil. The use of recycled organics provide nutrients whilst ameliorating the possible negative effects of mineral fertiliser. Understanding the role of different recycled organics products in maximising the survival and growth of plantation species allows appropriate combinations of recycled organics to be used to overcome site specific problems. Recent examples include the following:

- recycled organics (soil conditioner, municipal waste compost) improved survival rates compared with other treatments
- biosolids, and biosolids in combination with mulch, improved growth

- amendment of the soil with recycled organics (in particular mulch) increased soil moisture.

Mulch significantly reduced the weed growth (particularly in biosolids plots) in addition to improving soil moisture and moderating soil temperature. These conditions led to improved tree growth, superior to that of biosolids or fertiliser alone.

Barking owl research benefits foresters

New knowledge about a vulnerable species, the barking owl, is delivering two-fold benefits in the central north of NSW.

Following discovery of a substantial population of barking owls in the Pilliga State Forests, NSW DPI researchers studied the owls' habitat requirements. The research findings then fed into the development of a new set of forest management prescriptions for the species in the Southern Brigalow Region. The prescriptions should not only increase protection for the owl and its habitat, but also reduce the level of uncertainty sawmillers face about future wood supplies in the region.

Grey nurse shark reproduction

In 2006 NSW DPI commenced research into artificial breeding of the endangered grey nurse shark. Progress to date includes:

- an initial examination of the histology of the female grey nurse shark reproductive system
- collection of samples from female wobbegong sharks which are being used as a 'model' for grey nurse sharks
- examination by ultrasound machine of embryonic development in pregnant wobbegongs
- construction of a prototype artificial uterus.

Doctor Megan Storrie, Shark Reproductive Biologist from the Port Stephens Research Centre working with a live transponder tagged Wobbegong shark.

Havens improve recreational fishing

NSW DPI scientists recently compared the catches of recreational fishers in two NSW estuaries before and after they were declared recreational fishing havens. The goal in establishing the havens, which are either fully or partially closed to commercial fishing, was to improve recreational fishing opportunities.

Detailed research studies on recreational fish catches were completed in Lake Macquarie and Tuross Lake during 1999-2000, before declaration of the havens, and repeated in 2003-04 after haven implementation. The study showed that estimated total catches of some key species such as bream, whiting, and flathead were greater in the post-haven period, as were the average sizes of the same key species.

Restoring agriculture in Aceh

A team of NSW DPI scientists is working in eastern Aceh, Indonesia, to rehabilitate soils and restore cropping following the December 2004 tsunami. The Australian Centre for International Agricultural Research is providing funding.

The team's first steps included training local staff in the use of an EM38, which can measure salinity in soil to a depth of one metre. This allowed farmers to avoid trying to establish crops on highly saline soil that would result in crop failure.

Communities and primary industries prepared for managing risks

Seasonal climate forecasts for wool producers in western NSW

A three-year research program based at Trangie Agricultural Research Centre has shown that the Southern Oscillation Index Phase System, with outlooks based on (simulated) pasture growth rather than rainfall, is the best seasonal risk assessment method for western NSW.

The system is most reliable in winter and spring. To assist graziers with decisions at other times, the project defined trigger points for decision-making based on historical patterns of pasture growth. Trigger points are calendar dates defining the start of periods of minimum or maximum growth potential and are critical to decisions on the sale or purchase of stock. The research defined pasture growth profiles for 27 locations which landholders can use to define the trigger points for their properties. The report on the research findings, *Betting on rain: Managing seasonal risk in western NSW*, is available free to landholders.

Climate risk management tools

CropMate was developed to provide farmers with a formal tool to integrate decision making at the strategic, tactical and operational levels. The framework (CropMate) is a spreadsheet based tool that integrates up to date climate data with enterprise budgets. It was developed

in conjunction with farmers and NSW DPI advisory staff and is being further modified to be delivered through the Climatology in Agriculture extension program.

The *Climate Drafting Gate* was developed through the Land, Water and Wool Alliance for the high rainfall and sheep-wheat belts of Australia by a team of research and extension staff from NSW DPI, South Australian Research and Development Institute and Queensland Department of Primary Industries and Fisheries. The *Climate Drafting Gate* is a series of 'climate basics' fact sheets and accompanying spreadsheet based tool that directs users to the most relevant climate information on the Internet.

The Climate Variability Analyser (CVA) was developed to assist climate researchers better understand the climatic risks associated with different periods of crop growth (e.g. risk of frosts at flowering, probability of seasonal break). The CVA is a tool to easily analyse and visualise historical climate records, crop yields and other variables of interest that are routinely used in seasonal climate forecasting studies.

Increasing industry competitiveness

New feed testing service

The State's first comprehensive Feed Quality Service, which can make an objective assessment of livestock feed quality, started operation in May 2006 at Wagga Wagga's Agricultural Research Institute. Assessment allows primary producers to compare feeds according to nutritional value and value for money. The service, which is NATA-accredited, is tailored to producers' needs for assessing pasture, hay, forage, silage, grains or mixed rations.

NSW DPI continued to promote laboratory testing of feedstuffs through programs like PROGRAZE and TopFodder Silage as part of standard management practice to minimise costs and maximise profits. Both objectives have become even more important as beef and lamb production systems intensify and the use of supplementary feeds increases.

NSW Centre for Animal & Plant Biosecurity

In March 2006, the Minister launched the NSW Centre for Animal and Plant Biosecurity, an alliance between NSW DPI's Elizabeth Macarthur Agricultural Institute and the University of Sydney's Veterinary and Agriculture Faculties. The Centre will be a key node of our national biosecurity science network.

Benchmarking our research

As with most science based organisations NSW DPI assesses the performance of its research work by reviewing the impact of its research publications compared to other similar organisations. An independent international organisation, Thompson ISI, ranks NSW DPI in the top one per cent of institutions world wide in the fields of Agriculture and Plant and Animal Science based on the impact of its publications. This comparison is based on indexing over 8700 internationally peer-reviewed journals in the sciences, social sciences and the humanities, and is the largest interdisciplinary database in the world.

Similarly Australian benchmarking shows that the Department's scientists have a high impact in the Australian science community. For example, in 2006 Departmental scientists contributed to three out of the top twenty most read articles in the Australian Journal of Entomology including the most widely read article.

The high impact of Departmental science is a strong indicator of the quality and of the relevance of Departmental research. We continue to monitor these trends to ensure that NSW DPI science is oriented to the needs of our stakeholders, is of a high quality, and is widely disseminated.

Significant issues

Maintaining disease response capability

NSW DPI maintains 11 NATA-accredited veterinary, plant health and chemical diagnostic laboratories to enable the state to respond to exotic disease outbreaks and food safety emergencies. To partially offset the $12 million annual cost of maintaining this capability, we provide a commercial diagnostic and analytical service to internal and external clients. Earnings from the service in 2005-06 were less than predicted due to the drought and changes in the international market place.

To manage the setback we:

- restructured veterinary diagnostic activities to reduce costs while maintaining the service levels
- broadened the service base by introducing new and expanded commercial services in olive oil testing, feed quality analysis and dioxin detection
- improved capability for detecting an expanded range of pesticide residues in fruit and vegetables.

Continued careful management of commercial services together with capture of emerging opportunities should enable us to maintain a cost effective response capability which is an important public benefit.

Evaluating environmental and social public goods

The nature of applied primary industries R&D is such that nearly all research projects provide a complex mix of public and industry benefits which are economic, environmental and social in nature. But, unlike economic benefits, environmental and social impacts are difficult to assess. To take the subjectivity out of assessment, NSW DPI is working with economists and biologists at Charles Stuart University and the University of New England to integrate

farm and catchment-level bio-economic modelling with ecological modelling and environmental valuation research.

Science Review

In July 2005, the then Premier established a Review of Scientific Research in NSW Government Agencies. As the largest research organisation reviewed, NSW DPI provided substantial information on its research portfolio and the significant public benefits derived from this research investment. This is the latest in a number of reviews of NSW DPI research or that conducted by the former agencies incorporated in NSW DPI. The review will enable a greater understanding of the extent and complexity of NSW DPI research as well as the significant economic, environmental and social benefits of this research.

