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PART FOUR: OUR ORGANISATION

Management and accountability

Operating Model

CSIRO's Operating Model is designed to support the successful execution of our strategy and delivery of our goals. The Model underpins the governance of the Organisation by defining the roles, relationships and accountabilities of leaders and operating units. It includes our processes for planning, investment, review and reporting, and outlines CSIRO's Policy Framework. The Model is documented in *CSIRO – the way we work* and is available to everyone who works in CSIRO and to the general public at www.csiro.au/resources/CSIRO-the-way-we-work.html.

Further information on CSIRO's governance arrangements can be found at: www.csiro.au/governanceoverview.

Code of Conduct

In 2010, CSIRO revised and simplified its Code of Conduct. The revised Code now sets the standard for behaviour expected of CSIRO and of everyone working in CSIRO.

Through the consistent application of our Code of Conduct, we can ensure that CSIRO continues to be a trusted advisor, respected collaborator, and a great place for us all to work.

Megan Clark, Chief Executive

The Code complements the Operating Model and forms a key component of our induction programs. All staff members and CSIRO affiliates must comply with the Code of Conduct, which can be viewed at: www.csiro.au/resources/Code-of-Conduct.html.

It is aligned with our Values Compass, which guides our interactions with colleagues and external partners and stakeholders. More information on CSIRO's Values Compass can be found on page i.

Legislation and government policy

CSIRO is an Australian Government statutory authority constituted and operating under the provisions of the *Science and Industry Research Act 1949* (SIR Act).

CSIRO's **primary functions** are to:

- carry out scientific research to:
 - assist Australian industry and to further the interests of the Australian community
 - contribute to national and international objectives and responsibilities of the Commonwealth
- to encourage or facilitate the application and use of the results of CSIRO scientific research.

Our **secondary functions** include international scientific liaison, training of research workers, publication of research results, technology transfer of other research, provision of scientific services and dissemination of information about science and technology.

Reporting, accountability and other rules for CSIRO's operations are set out in the *Commonwealth Authorities and Companies Act 1997* (CAC Act).

Pursuant to a service agreement, CSIRO provides administrative support services to the Trustee of the Science and Industry Endowment Fund consistent with the *Science and Industry Endowment Fund Act 1926*. The Fund has its own governance structure.

In October 2010, CSIRO submitted an annual Compliance Report to the Australian Government regarding the Organisation's compliance with the CAC Act and its financial sustainability.

General policies of the Australian Government that applied to CSIRO in 2010–11 under Section 28 of the CAC Act are: Commonwealth Fraud Control Policy; Australian Government Foreign Exchange Risk Management Guidelines; and Outsourcing of IT Infrastructure Services. In addition, CSIRO has complied with the Commonwealth Procurement Guidelines as they apply to CSIRO.

In the May 2011 Federal Budget the Government announced a new 2011–12 to 2014–15 Quadrennium Funding Agreement with CSIRO. The Agreement will include the principles of quadrennium funding, resourcing of outputs, performance reporting and other matters agreed by the parties.

Responsible Minister

In 2010–11, the Minister responsible for CSIRO was Senator the Hon Kim Carr, Minister for Innovation, Industry, Science and Research.

Under the SIR and CAC Acts, the Minister has power to:

- add to the purposes for which CSIRO may carry out scientific research (SIR Act, section 9)
- provide to the CSIRO Board in writing, directions and guidelines with respect to the performance of the functions, or the exercise of the powers, of the Board or of the Organisation (SIR Act, section 13).

The Minister's Statement of Expectations and the Board's Statement of Intent can be found at: www.csiro.au/resources/Statement-of-Expectations.html.

The Public Research Agency Charter, signed by the Minister and the Board, provides guidance to CSIRO and its researchers on providing scientific advice and engaging in public debate. The Charter can be found at: www.csiro.au/resources/pf11c.html.

Ministerial directions and notifications

No new directions were received in 2010–11. The CSIRO 2011–14 Enterprise Agreement was developed in accordance with the Minister's direction regarding compliance with the Australian Government Employment Bargaining Framework.

Eleven notifications of significant events under Section 15 and 16 of the CAC Act were made to the Minister during 2010–11. These related to participation in research centres and alliances, licence agreements, equity transactions and major research and infrastructure projects.

CSIRO Board

CSIRO is governed by a Board which is responsible to the Australian Government for the overall strategy, governance and performance of the Organisation.

The CSIRO Board comprises nine part-time, non-executive members including the Chairman and a full-time Chief Executive. All non-executive members are appointed by the Governor-General. The Chief Executive is appointed by the CSIRO Board, in consultation with the Minister.

The CSIRO Board operates partly through four standing committees:

- Board Audit Committee
- Board Commercial Committee
- Board Nominations and Remuneration Committee
- Board Endowment Committee.

Newly appointed Board members are informed of their responsibilities and rights through a formal induction process. In the pursuit of their duties, Board members may take such independent professional advice as is considered necessary, and have complete access to senior management. A performance review of the Board and its Committees was conducted in early 2011 by an independent consultant commissioned by the Board.

Disclosure of interests by Board members and the Chief Executive are made in accordance with the SIR Act and CAC Act, as appropriate.

Details of the 2010–11 Board members, including qualifications and terms of appointment are on page 90–91. Details of remuneration, membership of Board Committees and attendance at meetings are shown on pages 155–159 in the Financial Statements. The Board Charter and membership profiles are available at: www.csiro.au/boardoverview.

CSIRO Executive Management

The Chief Executive conducts the affairs of the Organisation in accordance with the strategy, plans and policies approved by the Board and the Board Directions to the Chief Executive.

The Chief Executive is supported by the Executive Team. As a team and through their individual roles, the members lead, direct, coordinate and control CSIRO's operations and performance. Details of the members are on page 91–92.

The Executive Team is assisted by the Science Sub-committee, Flagship Oversight Committee and Commercial Executive Committee. The CSIRO Health, Safety and Environment Committee is accountable to the Chief Executive.