Future directions

The development in 2005-06 of a three-year strategy for science and research priorities in the primary industries sector will provide our research with even greater focus. The strategy centres on developing innovations, increasing market access for NSW producers, and improving risk management. It also outlines government priorities, targets and performance indicators until 2008 along with a framework for investment that aims at maximising stakeholder benefits.

Under the strategy, decisions on research funding will be made after determining the:

- appropriateness of the issues – addressing questions such as market failure, alignment with corporate goals and state priorities, problem significance, appropriateness and capacity of the agency, and industry priority and support
- efficiency of investment strategies, including likely return on investment and achievement of targeted outcomes at least cost
- effectiveness of research and development approaches, including the likelihood of success, identification of beneficiaries and capacity to extend new knowledge.

The full strategy is on the NSW DPI website at www.dpi.nsw.gov.au/aboutus/resources/majorpubs/corporate/primary-industries-science-research-strategy-2005-08.

Science and Research Divisional performance

	Units	2003-04	2004-05	2005-06
Outcomes:				
New crop/pasture varieties released	no	6	5	4
State market share of varieties developed by the Department				
wheat	%	31	35	40
canola	%	55	55	55
soybeans	%	85	85	85
chickpeas	%	60	65	50
lupins	%	60	65	55
lucerne	%	40	45	40
Formal alliances with universities and other research partners	no	21	24	32
Outputs:				
Scientific and educational publications	no	797	804	1237
Intellectual property arrangements in place	no	65	68	72
Samples processed by departmental laboratories	no	409 637	270 000	265 319

CASE STUDY

Excellence in service delivery to stakeholders

The good oil

The Australian olive industry is reaping the benefits of access to a one-stop-shop for olive oil research, commercial testing and technical information. This is the Department's Olive Oil Research and Diagnostic Laboratory at Wagga Wagga. Accredited to international standards, the laboratory is the only one in Australia able to service all the olive oil industry's needs and has gained a reputation for excellence both nationally and overseas.

Nearly all Australian olive oil is screened through the laboratory. Although Australia is only a small producer by global standards, our extra virgin quality olive oil constitutes eight per cent of the world's premium product. With half of this oil sold overseas, the laboratory enables the Australian product to meet stringent export quality assurance requirements.

The laboratory's commercial arm, which undertakes chemical analysis, has grown more than tenfold in the past four years. Given predictions that the Australian industry will triple in size by 2010, demand for chemical analysis should continue to soar, as should demand for organoleptic testing.

Organoleptic testing is subjective testing using the human senses. In establishing the service, NSW DPI set up a 21-person sensory panel, which trained under international experts for three years. Now certified by the National Association of Testing Authorities, the panel is unique in Australia and highly regarded within the industry. The Australian Olive Association deems it 'an invaluable resource for our Australian olive oil industry and the authenticity of extra virgin olive oil'.

As the laboratory pushes for higher accuracy and speed, it must continually develop new methods and equipment. One priority will be adopting better methods to identify fraud and adulteration of olive oil, which is becoming more difficult to detect through traditional means. Through close affiliation with European laboratories and commitment to excellence, the NSW DPI laboratory is determined to maintain its status as a cutting edge facility.

Photo caption: Dr Rod Mailer, Principal Research Scientist (right), and Mr Jamie Ayton, Technical Officer, discuss an olive oil sample sent to the Wagga Wagga laboratory by the International Olive Council (IOC). This is being analysed as part of the annual accreditation of the laboratory by the IOC.

CASE STUDY

Excellence in service delivery to stakeholders

Sowing the seeds for success in Cambodia

For poor farming families in upland Cambodia, a current NSW DPI project will potentially do more than lift their agricultural output. It will improve their standard of living.

Begun in 2003, the project aims to help overcome social, economic and production constraints to crop diversification in Cambodia and introduce better agronomic management practices. And, according to a recent review, it should have a huge impact.

The focus crops – maize, soybeans, peanuts, mungbeans, sesame and cowpeas – are showing good yields and individual farmers are taking up some of the techniques promoted through trials and field days. These include the environmentally sound practices of zero tilling, crop residue mulching and integrated pest management, an approach that encourages reduced pesticide use.

For the farmers in the Battambang and Kampong Cham provinces where the project is running, the longer-term results will be increased cash income and greater food security. Progress is already evident in significant capacity building within the Cambodian agricultural fraternity as the farmers and project team members work in partnership on local research.

The NSW DPI team is funded by the Australian Centre for International Agricultural Research and is led by Dr Bob Martin. The other team members are economists Dr Bob Farquharson and Fiona Scott, research agronomist John Holland and district agronomist Stephanie Belfield.

Photo caption: Cambodia case study - John Holland Research Agronomist Tamworth, Australian volunteers Wes Leedham and Kelly Baker taking soil samples in Kampong Cham Province Cambodia.

BIOSECURITY, COMPLIANCE AND MINE SAFETY DIVISION

Manages biosecurity risks impacting on NSW primary industries to enhance market access, protect human health and the environment. Responds to emergencies and disasters and promotes safety in the mining industries.

Biosecurity, Compliance and Mine Safety Division

The Biosecurity, Compliance and Mine Safety Division manages biosecurity risks impacting on NSW primary industries to enhance market access, protect human health and the environment. We also respond to emergencies and disasters and promote safety in the mining industry.

The Division comprises six branches:

- **Animal and Plant Biosecurity** – safeguards domestic and export markets for NSW agricultural products.
- **Surveillance and Biosecurity Operations** – provides accurate and timely surveillance information and operational responses.
- **Emergencies and Strategic Response** – minimises the impact of pests, weeds, disease, natural disasters and agricultural and animal emergencies.
- **Compliance Standards** – manages the Division's legislative program and coordinates input to legislative review and new proposals.
- **Agriculture and Fisheries Compliance Operation** – ensures compliance with NSW DPI legislation on agriculture and fisheries.
- **Mine and Forest Safety Performance** – develops and manages policy, systems, regulation and enforcement to improve mining industry safety.

Major outcomes achieved

Minimise risks posed by pests, disease and chemicals

Australia declared BSE-free

One of the year's highlights was recognition by the World Organisation for Animal Health of Australia as a country free of Bovine Spongiform Encephalopathy (BSE) – a result achieved after sustained surveillance and monitoring of the ban on feeding meat products to ruminants. BSE-free recognition crowns years of effort by NSW DPI and Rural Lands Protection Board staff, private practitioners and cattle producers. This ensures continued market access for Australia's $4.9 billion beef export industry.

National identification of cattle, sheep and goats

To meet our international and national market access obligations for animal health, implementation of the National Livestock Identification System for cattle continued throughout the year. All cattle must now be identified with an electronic tag and their movements recorded on the national database. Monitoring of saleyards and abattoirs confirmed a progressive increase in the number of cattle scanned and uploaded into the database. NSW DPI worked closely with Meat and Livestock Australia (which manages the database) to enhance our ability to trace and monitor the movements of stock of regulatory interest, such as imported and stolen cattle. The successful implementation of the system allows NSW to abolish the use of tail tags, a much more limited tracing device, from 1 July 2006.

The National Livestock Identification System for Sheep and Goats commenced on 1 January 2006 with the requirement that all lambs and kids born after that date must be identified with a visually readable ear tag. All sheep and goats movements must be recorded on a movement document. NSW DPI is developing procedures to monitor system compliance and effectiveness over the next year.

Property identification codes (PICs) are fundamental to the operation of the systems for both cattle and sheep and goats. A major review of our PIC register over the past two years will ensure that available data is as complete and accurate as possible. There are currently about 82 000 PICs allocated in NSW.

Ovine Johne's disease management

Following a review, NSW DPI revised the animal health statement to simplify the form and make it easier for purchasers to detect risky sheep. The renamed sheep health statement commenced in April 2006.

We also conducted an internal review of Ovine Johne's disease (OJD) exclusion areas. The majority of Rural Lands Protection Boards involved indicated their continuing support for the concept.

Abattoir monitoring for OJD continued in the four major export abattoirs, underpinning the division of NSW into high, medium, low and very low prevalence areas and driving the uptake of OJD vaccine. Monitoring showed a marked reduction in OJD-positive consignments from the high prevalence area compared with previous years, possibly due to the high level of OJD vaccination. Monitoring also established that few sheep from the very low prevalence area were OJD-positive. This finding enabled producers in this area to reduce costs by limiting vaccination to abattoir-positive and high value flocks.

Abattoir monitoring of other sheep diseases

In January 2006, abattoir monitoring of adult sheep for OJD was extended to include monitoring for other conditions including endemic diseases such as liver fluke, hydatids, tapeworm cysts, nodule worm damage to intestines and pleurisy/pneumonia. Analysis of more than 1200 abattoir lines confirmed the presence of liver fluke damage in 36 per cent of lines and 14 per cent of all animals inspected. Hydatids, which affect human health, were detected in one per cent of lines inspected.

Newcastle disease

Now in its fifth year, the Newcastle Disease National Management Plan aims to reduce the risk of Newcastle disease of both endemic and exotic origin. The cornerstone of the plan is compulsory vaccination of commercial chicken flocks in different jurisdictions. NSW led the way through the early establishment of a vaccination registry under the management of a senior veterinarian and this year audited vaccination outcomes. The audit contributed significantly to the on-going refinement of vaccination requirements.

The plan's success is evident in the lack of Newcastle disease outbreaks in poultry since the introduction of compulsory vaccination.

Pest animals

NSW DPI is the principal agency in pest animal control, providing legislative support, research, training and extension services to pest managers and landowners. This year we boosted control capacity by training 64 front-line pest animal managers from across a range of agencies and industry. The NSW Department of Environment and Conservation has recognised the comprehensive nature of the training and will only authorise officers to use 1080 poison after they have completed the program.

NSW DPI coordinated the annual wild dog aerial baiting program in the NSW eastern tablelands where significant livestock losses occur. This year the Australian Department of Environment and Heritage determined that the program was not environmentally damaging according to Commonwealth legislation, a critical decision as far as its long-term viability is concerned.

Aerial baiting, which is part of an integrated control approach, led in 2005-06 to a decrease in the number of reported cattle and sheep deaths caused by wild dogs.

NSW DPI Vertebrate Pest Management Course coordinator (Rob Williamson) explains some of the pest animal trapping options to this year's capacity filled class that were representing ACT Government, regional councils, private contractors and other NSW government agencies.

Biosecurity, Incident Response and Tracing system (BioSIRT)

May 2006 marked the launch of an important national project. This was the development of BioSIRT, a standardised national system that NSW DPI will use in planning for and responding to emergencies and conducting biosecurity surveillance and related activities. NSW DPI will guide the design phase of the project and has appointed a manager to supervise the design process.

When complete, BioSIRT will allow a consistent national response to possible events such as an avian influenza outbreak and alleviate some of the historical cross-jurisdictional problems of the past in managing emergencies across state borders.

Plant pest incursions

NSW DPI undertakes surveillance to identify new plant pest incursions into NSW and, if detected, to map their distribution – actions that aim to ensure optimal access for NSW producers to Australian and overseas markets. This year major surveillance operations centred on one actual and one potential horticultural threat.

Intensive surveillance of the currant lettuce aphid *Nasonovia ribisnigri*, a serious pest of lettuce in Europe and New Zealand, confirmed that the aphid was widespread in the Sydney Basin and evident in a number of other areas. In total there were 336 inspections involving a wide range of NSW DPI personnel, many working in an emergency plant surveillance operation for the first time.

The yellow leaf curl virus affects tomatoes but also has a wide host range including capsicums, eggplants and beans as well as some nursery plants and weed species. NSW DPI horticulturalists began intensive surveillance of tomato crops in April 2006 but by mid June had made no positive detections. The survey was important in determining regional virus status and whether NSW should impose movement restrictions and/or treatment conditions on tomato seedlings, plants or fruit from Queensland, which are virus-affected.

Weed control

NSW DPI boosted the skills of farmers and others at the frontline of weed control through the award winning Weed Ed project. Developed in conjunction with the Weed Cooperative Research Centre, the project included training for local government weed officers and preparation of resources to improve weed management and reduce tillage and residual herbicide use. It won the 2006 Australian CRC Association innovation award for Education, Training and Public Outreach.

In addition, NSW DPI supported commencement of the amended *Noxious Weeds Act 1993* by conducting a series of briefings to local control authorities. The amendments are

assisting local government carry out weed control functions by making responsibilities clearer, and improving their ability to address potential weed problems.

Chemicals in aquaculture

Following detection of unapproved chemicals in domestic and imported fish, NSW DPI initiated a project to promote more responsible chemical product use in the aquaculture industry. We worked closely with the National Aquaculture Council, the Australian Pesticides and Veterinary Medicines Authority and NSW fish producers to put in place a more effective process for gaining access to approved chemicals. The new process will assist NSW and national expansion of an industry in which few approved products are available for disease and pest control.

Plant biosecurity

NSW DPI coordinates NSW Government's input into Australian policy development on the importation of agricultural plant products by reviewing Biosecurity Australia's import risk analyses. In 2005-06 we reviewed reports on the importation of table grapes from Chile, sweet oranges from Italy, Tahitian limes from New Caledonia, pears from The People's Republic of China and apples from New Zealand. These reports were examined from a NSW perspective and comments provided to Biosecurity Australia.

In other biosecurity activities over the year, we led surveillance of the exotic pest yellow crazy ant on Goodwood Island at the mouth of the Clarence River. The Goodwood Island port supports weekly traffic to Norfolk and Lord Howe Islands and so biosecurity risks are significant.

Fruit fly

The major developments with important economic consequences in 2005-06 were the reinstatement of all production areas in the fruit fly exclusion zone (which includes Hillston, Griffith, Leeton and Narrandera) for domestic trade and the determination that conditions for greater trade access, especially to the United States, had been met. Reinstatement allows fruit to move from these areas without the need for treatments for fruit fly.

NSW DPI staff check fruit to ensure enhanced market access.

Communities and primary industries prepared for managing risks

Preparedness for avian influenza

The presence of highly pathogenic avian influenza in many parts of the world continues to present a risk to Australia, although that risk is currently estimated as low. NSW DPI was active on a number of fronts to reduce the risk of the disease, minimise the impact of an outbreak and educate both industry and the general public. Our aim is to ensure an effective whole-of-government response.

In order to have the right framework in place, NSW DPI developed and reviewed policies and response procedures, including procedures for in-house destruction and disposal of commercial poultry and the establishment of local control centres. Veterinary field staff coordinated workshops around NSW on world trends occurring with avian influenza, the clinical signs of the disease, collection of samples, and institution of health precautions. All participants found the workshops informative.

On-farm exercises improved local preparedness for a possible outbreak while Exercise Eleusis tested overall readiness at state level. This national exercise confirmed that NSW systems and arrangements are robust and suitable for responding to an avian influenza incident. The lessons that NSW DPI, other NSW government agencies and industry learned in the process are being integrated into our on-going preparedness program.

In view of the need for coordinated public communication in the event of an outbreak, NSW DPI facilitated the development of state-level policies and protocols on media and public relations management. We published a range of informative material to ensure that the public and industry have the facts on avian influenza.

A national emergency plant pest response

In 2005-06 NSW, along with the Australian Government and all other state and territory governments, signed the Emergency Plant Pest Response Deed. The deed, which the majority of Australian crop and horticulture industries and Plant Health Australia also signed, provides a cost-sharing framework to manage disease and pest outbreaks currently exotic to Australia. It will maximise the potential for eradication or effective control of pests and assist in maintaining the disease-free status of many Australian crops. All signatories to the deed must develop biosecurity plans for relevant industries.