The Executive Management Council of senior managers provides a forum for sharing and discussing issues relating to the management and future strategy for CSIRO.

Policies, standards and procedures

CSIRO conducted an extensive review of its policy material as part of the implementation of a new Policy Framework, which comprises:

- Policies:** Define CSIRO's commitment and responsibilities in an area.
- Standards:** Define minimum mandatory performance requirements for all CSIRO staff, sites and operations.
- Procedures:** Define the minimum mandatory actions or processes that must be followed by CSIRO staff in performing a particular task or activity.

The aim is to improve compliance by clarifying performance requirements, roles and accountabilities. Documents will be easier to follow and access from a user perspective.

Access to policy material has also been enhanced through the implementation of a Policy Portal on the MyCSIRO intranet site launched in May 2011. When fully developed, the Policy Portal will be a one-stop shop for staff to access information on CSIRO's practices and minimum requirements.

The Policy Framework is supported by the CSIRO Delegations and Authorities Framework. The Commercial Delegations were amended in August 2010 to include a threshold based on an assessment of enterprise risk. Further changes are being implemented to improve the flexibility of the Framework, support the CSIRO Operating Model and reduce administration.

Policies

The CSIRO Board has five major policy statements on the Organisation's commitment in relation to:

- Science and Delivery
- People
- Governance
- Risk
- Health, Safety, Environmental Sustainability and the Community.

The policy statements are available at: www.csiro.au/org/Key-policy-statements.html.

Standards and procedures

CSIRO's Health, Safety and Environment (HSE) group has completed a comprehensive review of CSIRO's HSE procedures and guidelines, as part of the CSIRO's commitment to the goal of *Striving for Zero Harm* and the implementation of CSIRO's new Policy Framework.

In December 2010, HSE released a new HSE Management standard, 11 new procedures and 22 revised procedures, many with revised guidelines.

The HSE Management standard sets down for the first time a consolidated and approved list of the minimum mandatory HSE management performance requirements for all CSIRO staff, sites and operations.

The new HSE procedures cover:

- Biological Safety
- Confined Space Safety
- Diving Safety
- HSE Induction for New Starters
- Isolation of Plant
- Laboratory Safety
- Nanotechnology Safety
- Occupational Health and Hygiene Management
- Permit to Work
- Safe Work on Seagoing Vessels
- Vehicle Use Safety

Further information on CSIRO's health and safety can be found on pages 94–97.

The other standards and procedures introduced or amended this year include:

Standard

- CSIRO Code of Conduct
- Commercial engagement
- Project management

Procedure

- Adjunct appointments
- Anti-bribery and facilitation payments
- Travel (revised)

Planning and monitoring performance

2010–11 was the final year of CSIRO's 2007–11 strategic planning period and of the associated four-year funding agreement with the Australian Government. Consequently, an important focus of activity during the reporting year was a major review of CSIRO's performance and the development of a new Strategic Plan for the period 2011–15.

The Program Review of CSIRO was established to demonstrate accountability for past investment in CSIRO, inform the development of CSIRO's future strategy and operations, and inform the decision to enter into a new multi-year funding agreement. The Review was conducted between June and September 2010¹.

Development of the new Strategic Plan was led by the CSIRO Board and Executive Team with extensive input from CSIRO's broad range of stakeholders in industry, government and the research community.

The Strategic Plan (see: www.csiro.au/org/Our-Strategy-Overview.html) conveys broad objectives for the Organisation, and sets out the broad policies and strategies to be pursued to achieve those objectives. In brief, the strategy emphasises CSIRO's intent to maintain its focus on addressing national challenges and opportunities through an enhanced program of National

Research Flagships, and to continue developing Australia's scientific capability and preparedness by investing in the people and infrastructure required to meet current and future challenges. Priority actions required for successful implementation of the strategy are described in the annual CSIRO Operational Plan (see: www.csiro.au/operational-plan).

Within the context provided by the Strategic Plan, CSIRO's portfolio of research is decided through a rigorous science investment process that is guided by the twin imperatives of seeking relevance and impact for Australia. Our Divisions and Flagships are subject to regular review by panels chaired by independent experts who assess the strength of our capability as well as the relevance and impact of our research. In addition, the quality of our research is subject to the normal scientific peer review mechanisms and the Chief Executive conducts an annual review of all research portfolios, Divisions and functional areas.

Advisory mechanisms

CSIRO's primary advisory mechanisms are Sector Advisory Councils and Flagship Advisory Committees, which comprise representatives from industry and other stakeholders.

Sector Advisory Councils provide strategic advice on the national challenges and opportunities of a broad sector of the Australian economy, society or environment. There are Councils for the energy and transport; environment and natural resource management; health; information, communication and services; manufacturing; and mineral resources sectors.

The Flagship Advisory Committees, established for each Flagship, provide advice on how to maximise the effectiveness of the Flagship portfolio to achieve its goals.

¹ The review was conducted by an interdepartmental committee with representatives from: Treasury; Finance and Deregulation; Prime Minister and Cabinet; Innovation, Industry, Science and Research; and CSIRO. The terms of reference addressed the six 'expenditure review principles' (appropriateness, effectiveness, efficiency, strategic alignment, integration and performance measurement) as well as two special issues, namely matters related to CSIRO's funding model and revenue mix, and the case for a multi-year funding agreement.

CSIRO's advisory mechanisms were reviewed in early 2011. In 2011–12, the Sector Advisory Councils will be replaced by Strategic Advisory Committees, which will provide advice on CSIRO's longer-term strategic directions and research and development priorities and on how CSIRO can meet the research, technical and business needs of customers or communities.

Details of the Sector Advisory Councils and Flagship Advisory Committees can be found at: www.csiro.au/SAC and www.csiro.au/FAC.

Risk management

CSIRO is committed to the effective management of risks. The CSIRO Risk Policy recognises that the identification and management of risk is central to delivering the functions of CSIRO and delivering benefits to Australia.

CSIRO's risk management framework sets out the responsibilities of all individuals across CSIRO, including the Board and management for identifying and managing risk. This includes understanding scientific, financial, commercial and legal, health and safety, environmental, and reputational risks. It also provides the methodology by which CSIRO's risk profile is articulated and regularly updated.

Risks are managed on an enterprise basis through mitigation strategies that include, in appropriate circumstances, insurance to transfer the financial impact of risk.

General insurance including General Liability and Professional Indemnity insurance and Directors and Officers Liability insurance is through Comcover. CSIRO's workers compensation liability is covered by a premium paid to Comcare.

External audit and internal controls

Assurances about the Organisation's financial state of affairs, compliance issues and control environment are provided through a comprehensive range of processes including the internal Risk Assessment, Audit, Fraud Control and Security functions. External audit is provided by the Australian National Audit Office.

CSIRO maintains a Whistleblower Scheme and uses mechanisms such as Control Self-Assessment Questionnaires signed by senior managers to provide additional assurance.

CSIRO complies with Commonwealth Fraud Control Guidelines (revised 2011). The Fraud Risk Assessment was completed in February 2010 and an updated Fraud Control Plan incorporating guideline amendments is planned for release in August 2011.

The CSIRO Strategic Protective Security Risk Assessment was updated in February 2009 and reviewed in February 2011. As a result of the release of the Commonwealth Protective Security Policy Framework in June 2010, a review of current security standards and procedures is underway and expected to be completed by March 2012.

Administrative law

CSIRO is bound by a range of administrative laws including the *Freedom of Information (FOI) Act 1982* and the *Privacy Act 1988* (see Appendix 3, p 176).

In May 2011, CSIRO implemented initiatives to comply with the FOI provisions relating to the Information Publication Scheme (IPS). The IPS is designed to promote open and transparent communication of government information. For information on how to access information under the FOI Act, and CSIRO's plan to implement and administer the IPS, see: www.csiro.au/org/FOI.html.

Board membership 2010–11



Chairman
Mr Simon McKeon
 BCom LLB FAICD
 F FIN
 Company Director
 28 June 2010 –
 27 June 2015



Deputy Chairman
Dr Terry Cutler
 BA(Hons) PhD
 Hon DUniv FAHA
 FIPA
 Principal
 Cutler and
 Company Pty Ltd
 25 July 2002 –
 24 July 2012



Chief Executive
Dr Megan Clark
 BSc(Hons) PhD
 HonDSc (UWA)
 Hon DApSc
 (RMIT) FTSE
 GAICD
 1 January 2009 –
 31 December 2013

Members



Ms Mary Boydell
 BCom FCA
 Company
 Director
 26 June 2009 –
 25 June 2014



Professor Ian Chubb AC
 MSc DPhil Oxon,
 Hon DSc (Flinders)
 Chief Scientist of
 Australia
 7 August 2008 –
 6 August 2012



Dr Eileen Doyle
 BMath(Hons)
 MMath PhD
 FAICD
 Company Director
 15 February 2006
 – 14 February
 2016



The Hon John Kerin AM
 BA BEc Hon
 DScAgr (UNE)
 Hon DSc (UWA)
 Hon DLitt (UTas)
 Company
 Director
 3 October 2008 –
 2 October 2011



Ms Deborah O'Toole
 LLB
 Company
 Director
 16 April 2003 –
 15 April 2008
 1 May 2008 –
 30 April 2011



Mr Mark Paterson AO
BBus, FAICD,
FAIM, FRMIA
Secretary
Department
of Innovation,
Industry, Science
and Research
9 February 2011 –
31 May 2011



Mr Hutch Ranck
BSc, Economics
Company
Director
1 May 2011 –
30 April 2016



Mr Douglas Rathbone AM
DipChemEng
BCom
Managing Director
and Chief
Executive
Nufarm Ltd
26 September
2007 – 25
September 2010



Professor Tom Spurling AM
BSc(Hons) PhD
FRACI FTSE
Research
Professor
Swinburne
University of
Technology
1 May 2008 –
30 April 2012

Executive Team membership 2010–11



Dr Megan Clark
BSc(Hons) PhD
HonDSc (UWA)
Hon DApSc
(RMIT) FTSE
GAICD
Chief Executive



Mr Craig Roy
BSc MSc MBA
GAICD
Deputy Chief
Executive,
Science Strategy
and People



Mr Mike Whelan
BEc
Deputy Chief
Executive,
Operations



Ms Hazel Bennett
BSc(Hons) ACA
FAIM
Chief Finance
Officer (from
November 2010)



Dr Calum Drummond
BSc(Ed)
BSc(Hons) PhD
Group Executive,
Manufacturing,
Materials and
Minerals (from
January 2011)



Dr Andrew Johnson
BAgrSc(Hons)
PhD MPA
(Harvard)
Group Executive,
Environment



Dr James Bradfield Moody
BInfoTech(Hons)
BEng (Elec) PhD
Executive Director,
Development



Dr Steve Morton
BSc(Hons) PhD
Group Executive,
Manufacturing,
Materials and
Minerals (to
December 2010)



Mr Nigel Poole
LLB BCom
FAICD
Executive
Director,
Commercial (to
December 2010)



Dr Alastair Robertson
BSc(Hons) PhD
FRSC CChem
FIFST
Group Executive,
Food, Health
and Life Science
Industries



Dr Beverley Ronalds
BE(Civil)(Hons)
MSc PhD
FIEAust FICE
FTSE FAICD
Group Executive,
Energy



Mr David Toll
BA,
MAccounting,
MBA, CPA
Acting Chief
Finance Officer
(to November
2010)



Dr Alex Zelinsky
BMaths(Hons)
PhD FTSE FIEEE
FAICD FIEAust
Group Executive,
Information
Sciences

Executive Team profiles
are available at:

www.csiro.au/executiveteam



CSIRO's research being used to make Australian water policy decisions

CSIRO has undertaken a comprehensive scientific assessment of current and future water availability in several regions of Australia and the results of these assessments are being used by water managers and governments to make water policy decisions.