Drought assistance

Assisting producers affected by the prolonged drought remained a critical area of activity. At 30 June 2006, 89 per cent of the State was drought declared.

During 2005-06 NSW DPI:

- handled over 652 calls on the drought hotline
- processed 14 785 transport subsidies worth more than $14.7 million for agistment, fodder and water.

Rural communities continued to praise the work of our drought support workers in assisting producers to deal with the impacts of drought.

NSW emergency pest and disease first response team

The annual team review led to the establishment of a new-look team that includes staff from all NSW DPI branches and some Rural Lands Protection Board personnel. Activities aimed at enhancing the team's preparedness for a pest and/or disease incursion included:

- workshops to develop response skills, supporting policies and procedures and operational systems
- training for personnel to gain relevant national competencies
- simulations to test systems, procedures and policies.

Next year the team will expand to include some of the 300 NSW DPI staff who expressed interest via survey in assisting with emergency response.

Response to general emergencies and natural disasters

NSW DPI responded to eight emergencies over the year and provided assistance to approximately 310 rural producers. A key element of the bushfires assistance was the successful fodder donation scheme, a joint initiative with the NSW Farmers' Association.

There were 18 agricultural natural disasters which caused over $51 million in damage. The main form of assistance provided was low interest loans through the Rural Assistance Authority.

FrontGate

As part of boosting management capability for emergencies, natural disasters and disease incursion, NSW DPI completed development of a web-based inquiry system for land ownership and rural property identification. This will enable us to identify and contact relevant property owners in the event of any emergency. We are now rolling out FrontGate, as the system is known, to NSW DPI staff and conducting a small trial with Rural Lands Protection Boards. The Department intends to enhance the systems functionality so that rural clients can report the geographic locations of specific problems such as flood bound livestock.

Positive and productive partnerships

Rural Lands Protection Boards

NSW DPI works closely with Rural Lands Protection Boards and producers conducting surveillance to protect the State's livestock and livestock products. Together we look for the presence of exotic and notifiable endemic diseases and track other endemic diseases trends.

The already sound relationship between NSW DPI and Rural Lands Protection Boards will become even stronger after a review of the current memorandum of understanding on inter-agency cooperation. Both staff and stakeholders will make an input to the review.

All joint committees will continue to have a balanced NSW DPI/RLPB membership in the interest of coordinated policy development and communication.

NSW DPI contributed $475 000 to the State Council of Rural Lands Protection Boards to assist them with operational activities. A further $70 000 was also contributed to State Council for the Travelling Stock Reserves capital works fund.

Further cementing the relationship, 12 board officers commenced the Certificate IV in Government (Statutory Compliance) course that NSW DPI is running for our own compliance officers.

A cooperative approach to pesticide residues in food

Together with the NSW Food Authority and Department of Environment and Conservation, NSW DPI analysed the NSW management framework for pesticide residues in food products. The analysis identified opportunities for increased efficiencies through reducing duplication in the three agencies' policy, regulatory and advisory activities and through improving coordination.

A joint strategic plan for the future management of pesticide residues in food is now under development and will include innovative proposals for monitoring and surveillance.

Community confidence in primary industries is enhanced

Electronic cattle tick surveillance for the Queensland border

The cattle tick, *Boophilus microplus*, is the most serious external cattle parasite in Australia. If uncontrolled, it would cause severe financial loss to the beef and dairy industries. Stockowners and NSW DPI are therefore working together to control and eradicate the tick in the far north-eastern corner of the state.

Electronic surveillance is currently in place to monitor livestock transport movements from the Queensland cattle tick-infested area into NSW. Following the development of project specifications this year, electronic surveillance will be

extended in 2006-07 to all crossings that adjoin the infested area of Queensland. The project will enhance surveillance of border crossings at a reduced cost.

Joint seafood compliance operation

In a three-month compliance operation, NSW DPI and the NSW Food Authority checked close to 300 restaurants, seafood retailers, wholesalers, processors and commercial fishers between Tweed Heads and Eden. Officers determined if seafood had been obtained legally, if the sale description was correct, and if the product had passed all NSW Food Authority requirements relating to traceability and correct labelling.

We found substantial levels of product substitution and incorrect labelling of the country of origin. In total there were 255 offences. As a result, the Food Authority took evidence for three prosecutions for substitution and labelling offences and issued 39 penalty notices and over 200 warning letters.

Compliance with NSW fisheries legislation was however very high. NSW DPI issued 19 written cautions and 5 penalty infringement notices.

New vessel on patrol

In December 2005 NSW DPI launched a new high-speed patrol boat, the *Sydney Swan*. The patrol boat is based on the South Coast at Batemans Bay and targets high-risk offenders in the abalone and rock lobster fisheries. Fisheries officers also use the boat for covert and overt patrols to ensure recreational and commercial fishers comply with NSW and Commonwealth fisheries legislation.

NSW DPI takes delivery of its new high speed patrol boat the 'SydneySwan'

Banana planting permits

A February 2006 compliance operation in the Richmond Tweed area checked on whether banana growers had a valid planting permit. The permit requirement minimises the risk of transmission in new planting material of major banana pests, including banana bunchy top virus and panama disease.

NSW DPI officers inspected 20 plantations and found an overall compliance rate of 75 per cent, a disappointing result given that planting permits have been required for many years. Improvements to permit administration are planned as well as educational activities for growers.

The mining industry operates to best practice health and safety standards

Performance

This year is the first in NSW mining history that there have been zero fatalities – the 2005-06 statistics continuing the excellent results of the two previous financial years. The metalliferous mining sector has now been fatality-free for three years and both the coal mining and underground mining sectors fatality-free for two years.

The 2005-06 statistics however chart an increase in reported serious bodily injuries and notifiable incidents in the coal sector. Analysis of the former shows increases in injuries from falls and contact with hot fluids. In response, we conducted compliance investigations and issued safety alerts. The number of notifiable incidents is higher due to both increased industry activity and better reporting of unplanned movement in underground and open cut coal mines.

NSW mining industry safety performance statistics

	2004-05	2005-06
Fatalities	1	**0**
Serious bodily injuries (coal)	32	**34**
Serious injuries (non-coal)	10	**19**
Notifiable incidents (coal)	181	**271**
Dangerous occurrences (coal)	30	**21**
Dangerous incidents (non-coal)	95	**109**

Implementing the NSW Mine Safety Review (Wran Review) recommendations

The implementation of the Wran Review recommendations on improving mine safety was a major focus for the year. One of the key recommendations was the creation of a stronger Mine Safety Advisory Council with the ability to commission experts and conduct research into safety issues. This is now a reality. The Council, under the independent chairmanship of Norman Jennings, includes two independent health and safety experts and senior representatives from the mining industry organisations.

It is presently engaging experts to examine:

- working hours and fatigue
- production bonus payments and safety-based incentive schemes
- the apparent disconnect between management and workers
- the role of contractors and subcontractors in resolving occupational health and safety problems.

The other key Wran Review recommendation was the introduction of the Mine Safety Levy. As part of the introduction process, NSW DPI liaised with WorkCover NSW and Coal Mines Insurance to establish collection mechanisms for the levy on industry, which will exclusively fund NSW DPI's mine safety regulatory functions.

Legislation

2005-06 saw the introduction of the *Explosives Act 2003* and Explosives Regulation 2005. This NSW DPI-administered legislation puts in place a chain of control licensing regime in the mining industry for explosives and materials such as ammonium nitrate. The dangerous goods provisions of the Occupational Health and Safety Regulation 2001 also commenced during the year.

We consulted on new regulatory controls, namely the Coal Mine Health and Safety Regulation 2006, which were released for public comment, and the Mine Health and Safety Regulation for which we developed drafting instructions in consultation with industry.

Accident/incident investigation

NSW DPI aims to improve safety management in the mining industry through investigating major accidents and incidents for coroner's reports and legal proceedings. During 2005-06 we completed six serious and fatal accident investigations and laid a number of charges in relation to previously concluded investigations.

Accident/incident investigation statistics

Performance statistics	2004-05	2005-06
Investigations commenced	2	5
Investigations completed	4	5
Investigations in progress at the end of year	2	4
Investigation reports submitted to the Coroner	2	1
Coronial inquests commenced	0	1
Prosecutions commenced	2	11
Successful prosecutions	6	3

The investigations concerned:

- the death of a contractor in a roof fall in an underground coal mine on 28 May 2004
- serious head injuries sustained by an employee when struck by a chain while working underground
- serious spinal injuries suffered by an employee while working underground on a continuous miner
- the death of a driver in a truck accident at a mine on 14 June 2005
- a high voltage electric shock suffered by a contractor while working on switch gear at a declared plant
- injuries to one contractor and exposure of another to risk in a truck accident in the decline underground at a mine.

Other investigations in progress include:

- participation in the Beaconsfield enquiry by a senior investigator
- a peer review of the New Zealand investigation into a fatality at Black Reef mine near Greymouth, NZ
- investigation into an accident involving an elevated work platform at Bulga open cut mine.

Communication

More than 3000 industry stakeholders received the three 2005-06 editions of our flagship publication, *Mine Safety Update*. Other publications included hard copy safety alerts, mine design guidelines, handbooks and codes of practice.

A communication strategy is in place for the implementation of the Mine Safety Levy. We began the upgrade and migration of the mine safety component of the Minerals section of the NSW DPI website to the new departmental site.

Benchmarking for improved performance

During 2005-06 NSW DPI commenced a self assessment against the recently established national animal health system performance standards to allow for benchmarking against other states and identification of areas for improvement. The intention is to ensure that effective systems are in place to control animal diseases and to allow NSW producers access to national and international markets. An external audit against the standards will be conducted in 2006-07.

A preliminary assessment against the standards indicates a high level of compliance, however two areas identified for continuous improvement were disease surveillance for market access and early detection of disease outbreaks.

Future directions

- Develop a biosecurity strategy and a comprehensive invasive species action plan for NSW.
- Improve animal and plant health legislation so that we institute better biosecurity management and explore a range of response options.
- Develop comprehensive NSW DPI and whole-of-government emergency response plans and maintain preparedness for emergencies.
- Support the national BioSIRT project to assist national management of emergency and routine plant and animal incidents.
- Engage primary industries in participating in programs to reduce the impact of pests and diseases on market access for livestock, plant and fish products.
- Lead, develop, and participate in state and national emergency response programs for drought, disease, pests and weeds.

Biosecurity, Compliance and Mine Safety Divisional performance

	Units	2003-04	2004-05	2005-06
Outcomes:				
Persons accredited in emergency response preparedness	no	144	193	**340**
Compliance rates for recreational fishers	%	89	88	**90**
Compliance rates for commercial fishers	%	91	91	**91**
Compliance rates for aquaculture	%	40	65	**60**
Outputs:				
Biosecurity plans to which the Department has contributed	no	68	104	**227**
Training programs for emergency response preparedness	no	15	18	**18**
Biological control agent releases	no	264	270	**270**
Attendees at workshop seminars relating to health and safety in the mining industry	no	2400	2400	**2794**
Major investigations (mining)	no	na	5	**4**
Prosecutions (mining – Investigation Unit reports)	no	Na	3	**6**
Prosecutions (fisheries)	no	326	460	**528**
Penalty notices (fisheries)	no	1660	2500	**2378**

CASE STUDY

Healthy and safe industries

Cooperative approach resurrects Hawkesbury River oyster industry

NSW DPI and assistance and industry hard work have revived oyster production on the Hawkesbury River following disastrous stock losses due to QX disease in 2005.

First came the clean-up of the dead oysters and cultivation materials. This was a Herculean task that involved the removal and disposal of more than 4000 tonnes of the dead oysters. Restocking of the cleaned up leases was with new hatchery-reared stock rather than through superceded stick culture methods. Restocking this way was environmentally sound. It is more technologically advanced as it involves the use of recyclable plastic oyster-growing infrastructure, not tar-treated products. At the same time as the clean-up, occupational health and safety practices were also improved, resulting in a healthier and safer work environment for the oyster farmers.

The impetus for industry revival came from a government assistance package in mid 2005. To reduce the environmental fallout of QX disease, $2.7 million was set aside for farmers to remove dead oysters and cultivation material from the estuary. NSW DPI staff managed the clean up program. As part of the package, farmers also received selectively bred QX-resistant Sydney rock oysters developed by NSW DPI researchers plus $200 000 in funding for additional stock purchases. Testing has shown that the QX-resistant oysters have excellent survival and fast growth.

Support from the Department did not stop there. NSW DPI offered financial counselling to assist farmers in restructuring their businesses and developed state and commonwealth submissions to retain oyster-growing businesses on the Hawkesbury River. And, to understand the base problem better, the Department's biosecurity staff are still researching the infective cycle of QX disease.

Oyster farmers are now looking to a brighter future. Oyster sales re-commenced in June 2006 and the Hawkesbury River is set to re-establish itself as one of the premium oyster producing estuaries in the State.

Photo caption: Local oyster producers work with department staff to remove dead oysters and cultivation materials to protect and enhance the river and its environment.

STRATEGY, POLICY AND COMMUNICATIONS DIVISION

Plays a lead role in translating government priorities and industry needs into the Department's policy and corporate agenda. Coordinates whole-of-government approaches and manages strategic and contentious issues. Facilitates strategic communications and promotes the work of the Department and primary industries.

Strategy, Policy and Communications Division

Nature and scope of activities

The Strategy, Policy and Communication Division plays a leading role in translating government priorities and industry needs into NSW DPI's policy and corporate agenda. It also coordinates whole-of-government approaches on primary industry issues, manages contentious issues and publicises departmental achievements.

The Division comprises five branches:

- **Policy and Legislation Coordination** – coordinating and advising on strategic policy development, prioritising and managing the legislation program and acting as the focal point for coordination of indigenous policy across NSW DPI
- **Industry Analysis** – providing economic and social analyses of policy options and preparing innovative and integrated economic policy options for consideration by stakeholders
- **Public Affairs and Media** – coordinating management of contentious media issues and promoting through the media the work of the Department and the value of profitable and sustainable primary industries
- **Corporate Strategy and Organisational Development** – building the capacity of the department to improve its performance by leading change initiatives and by developing and implementing strategic management and governance frameworks, systems and processes
- **Communications** – driving strategic communications through electronic and hard copy publishing and event management to foster a culture of planned communications and to promote primary industries

Major outcomes achieved

Policy, regulation and advice based on sound knowledge and analysis

Policy

The Division played a lead role in developing policy proposals and NSW DPI positions on strategic and contentious policy issues. Policy and administrative support was provided to key state and national primary industries policy forums, including the Primary Industries, Natural Resource Management and Mineral and Petroleum Resources Ministerial Councils and Standing Committees and the NSW Ministerial Advisory Councils on Agriculture, Minerals and Forests and Forestry Products.

Major issues covered included the introduction of share management in commercial fisheries, appropriate recovery of regulatory costs, protecting international trade in primary products, and securing Sydney's potable water supply. There was also a strong focus on representation of primary industry interests in land-use planning and other key policy initiatives, such as the development of the state-wide standards and targets for natural resource management.

A major achievement was coordinating the development of an integrated suite of proposals, involving several NSW DPI divisions and other government agencies, to secure almost $30 million from the Australian Government Water Fund. The proposed works will deliver substantial short and long-term benefits to both extractive water users and the environment.

Regulation

The Division was responsible for leading the NSW DPI legislative program, coordinating the preparation and passage of 12 Bills and more than 20 regulation amendment and renewal processes, most notable of which was the Mine Safety (Cost Recovery) Bill 2005. The new Act provides a mechanism for mining companies to fund the cost of enforcing mine safety regulation.