The first project conducted was in the Murray-Darling Basin in 2008, and which has been used to inform decisions about future management of the Murray-Darling Basin, including using updated Murray-Darling Basin Sustainable Yields models in the development of the Murray-Darling Basin Plan.

The Northern Australia Sustainable Yields project, completed in late 2009, provided a major component of the Northern Australia Taskforce report on the Sustainable Development of Northern Australia and has been used by the West Australian Government to make decisions on water management in northern Western Australia.

In Tasmania, the sustainable yields assessment, completed in early 2010, has been used by the commonwealth and state governments to inform decisions on new irrigation schemes (including approval of four new schemes).

In south-west Western Australia, project results released in early 2010 have been used to calibrate new groundwater models for the region. The project modelled current water yield and future water yields with respect to climate change, water resource development and other risks.

In late 2010, CSIRO began assessing the water resources of the Great Artesian Basin, which underlies about one-fifth of the Australian continent. The assessment will improve understanding of available groundwater resources in the Basin's

aquifers, at a time of increasing water demand and heightened concerns about the potential impact of coal seam gas development. It will also help water managers meet National Water Initiative commitments, providing greater certainty for investment and for the environment.



Blackwood River, south-west Western Australia.
Credit: Robert Garvey, CSIRO

Health and safety

CSIRO is committed to the health and safety of its staff and recognises the importance of positive interventions aimed at improving staff health and safety. CSIRO acknowledges its responsibilities under Section 74 of the *Occupational Health and Safety Act 1991*.

Health, Safety, Environmental Sustainability and Community Policy

CSIRO's Health, Safety, Environmental Sustainability and Community Policy reflects our commitment to ensuring the safety and wellbeing of our staff, visitors and the communities in which we work. It reinforces our Health, Safety and Environmental (HSE) strategic goal of 'Striving for Zero Harm' to our people, the environment and the communities in which we operate.

A summary of CSIRO's performance and its compliance with Section 74 of the *Occupational Health and Safety Act 1991* is provided below.

Health and safety management arrangements

Health and safety management arrangements are documents concerning the management of health and safety in CSIRO. They are one of the mechanisms by which CSIRO demonstrates commitment to meeting its duty of care under the Act.

In recognition of this duty, CSIRO has developed these health and safety management arrangements in consultation with our staff and their representatives. The Act emphasises consultation and cooperation between employers and employees in regard to occupational health and safety issues by requiring the establishment of a framework incorporating:

- health and safety management arrangements (HSMAs)
- designated work groups
- health and safety representatives
- health and safety committees
- dispute resolution processes.

These structures and arrangements are in place and effective within CSIRO. A review of the HSMAs in line with the expected changes to Workplace Health and Safety laws and the new CSIRO Enterprise Agreement commenced in June 2011, with a planned delivery of updated and approved arrangements in September 2011.

Initiatives undertaken during the year to ensure the health, safety and welfare at work of staff members and affiliates

- A new HSE Policy Framework has been implemented that simplifies and streamlines organisational HSE requirements to ensure that requirements are easier for staff to access, understand and comply with. The new HSE Policy Framework comprises a new policy, management standard, procedures and guidelines providing improved safe systems of work and risk tools. An additional level has been established for Business Units and sites to create specific operating instructions and local teams to establish safe work instructions.
- A restructure of the HSE function to improve efficiency and effectiveness of our HSE service delivery across the Organisation has been implemented. This has provided an improvement in local site coverage.
- Implementation of CSIRO's health, safety and environment leadership training continued. This will equip the next level of leaders to take a higher profile in growing the Organisation's *Zero Harm* culture.
- The Contractor HSE Management Training program for scientific managers who manage or engage contractors continued. The program highlights the specific HSE requirements necessary for safe completion of contracted works within CSIRO. HSE staff also attended specific training on supporting scientific managers in their responsibilities relating to contractor management.
- Upgrades were undertaken to our HSE Management System to improve hazard and incident reporting.
- Increased emphasis was placed on the reporting of incidents, near misses and any incident involving lost time and medical treatment.
- Following feedback from regular international travellers, several system upgrades have been implemented in our Staff International Travel System.

Health and safety outcomes

- An increased awareness of requirements and responsibilities for safe systems of work and risk management processes was achieved through enterprise-wide implementation of the new HSE Policy Framework.
- An improvement in the visible interest and demonstration of HSE leadership behaviours and staff engagement was made through the ongoing HSE leadership training course and the conduct of site observations in the Safety Contacts Program and the HSE Review Program.
- An increased awareness of serious HSE incidents by senior managers was achieved following the implementation of serious HSE incident procedures.
- An overall improvement in health and safety performance is recognised in reduced injuries, illnesses and the workers' compensation premium.
- An increased awareness and better understanding of how HSE staff can better support managers who manage contractors to ensure positive HSE outcomes in contracts was achieved.
- Accuracy in the reporting of incident information was improved.
- Following two emergency situations in Queensland, Site Emergency Management Plans were centrally located on an HSE Share Point to increase staff accessibility.
- Continued counselling support for staff and their immediate families.