Service delivery aligned with stakeholder priorities

Our ability to engage with and provide support for NSW Aboriginal communities was enhanced due to activties such as:

- finalising arrangements for the establishment of a high-level Aboriginal Reference Group to advise NSW DPI and the Minister for Primary Industries on policy issues
- providing detailed assessments of primary industries issues in relation to 68 Aboriginal land claims
- developing operational guidelines for Aboriginal cultural heritage management in the Forests NSW Environmental Management System
- developing a cultural awareness training program for NSW DPI staff.

Sound knowledge and analysis

Socio-economic analysis and information underpins policy development and contributes to more efficient and inclusive policy outcomes. Key economic analyses during 2005-06 included:

- coordination of Exceptional Circumstances applications and rollover reviews for the majority of areas in NSW which remain seriously affected by the ongoing drought, facilitating assistance to industries and associated rural communities
- analysis of policy options relating to the National Drought Policy and the associated development of the National Agricultural Monitoring System. This work is contributing to more efficient and effective assistance programs
- development and application of bio-economic models

that have facilitated better trade-off decisions by catchment management and marine park authorities
- policy advice to a NSW inter-agency review of funding arrangements for the shellfish industry's Harvest Area Classification Program, which contributed to the efficient sharing of costs associated with estuarine water quality maintenance and testing
- analysis of locust control strategies contributed to more soundly based and accountable public investments in disaster management.

Sound corporate governance

This year NSW DPI developed a corporate management framework around the Corporate Plan 2005-08. Each division prepared a divisional plan aligned with the key results areas, outcomes and strategies of the corporate plan and subsequently submitted quarterly performance reports that measured progress against specific targets.

In other initiatives, we completed a comprehensive NSW DPI-wide risk assessment and risk register. The highest-rated risks for the Department include ensuring that consistent policy advice is provided to Government, management of a serious mine incident should it occur, and planning and preparedness for emergencies and disasters. The findings are feeding into other corporate governance processes across the Department such as the internal audit plan.

To improve risk management, we also completed a Business Impact Assessment to identify core business functions that must continue to operate in the event of a disaster.

A safe, satisfying and fair work environment

One of the outcomes articulated in the corporate plan is that NSW DPI will nurture a skilled and cohesive workforce operating in a safe, satisfying and fair work environment'. Two developments in 2005-06 bring achievement of that outcome closer. They are the preparation and release of the Women's Employment Strategy, which is based on the principles of equity, opportunity and diversity and describes actions the Department will take to improve the career management skills of women, and formulation of a plan to improve internal communication.

The internal communication improvement plan followed analysis of responses to staff surveys, feedback from senior management network meetings, and comments put forward by more than 100 focus group participants. Among the resulting initiatives implemented in 2005-06 were:

- guidelines for communication improvement between supervisors and staff
- a weekly e-bulletin and a quarterly staff newsletter
- Board of Management and senior management visits to regional offices
- a broadcast email policy
- a usability assessment of the NSW DPI intranet
- improved processes for advising staff of hot issues and media releases
- consolidation of Regional Relations Teams.

Innovative solutions in service delivery

Corporate branding

Corporate branding was refined, with an update of the corporate identity guide and development of consistent style for publications. As much of our publishing is decentralised, monitoring is important to maintaining professional standards and ensuring dissemination of high quality material.

In the interests of projecting a strong image in the community and in identifying our staff, NSW DPI introduced a uniform range in May 2006. Staff reacted positively to the voluntary corporate clothing range, which was selected after department-wide consultation. At the time of this report, more than 300 staff had purchased items from the range – a response that indicates a high level of pride in representing NSW DPI.

Next year corporate branding will go a step further with the updating of all NSW DPI external signage.

Publishing and events

NSW DPI conducted a publications review to identify how to improve publishing processes and enhance efficiencies in a decentralised organisation. As part of the review, we examined management options to address major issues and prepared an appropriate implementation plan for each.

In a parallel exercise, we also looked at better management of events – NSW DPI manages or participates in over 100 events annually – and developed an events program. This provides tools for:

- improving the choice of events
- maximising the direct contact with clients
- improving event organisation
- developing professional and effective displays
- event reporting and evaluation.

Another major achievement was the establishment of an online digital image library that allows all staff access to departmental images for easy use in publications and presentations.

Schools education

Various divisions of NSW DPI offer a wide range of primary and secondary school educational products and services, a situation that in 2005-06 prompted a review to find a way to coordinate programs better and use resources more effectively. There were two important outcomes. The first was establishment of an internal schools education

network and the second the writing of the NSW DPI Schools Education Plan. The plan details how we intend to:

- coordinate existing products and services
- identify and create new resources
- establish, lead or participate in state and national networks.

At a national level, NSW DPI is the lead agency in a network promoting agriculture in schools. The network is currently working to establish a national web portal – a one-stop website for teachers and students wanting information on agricultural programs, products and services. We are also an active member of the National Forestry Education and Awareness Network, which is engaged in similar work.

Providing high quality information

NSW DPI remained a major information provider to regional communities this financial year, producing and distributing some 450 publications. Highlights included the rejuvenation of key publications for the minerals sector, *Minfo* and the *Coal Industry Profile*, which had been put on hold with the relocation of staff to Maitland, and the launch of a new Science and Research Division e-newsletter. *Agriculture Today*, a NSW DPI newspaper published monthly in *The Land*, was revised to incorporate stories from other primary industry sectors of interest to its readers such as fish friendly farms and private forestry.

Integration of the NSW DPI website from the previous four Departments' websites continued. Full integration was delayed by the technical limitations of the content management system but should be completed within the coming year.

Supporting rural women

The Rural Women's Network is a small but significant program within the Department, which works in partnership with individuals, groups and non-government and government agencies to facilitate information exchange and stimulate action on priority rural women's issues. This year the program contributed to building vibrant and sustainable rural communities through:

- producing and distributing 10 000 copies of the *Country Web* newsletter three times over the year
- coordinating the successful Rural Women's Award for NSW, sponsored by the Rural Industries Research and Development Corporation. Kate Schwager from Wee Waa in the State's northwest won the 2006 award for her efforts to promote rural towns and their links to agriculture and her contribution to the cotton industry
- actively supporting the annual Women's Gathering held in Bega in 2005
- providing policy advice and raising grass-roots rural issues for departmental action.

(l to r) Barry Buffier (NSW DPI Director-General), Peter O'Brien (RIRDC Managing Director), Kate Schwager (2006 RIRDC Rural Women's Award Winner) and The Hon. Ian Macdonald, Minister for Primary Industries, at the 2006 RIRDC NSW Rural Women's Award Presentation & Dinner

NSW DPI in the news

Management of issues gaining media attention and promotion of NSW DPI achievements through the media were again important in 2005-06. In particular, we contributed to informed media coverage on the closure of Port Jackson to commercial fishing due to dioxin contamination of harbour sediments, and provided communications support for several bushfire emergencies and the continuing drought.

Major Sydney newspaper articles on the development of mild onion varieties, the progress of research aimed at reducing methane emissions from cattle and the contribution of the Durum wheat breeding program toward the production of world class Australian pasta production helped to highlight the importance of NSW DPI's science and research activities.

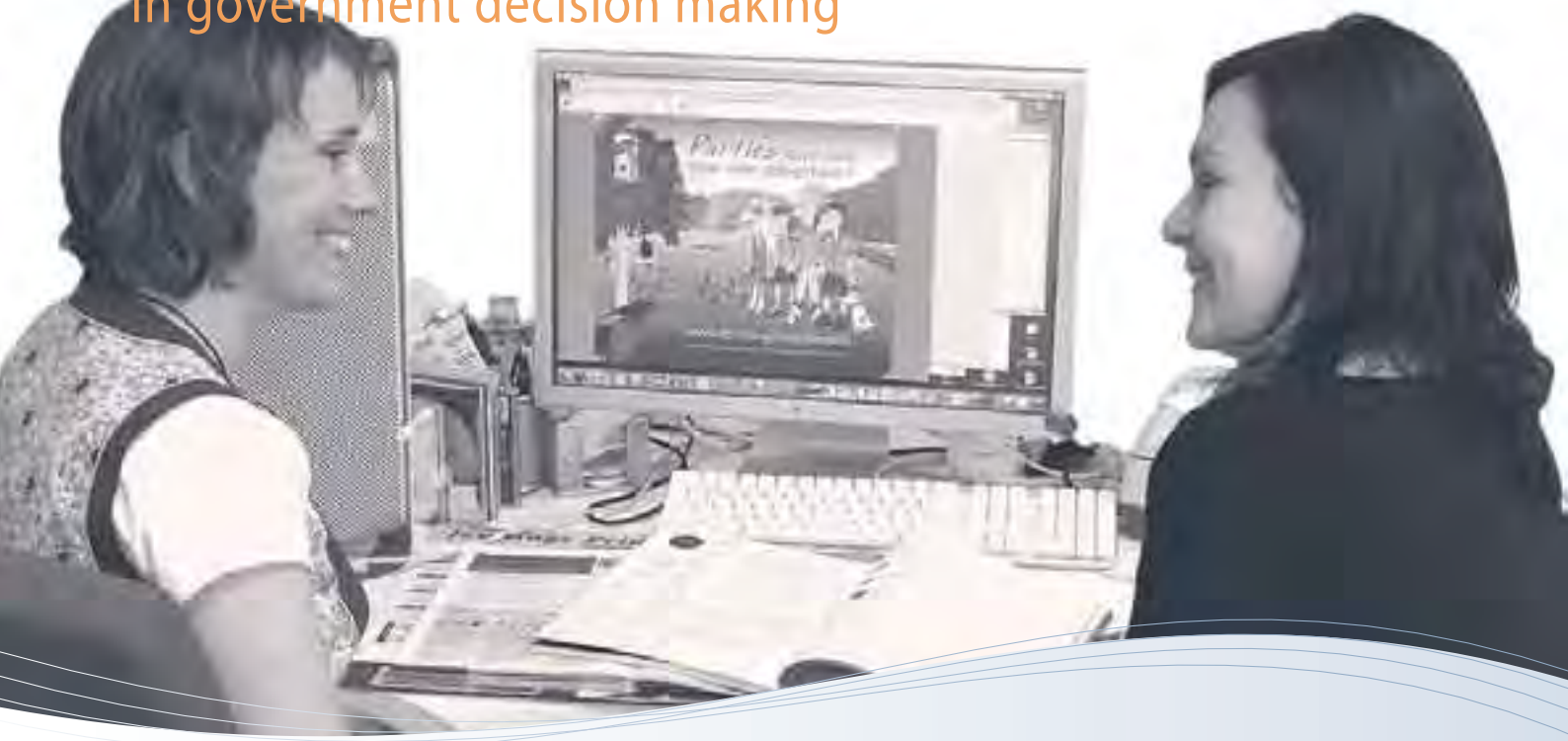
Future directions

Our major goals in 2006-07 are to:

- ensure the Department's corporate directions and the results and services that we deliver to the NSW community are aligned with NSW State Plan priorities
- implement a communications program to familiarise staff with State Plan priorities
- manage and develop NSW DPI's legislative portfolio to reflect stakeholder interests and client needs
- support informed land-use change investments by farmers and catchment managers
- contribute to the design and delivery of more efficient assistance programs for primary industries and rural communities, including drought support
- implement a corporate risk management process
- implement NSW DPI's Schools Education Plan.

CASE STUDY

Stronger voice for primary industries in government decision making



NSW ministerial councils drive the national agenda on primary industries education

One of the reasons behind the establishment of NSW DPI last financial year was to give our primary industries a stronger voice at national level. As shown in the leadership role recently taken by the NSW Agriculture Ministerial Advisory Council and the Forests and Forest Products Advisory Council, that voice is now strong and the message clear.

Two of four peak advisory bodies set up in 2005-06, these councils have taken the running on an important issue that the Minister raised with all Australian states and territories – how to promote primary industries in schools. With the unanimous support of governments across the nation, the Agriculture Ministerial Advisory Council has taken on the challenge of reviewing the teaching of primary industries in schools and promoting a national approach. This work is in progress under the guidance of a working group that the Council has established.

While agriculture was the initial focus of this education initiative, the concept was broadened to also embrace forestry, fishing and minerals in an integrated national teaching and promotional program.

The benefits of coordinated promotion of primary industries in schools will be manyfold. Importantly, students will gain a much better understanding of where the staples of life – food, fibre, building products and energy – come from and a balanced appreciation of the responsibilities and values of primary industries and the key role they play in communities and the environment. The program will also promote more effective links between schools, industry, training and tertiary education sectors and may motivate students to choose a career in one of the broad range of primary industries.

Photo caption: Leah Flint and Carmen Perry discuss education initiatives designed to promote an awareness of sustainable primary industries. NSW DPI is committed to forging working partnerships with industry and government to create relevant resources for teachers and students.

CORPORATE SERVICES DIVISION

Develops, manages and advises on systems, infrastructure, policies and standards to provide services to the NSW DPI in the areas of finance and administration, human resources, assets, information technology and legal services.

Corporate Services Division

Nature and scope of activities

The Corporate Services Division provides advice and assistance to enable staff in the other six divisions of NSW DPI to do their work efficiently and effectively.

The Division comprises five branches:

- **Finance and Administration** – provides a wide range of financial services across the Department including the development and implementation of financial policies, procedures and reporting systems, as well as supporting the Department's core business with extensive library resources and the provision of general clerical support throughout the state.
- **Human Resources** – provides strategic and operational human resources services across the Department including, employee services, industrial relations, staff development and workforce planning.
- **Asset Management** – develops and administers policies to ensure that the Department's assets are managed physically and financially to best meet the delivery of services and programs.
- **Information and Communication Technology** – is responsible for all aspects of the Department's computerised business system and software development, acquisition and support.
- **Legal Services** – provides legal advice on a wide range of primary industries and governance issues to the Minister, Executive and staff of the Department as well as advocacy and advice for a variety of litigation in which the Department becomes involved.

Major outcomes achieved

Innovative solutions

Rationalisation of accommodation continued in locations where NSW DPI had more than one office following the 2004-05 amalgamation. This year we completed a further eight co-locations and relocations at Cobar, Singleton, Orange, Deniliquin, Armidale, Inverell, Grafton and Sydney CBD/West Pennant Hills, achieving significant operational savings in excess of $1million per annum.

In addition, NSW DPI negotiated with other agencies on possible co-locations that will achieve mutual savings and strengthen cooperation, and completed a co-location with the Department of Lands at Ballina. These co-locations build on existing arrangements with other agencies including the State Council of the Rural Lands Protection Board, NSW Game Council, NSW Rural Assistance Authority and the NSW Food Authority.

In order to accurately cost services and benchmark our performance, NSW DPI developed and piloted an activity based costing system. We will progressively introduce the system across the Department following its successful implementation in Corporate Services and Mine Safety.

A facility has been established on the NSW DPI web site where the public can view tenders being let by NSW DPI. This strategy complies with the Government's policy on the Disclosure of Information on Government Contracts with the Private Sector and provides appropriate transparency in the Department's tendering process.

Amalgamation of the library services of Forests NSW and NSW DPI gave Forests NSW staff access to an increased range of electronic journals, databases and current information services at a lower cost.

During the year we paid a total of 14 785 claims under the Drought Transport Subsidy Scheme to drought affected farmers. On average, NSW DPI paid each claim within two weeks of receipt.

Workforce management – Providing a safe, satisfying and fair work environment

NSW DPI continued to create and fill management positions while also running a voluntary redundancy scheme to rationalise positions that had become surplus following the Department's establishment. Seventy-two staff chose to take advantage of the scheme. All received support with career planning through the Job Assist Program.