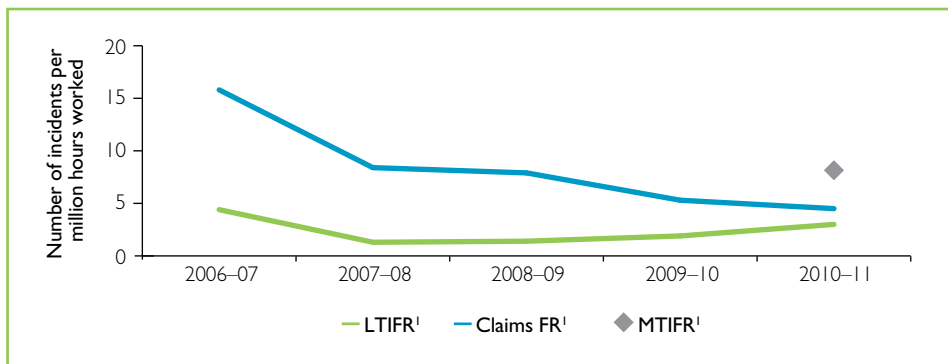
Statistics of any accidents or dangerous occurrences during the year that arose out of the conduct of undertakings by CSIRO that required the giving of notice under section 68 (see Figure 4.1)

- The number of workers' compensation claims with injury dates in the reporting period shows a continued reduction from 63 in 2009–10 to 50 in 2010–11. Improved incident prevention and an early injury intervention program contributed to the reduction.
- A focused initiative to improve the reporting and correct internal classification of injury has seen an increase in the lost time injury frequency rate (LTIFR) that now accurately reflects the actual performance of the Organisation. The LTIFR for 2010–11 was 3.0 compared to 1.9 for 2009–10.
- Historically, the reported medical treatment frequency rate (MTFR) was based on the rate of claims accepted by Comcare. With our ability to now report MTFR based on our own data, the previously reported data has been re-characterised as a claims frequency rate (Claims FR). CSIRO's Claims FR has decreased from 5.3 in 2009–10 to 4.5 in 2010–11.
- Commencing with the 2010–11 reporting period, any injury requiring defined medical treatment is classified as a medical treatment injury (MTI) and captured in the medical treatment frequency rate (MTFR). In this first MTFR reporting period, CSIRO's MTFR was 8.1.
- The reporting of near misses has decreased from 464 in 2009–10 to 337 in 2010–11, but hazard reporting has increased with the introduction of an improved reporting system reflecting a growing awareness among supervisors and staff of the value of reporting and rectifying risks before injuries occur.
- The number of Comcare Notifiable Incidents has decreased from 50 in 2009–10 to 31 in 2010–11.
- CSIRO reported one environmental incident to regulatory authorities during 2010–11. This related to a release of water from a glasshouse at the Black Mountain site (ACT). This was certified with the Australian Quarantine and Inspection Service and the Office of the Gene Technology Regulator. The release occurred because of flooding in the facility from watering operations.
- CSIRO reported one event to the Australian Radiation Protection and Nuclear Safety Agency during 2010–11 relating to a radiation source incident during transportation for disposal.
- CSIRO's premium for 2010–11 was 0.33 per cent of payroll compared to the rate for all premium-paying agencies of 1.20 per cent.

Details of any investigations conducted during the year that relate to undertakings carried on by the employer, including details of all notices given to the employee under sections 29, 46 or 47 during the year

- In November 2010, Comcare issued a letter of warning as an alternative to civil proceedings following the investigation of Incident Number 4221 – Serious Personal Injury – superficial burns to face, neck and arms resulting from a reaction following the mixing of hazardous substances on 17 July 2009.
- Comcare conducted a series of Dangerous Goods Audits on sites in the ACT and on the Dutton Park site in Queensland.
- Two Forklift Safety Audits were conducted by Comcare. One at a site in Queensland and one in the ACT, as part of a national campaign on forklift safety. Both audits were completed to the satisfaction of Comcare.
- Comcare requested a compliance monitoring program be implemented at one of our sites in Western Australia following a Notifiable Incident on the use of a mobile hoist.
- No Provisional Improvement Notices were served on CSIRO by Health and Safety Representatives.
- No Prohibition Notices were served on CSIRO.
- No Improvement Notices were served on CSIRO.

Figure 4.1: CSIRO's injury frequency rates



¹Definitions:

- Claims FR is the number of compensation claims per million hours worked (may include medical treatment and or lost time injuries). Previously reported as MTR.
- LTIFR is the number of incidents involving lost time from work greater than or equal to one full day or shift per million hours worked. (A major focused effort in ensuring reporting of serious incidents and correct internal classification of these has resulted in the apparent increase in the LTIFR).
- MTR is the number of incidents requiring medical treatment (beyond first aid) per million hours worked.

CSIRO's health and safety performance compares favourably with other Australian Government agencies. This is reflected in our workers' compensation premium. CSIRO's premium rate, determined on four year injury and claims performance, is ranked by Comcare in the first quartile (good performance) compared against other agencies. This is also reflected by the reduction in the actual rate charged.

Environmental performance

Contribution to Ecologically Sustainable Development

CSIRO upholds the principles of ecologically sustainable development (ESD) outlined in the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) through both its operations and research activities.

To meet its research goals, CSIRO operates offices, laboratories, pilot bays, machinery, glasshouses and significant information communication and technologies infrastructure, as well as managing plants and livestock. These activities require significant quantities of energy and water and produce waste.

CSIRO Business Units manage most of the environmental impacts of CSIRO's research activities, with support from centralised property, information technology and other groups.

Table 4.1: Examples of CSIRO's contribution to ESD principles

Principle	CSIRO's activities
Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations.	CSIRO's Values Compass identifies safety and sustainability as key values that guide the way CSIRO undertakes its business activities. In 2010–11 CSIRO reviewed its Health, Safety, Environmental Sustainability and Community (HSESC) Policy, Standards and Procedure Framework and conducted staff training on HSESC aspects of contractor management.
If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.	As an example of our commitment to preventing environmental damage, CSIRO and Australia Pacific LNG launched the Gas Industry Social and Environmental Research Alliance in July 2011. With its breadth and depth including social, economic and ecological sciences, CSIRO is able to provide impartial and integrated research to the gas industry, regulators and the wider Australian community.



Canola plants: a new source of omega-3

CSIRO scientists have discovered a way to produce beneficial long-chain omega-3 oils in canola plants, providing a new high-value crop for Australian farmers.

Traditionally sourced from ocean-based algae and the fish that eat it, long-chain omega-3 fatty acids are necessary for human health, playing an important role in heart and brain function, as well as child and infant development. These oils have also been found to reduce the risk of heart disease and may also play a role in mental health, depression and various inflammatory diseases.

CSIRO scientists, based in the Food Futures Flagship, have proved it is possible to produce commercially viable quantities of long-chain omega-3 oils in canola plants. Because the body can only make very small amounts of omega-3 fatty acids, they need to be obtained mostly from the foods we eat. Some land-based plants, such as flaxseed, can produce short-chain omega-3 oils, but are unable to produce the more beneficial long-chain omega-3

docosahexaenoic acid (DHA). Fish obtain their long-chain omega-3 oils from the microalgae they eat in the ocean. CSIRO scientists are taking the components of marine microalgae that produce long-chain omega-3 oils and adding them to land-based canola plants.

As demand for omega-3 DHA oils continues to increase to meet the needs of our growing world population, the race is on to find sustainable and reliable new sources that can satisfy this burgeoning consumer demand.

CSIRO is playing a leading role in a \$50 million dollar research collaboration with Nuseed and the Australian Grains Research and Development Corporation. This partnership aims to trial these new canola crops as early as 2013 and have seeds commercially available by 2016.



Long-chain omega-3 oil from marine plants can now be sourced from land-based canola crops
Credit: Carl Davies, CSIRO

Principle	CSIRO's activities
<p>The principle of inter-generational equity – that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.</p>	<p>As an example, through our Sustainable Agriculture Flagship, CSIRO conducts research to improve agricultural productivity while maintaining environmental health.</p> <p>CSIRO has an on-going program of building improvements that target building management and energy and water efficiency. During 2010–11, CSIRO replaced inefficient chillers, installed variable speed drives on various plant and equipment and funded upgrades of building management systems at six major sites that will reduce costs and greenhouse gas emissions (GHG) and enhance staff comfort. In addition, CSIRO has increased its utilisation of desktop videoconferencing, with the progressive deployment of web cameras to staff that undertake significant travel.</p> <p>CSIRO also ran a national e-waste collection and zero office waste trials in two states.</p>
<p>The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making.</p>	<p>In divesting CSIRO's Yalanbee site in Western Australia (WA), 320 hectares were preserved as a Bushland Conservation Park under the control of the WA Government.</p>
<p>Improved valuation, pricing and incentive mechanisms should be promoted.</p>	<p>CSIRO contributed to the Garnaut Climate Change Review through its Energy Transformed and Climate Adaptation Flagships and the Division of Marine and Atmospheric Research. CSIRO contributed through climate change and emissions modelling in areas such as climate model uncertainties, carbon cycle dynamics, economic modelling, carbon trading, climate scenarios, agricultural and other impacts, and the costs of electricity generation technologies. CSIRO also made submissions to issue papers on topics such as land use for agriculture and forestry; climate change science; low-emissions technologies; emissions trading, and transport, planning and the built environment (see www.garnautreview.org.au/CA25734E0016A131/pages/all-reports--resources.html).</p>

Effects of CSIRO's activities on the environment

The Environmental Sustainability Strategy (ESS) outlines CSIRO's key organisational goals of: carbon neutrality; halving mains water use; and halving waste to landfill by 2015. A comprehensive report of our performance against the ESS can be found in the Health, Safety and Environment Annual Report which is available at www.csiro.au/resources/HSEReport.html. A summary of our environmental performance in 2010–11 follows.

Over the last five years, total electricity and gas consumption have remained relatively constant, despite the transfer of operational management of the Canberra Deep Space Communications Complex (ACT) to CSIRO in early 2010. During 2010–11, CSIRO consumed an estimated 682 Terajoules (TJ) of electricity and gas (see Table 4.2).

A number of sites recorded decreased energy use, including the Australian Animal Health Laboratories (AAHL, Vic) and Newcastle (NSW). Energy consumption at AAHL has decreased by six per cent, attributed to the gradual implementation of new plant and energy efficiency measures over several years.

Table 4.2: Purchases of electricity and gas

Indicator	2006–07	2007–08	2008–09	2009–10 ¹	2010–11 ²
Electricity (TJ)	445	431	438	438	439
Natural gas (TJ)	227	234	245	229	243
Accredited GreenPower (TJ)	40	43	56	74	77

¹ Electricity consumption reported last year has been revised following the resolution of metering issues at the Black Mountain site (ACT).

² Data are best available at time of publication.

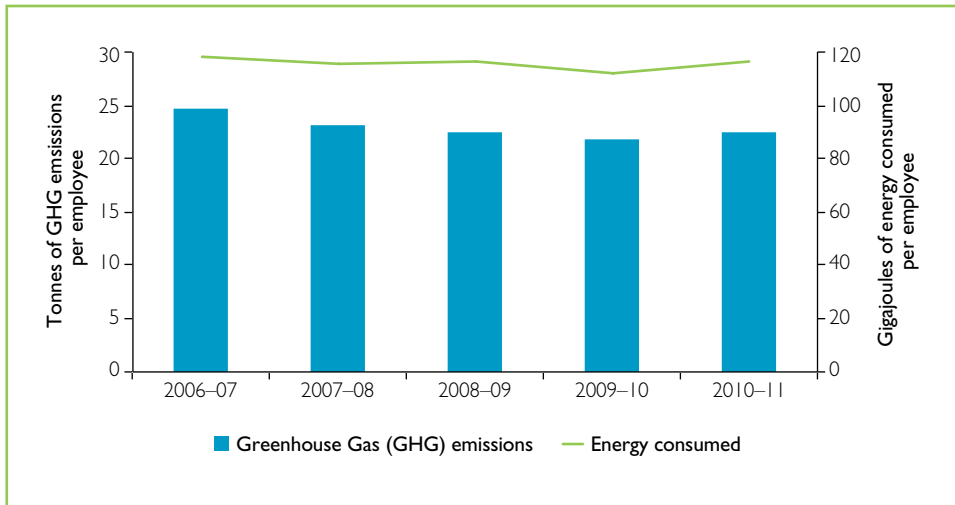
CSIRO's 2010–11 electricity and gas consumption generated an estimated 131 kilotonnes of GHG emissions¹ (see Table 4.3). This figure does not take into account that CSIRO procures 18 per cent GreenPower equivalent to an emissions reduction of approximately 22 kt CO₂-e this year.