With the establishment of the Training Committee, we were able to identify staff development priorities and provide staff with a broad range of training courses.

The launch of the Women's Employment Strategy will promote equity, diversity and opportunity in the workplace. The strategy describes how the Department will put in place processes and action plans that improve the career management skills of women and facilitate the achievement of their full potential.

Staff received a 4 per cent salary increase effective from 14 July 2005 as the second instalment of the Crown Employees (Public Sector - Salaries 2004) Award. All Award increases were processed successfully without delays. No working days were lost due to industrial action during the reporting year.

Positive measures were taken during the year to ensure the Department's employees have a work environment that meets occupational health and safety best practice with the recruitment of two additional safety officers and the introduction of a comprehensive OH&S policy that underpins the Department's approach to managing health and safety in its workplaces and properties.

Managing physical assets to meet business priorities

Measures to assist NSW DPI in aligning assets with current and future business priorities included:

- disposal of a number of properties, including the Brooklyn Fisheries Office
- the leasing to Forests NSW of 700 hectares on the Department's Grafton Agricultural and Research Station for the establishment of native forest species and relocation of the Forests NSW Grafton office to the station
- continued implementation of environmental management systems, an initiative which saw the Trangie Agricultural Research Centre successfully gain accreditation under ISO 14000
- construction of a state-of-the-art automatic dairy at Elizabeth Macarthur Agricultural Institute at a total cost of $1 million. The new dairy is part of a major dairy research project valued at $10.5 million that also involves the University of Sydney, Dairy Australia, DeLaval and NSW DPI
- revision of the Asset Strategic Plan to link asset management to service delivery in each division of NSW DPI, and submission to the Heritage Office of the Department's Heritage Asset Management Plan.

New automatic dairy constructed as part of the FutureDairy project at Elizabeth Macarthur Agricultural Institute, Camden.

Safeguarding the interests of primary industries

To ensure that government policies and regulation took account of the interests of NSW primary industries we:

- negotiated and managed the successful commercialisation of intellectual property developed by NSW DPI
- entered numerous agreements to safeguard the Department's investments in 18 cooperative research centres and other significant strategic alliances with multiple research partners
- provided legal assistance to 33 prosecuted offences relating to mine safety and 451 offences relating to fisheries management
- drafted legislation including the *Mine Safety (Cost Recovery) Act 2005* and supported passage through Parliament of the *Fisheries Management Amendment Act 2006*
- drafted and guided the passage through Parliament of three other bills as well as drafting and gazetting 12 notifications, 39 orders, 14 proclamations, 55 appointments, 26 closures and 34 regulations.
- provided legal advice to support management of major issues such as the dioxin fish contamination in Sydney Harbour.

Dynamic and integrated ICT infrastructure

The introduction of unified systems across the Department continued with the progressive rollout of a single email system and the introduction of correspondence tracking software, the latter as part of the move towards fully integrated NSW DPI records management. Training for records management commenced and over 100 staff completed training in system use.

All NSW DPI sites were finally linked to the same broadband network, which was specially designed to be resilient to carrier failures. To consolidate user identification and password management, we introduced an identity management system.

Upgrades to data storage facilities were implemented in Orange and Maitland and at over 30 locations across the state.

We also further improved the FrontGate geospatial mapping system, enhancing its functionality in the event of an emergency disease outbreak, and introduced new software to assist in tracking the spread of pests such as fire ants.

Looking to the future, we submitted a strategic five-year ICT plan to the Government Chief Information Office and Treasury. The plan synchronises ICT development with the Department's business directions.

Electronic service delivery

The Department offered a wide range of information through the Internet, including news, event details and many electronic publications. Progress was made towards merging the former agency websites into a single entity with the release of a common high-level navigation structure.

Other services available electronically were:

- online and voice activated purchase of recreational fishing licences

- online display and query of current and historical mineral exploration and titles information
- online provision of transaction information to large commercial clients of forest investment services
- online payment of accounts through a secure payment gateway.

Serving other agencies

NSW DPI established a service level agreement with the NSW Coal Compensation Board to provide corporate services (payroll, personnel, accommodation, IT and other services) to the Board. We now deliver such services to the NSW Rural Assistance Authority, the Game Council of NSW and the NSW Coal Compensation Board on a commercial basis.

Benchmarking Corporate Services

NSW DPI's corporate services are benchmarked annually against other NSW public sector organisations. The report provided by NSW Department of Commerce is a valuable source of independent data used by us as a tool to achieve greater efficiencies and drive performance improvement.

The number of employees supported by each corporate services employee is lower than both the profile group median and the sector median. However, NSW DPI's ratio has improved by 22% on an FTE basis or 13% on a headcount basis since 2004.

Employees supported by each corporate services employee

	2004	2005	Profile group Median*	Sector Median
Agency FTE/Corporate Services FTE (1)	8.8:1	10.7:1	15.7:1	11.7:1
Agency headcount/ Corporate Services FTE (1)	10.1:1	11.4:1	18.5:1	12.7:1

*Profile group: Large agencies (from 1500 to 9999 FTE)

Corporate Service costs are slightly higher than the profile group median but significantly lower than the sector median. NSW DPI's costs per FTE has reduced by $2585 (23%) and from 9.11% to 5.64% of NSW DPI's budget (a reduction of 38%).

Corporate Service costs

	2004	2005	Profile group Median*	Sector Median
Per agency FTE (2)	$11355	$8770	$8631	$10428
% of operating budget (2)	9.11%	5.64%	5.45%	7.3%

*Profile group: Large agencies (from 1500 to 9999 FTE)

Significant issues

Maintenance of a fair and consistent approach to human resource issues remained crucial in 2005- 06 as NSW DPI continued to deal with the impact of the Department's creation on the staff of the amalgamated agencies.

The Joint Consultative Committee met regularly to ensure the effective management of industrial issues. Among the issues that the Committee considered were:

- implementation of job evaluation outcomes
- establishment of a memorandum of understanding on the restructure of Forests NSW
- consistent application of travelling compensation rules
- the impact of avian influenza and pandemic on the Department.

The external agency, ITIM Australia Limited, engaged to provide personal counselling and support to NSW DPI staff continued to work with employees who had been through significant change but reported that change became less of a concern in the second half of the year.

Future directions

- Complete implementation of a fully integrated finance and human resources management information system.
- Prepare a workforce plan to deal with such issues as performance management, succession planning and managing an ageing workforce.
- Finalise drafting of the fisheries share management plans and advise on their implementation.
- We will also train staff on their legal responsibilities to heighten their awareness of the Department's legal obligations and improve the quality of advice to the public.

CASE STUDY

Excellence in service delivery to stakeholders

Promoting equity, diversity and opportunity in NSW DPI

The *Women's Employment Strategy* was launched on International Women's Day in March 2006 to recognise NSW DPI women as key contributors to the workplace and to ensure that they are provided with every opportunity to realise their potential.

The Department recognises that good people management is the key to excellent performance and that equity, diversity, and opportunity play a critical role in achieving this. This strategy is one of the ways we are working toward developing a dynamic, creative and inclusive workplace. It aims to achieve the following outcomes:

- Increased career management skills for women
- Increased career opportunities for women
- Increased representation of women on decision-making bodies
- Strong organisational support for programs implemented as part of the strategy

To make this strategy work on the ground and deliver real wins, the Department has established a consultative group of female representatives from across the Department and across salary ranges to develop and implement an action plan and monitor and report on its progress. This group is being supported by a steering group made up of senior managers – both male and female. The steering group plays not only an advisory and mentoring role – it plays a key role in engaging line management in the implementation of the strategy.

We are confident that the strategy will result in positive outcomes for women in the Department – and fully expect that a large number of initiatives under this strategy, including family friendly work practices, will in fact benefit all our staff, thus enabling us to continue to provide an excellent service to our stakeholders.

Photo caption: A consultative group comprising of female representatives from all divisions across the State will network and consult with women employees to identify women's needs and develop proposals to address them.