Table 4.3: Greenhouse gas emissions from electricity and gas consumption

Indicator	2006–07	2007–08	2008–09	2009–10	2010–11
Greenhouse gases produced (kt)	140	134	132	130	131
Greenhouse gases produced, adjusted for GreenPower (kt)	Not available		116	109	109

CSIRO's emissions and energy intensity increased slightly in 2010–11 (see Figure 4.2). With energy consumption comparable to last year, a slight fall in the number of full-time equivalent employees resulted in the increased intensity in greenhouse gas emissions and energy consumption.

¹ Expressed as kt CO₂-e – carbon dioxide equivalent.

Figure 4.2: Greenhouse gas emissions and energy use per employee

Water consumption has been reduced through activities such as the implementation of water-efficient fixtures and improved operation and maintenance of plant such as cooling towers. During 2010–11, CSIRO sites consumed approximately 392 megalitres (ML) of mains water (see Table 4.4).

In alignment with the Environmental Sustainability Strategy, CSIRO currently reports on its mains water consumption

only. CSIRO is actively improving its data on non-mains water usage and intends to report on total water consumption next year. CSIRO is increasing its use of non-mains water by harvesting rainwater, reverse osmosis reject water and other alternative water sources for reuse in flushing toilets and irrigation of heritage-listed trees and other landscaping (see case study on page 103).

Table 4.4: CSIRO mains water consumption

Indicator	2006–07	2007–08	2008–09	2009–10 ¹	2010–11
Purchased mains water (ML)	Not available	427	406	426	392

¹ Revised from 415 ML to 426 ML because of missing invoice data that was later found.

CSIRO commenced waste trials at its sites in South Australia and Western Australia with a focus on significantly reducing waste to landfill. Waste and recycling stations were installed at strategic locations across the sites that allow staff to sort waste at source into recyclable materials, compostable wastes and wastes that can be used for alternative fuel production.

In further efforts to reduce waste to landfill, an e-waste recycling program was undertaken in early 2011 that resulted in the collection and recycling of around 70 tonnes of obsolete computers, televisions, fridges and other electronic waste.



CSIRO's rainwater harvesting system

As part of CSIRO's goal to reduce its reliance on mains water, significant rainwater tank systems were installed at its sites in Werribee (Victoria) and the Waite campus (South Australia) by the CSIRO Property Services team.

At Werribee, rainwater will be captured from approximately 2,000 square metres of the roof area, which totals 5,500 square metres. The tanks are capable of holding 160,000 litres of water, which will be used to supply the toilet cistern on site.

Initially three buildings, the main office/laboratory complex, the Process Engineering Centre and the Conference Centre, were connected to the tanks. It is estimated that nearly 900,000 litres of drinking water will be saved each year (assumptions: 36 cisterns; ten flushes/day; five days/week; 50 weeks/year; ten litres/flush).

In addition, the toilets were upgraded with slimline cisterns and fittings and the tanks were switched from the mains supply to

the rainwater from the tanks. As required by the local water authority, the tank waterlines were setup with a mains supply cut-over system.

Another significant rainwater capture system was installed at CSIRO's Waite campus in Adelaide. The total tank capacity is approximately 128,000 litres which collects rainwater from a number of buildings and from a reverse osmosis purifying unit.

The tank system is important for the irrigation of heritage trees on the nature strip at the front of the CSIRO buildings at the Waite campus. In addition, the tanks will serve the toilet facilities in selected buildings.



Some of the rainwater tanks located at CSIRO's Werribee – Sneydes Road site. Credit: Murray Brown

Heritage protection

The CSIRO Heritage Strategy is used as the basis for the management of actions and activities associated with CSIRO's heritage places. The heritage program provides for recording and reporting of management, maintenance and expenditure on CSIRO's heritage assets. Heritage values are assessed and incorporated into the development proposal prior to any development activity occurring on CSIRO owned or controlled property.

During 2010–11, heritage assessments were undertaken at a number of CSIRO sites, including Hobart and Sandy Bay sites in Tasmania and four New South Wales sites that are used for radio astronomy purposes (Marsfield, Parkes, Narrabri and Mopra). Heritage values were identified at Parkes and Narrabri. The radio telescope at Parkes has Commonwealth significance and Narrabri has both Commonwealth and Indigenous cultural values. In 2011–12, heritage assessments and further work will occur at Floreat (WA), Parkville (Vic), Pullenvale (Qld), and Black Mountain (ACT).

Westridge House in Canberra, a Commonwealth listed heritage property, was sold during the year. A heritage management plan and covenants were established for the ongoing protection of the property's heritage values.

Our people

CSIRO looks to its staff to support its values and to work in a collaborative and positive way to achieve the Organisation's mission and purpose. CSIRO seeks to attract the best minds and to be a place where creativity and innovation can flourish. We provide the environment, facilities and opportunities people need to respond to national challenges.

CSIRO's People Policy confirms our commitment to developing and supporting our staff, and CSIRO's Human Resources function provides support and leadership on people issues to leaders and staff across CSIRO. The goal is to develop high-performing teams working across the Organisation's boundaries. Two key themes are:

- nurturing CSIRO's innovative culture by fostering a safe environment where innovation, collaboration, flexibility and performance flourish
- working effectively and efficiently by using common systems, structures and improved processes to support CSIRO's operations.

Enterprise agreement

Enterprise Agreements set the terms and conditions of employment for CSIRO staff. The CSIRO Enterprise Agreement 2011–14 was negotiated with relevant unions and staff bargaining agents. It came into operation on 7 July 2011 following formal approval processes and a staff vote. This new Agreement will reach its nominal expiry date in August 2014.

Throughout 2010–11, CSIRO has used focus groups, reference groups and other qualitative methodologies to engage with staff in a focused, topic specific way. These activities provided valuable insights to support the development of CSIRO's 2011–15 Strategy and the finalisation of the new Enterprise Agreement.

Learning and development

CSIRO believes that all officers should have the opportunity to participate in relevant learning, development and training activities aimed at improving individual and team performance, skills and knowledge, and the effectiveness of CSIRO. Under our new Enterprise Agreement, all staff will have the opportunity to participate in at least five days learning, development and/or training each year.

A new national orientation and induction program was introduced this year, providing significant improvements in supporting new employees transitioning into CSIRO. An introductory project management program was also introduced and an advanced module is in production.

Twenty-three high potential leaders participated in CSIRO's senior leadership program, *'Leading the Research Enterprise'*. The leadership credentials of the program have been recognised by the Australian Graduate School of Management (AGSM). Successful participants are now awarded an AGSM Certificate in Executive and Management Development. Fifty emerging leaders participated in the CSIRO *'New People Leader Program'* to support their transition into leadership roles.

The first program in the new *Impact from Science* stream, *Publishing with Impact*, was delivered in partnership with CSIRO PUBLISHING. There have been 41 participants to date. A further series of programs addressing communication and statistical analysis has been developed and will commence in 2011–12.

Equal employment opportunity

CSIRO is developing a new Workplace Diversity Plan to build on the 2009–11 Workplace Plan. The new Plan will

seek to capture the full benefits of a broadly diverse workforce and will include awareness raising on diversity issues, and promotion of the suite of family friendly work arrangements.

CSIRO's Indigenous Engagement Strategy, which aims to increase Indigenous participation in CSIRO's research and development agenda and activities, continues to be progressed (see page 17). The Indigenous Employment Strategy aims to increase the employment of Indigenous peoples through the implementation of several new employment programs and targeted approaches. CSIRO's commitment is reflected in the CSIRO Enterprise Agreement.

Commonwealth Disability Strategy

Since 1994, Commonwealth departments and agencies have reported on their performance as policy adviser, purchaser, employer, regulator and provider under the Commonwealth Disability Strategy. In 2007–08, reporting on the employer role was transferred to the Australian Public Service Commission's *State of the Service Report* and the *APS Statistical Bulletin*. These reports are available at www.apsc.gov.au. From 2010–11, departments and agencies are no longer required to report on these functions.

Staff demographics

CSIRO staff are employed under section 32 of the *Science and Industry Research Act 1949*. At 30 June 2011, CSIRO had a total of 6,514 staff, which has an equivalent full-time (EFT) of 5,780.

Table 4.5 shows the number of staff employed in different functional areas and Table 4.6 shows staff by state. Overall, as planned, the total number of staff decreased by 2.5 per cent (166) over the last 12 months. The largest decline (13 per cent) was in the

number of Communication and Information Services staff. Voluntary staff turnover remains low with a three year average of 4.35 per cent. The proportion of female staff in CSIRO remained stable at 39 per cent but the proportion of female research staff increased from 23 to 24 per cent (up from 19 per cent in 2005–06).

Table 4.5: Staff numbers (headcount) as at 30 June

Principal enterprise functions	2006–07	2007–08	2008–09	2009–10	2010–11	% Female for 2010–11
Research Scientists	1,688	1,727	1,837	1,907	1,865	24
Research Project Staff	2,199	2,246	2,215	2,241	2,166	41
Senior Specialists	25	13	13	15	12	25
Research Management	188	194	176	161	165	8
Research Consulting	28	29	26	34	40	18
Technical Services	581	542	545	630	643	12
Communication and Information Services	384	402	407	429	375	63
General Services	75	66	51	48	56	46
Administrative Support*	1,046	1,082	1,112	1,075	1,048	75
General Management	117	122	128	140	144	28
Total headcount	6,331	6,423	6,510	6,680	6,514	39
EFT	5,695	5,768	5,866	5,956	5,780	36

* *Administrative Support includes: Staff who provide science-based administrative and management services and systems.*

Table 4.6: Staff numbers by state as at 30 June

State	Metropolitan	Regional	Total
ACT	1,407	0	1,407
NSW	794	327	1,121
NT	26	10	36
QLD	724	131	855
SA	387	0	387
TAS	382	0	382
VIC	1,348	456	1,804
WA	516	6	522
Grand total	5,576	938	6,514



Facebook fans take on titanium challenge

Social media provided an effective means of driving interest in the inaugural CSIRO Titanium Challenge.

The Titanium Challenge aimed to stimulate awareness in Australian university undergraduates about titanium, the potential for additive manufacturing, and CSIRO's work in this area.

A series of posts on the CSIRO Facebook Fan page engaged with fans and encouraged them to visit the CSIRO Challenge webpage. Cross posting on CSIRO's Twitter account @csironews as well on the Facebook Fan Page of Engineers Australia helped spread the word.

Social media proved effective in directing traffic to the Challenge webpage – two thirds of the 800-odd hits on the page came via Facebook, and about 150 via Twitter.

The Challenge attracted entries from students of industrial design and mechanical and materials engineering in three Australian states.

A multidisciplinary judging panel from government, industry, and academia assessed the entries for appropriate use of titanium and of additive manufacturing, innovativeness and a supporting business case. The judges applauded the creativity and sophistication of the entries.

Callaghan Forsyth, from Swinburne University, won the challenge (and an Apple MacBook Pro) with his design for an advanced radiator. A prototype of his design will be produced by Formero Pty Ltd, an Australian product development and manufacturing service provider.

The runner-up, a design for a Prandtl-attack tube, was developed by Michael Bowen, a mechanical engineering student from The University of Adelaide.

CSIRO will run the Titanium Challenge again in 2012.



The winning design of an advanced radiator; created by industrial design student Callaghan Forsyth.
Credit: Callaghan Forsyth