

# Department of Environment, Land, Water and Planning 2014-15 Annual Report

## Additional departmental information available on request

In compliance with the requirements of the Standing Directions of the Minister for Finance, details of the items listed below have been retained and are available to the relevant ministers, Members of Parliament and the public on request (subject to the *Freedom of Information Act 1982*).

To ensure the department is meeting its accountability and compliance requirements, some of this additional information has been included in the Annual Report where relevant.

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### a) A statement that declarations of pecuniary interests have been duly completed by all relevant officers of the department

Declarations of pecuniary interests have been duly completed by all relevant officers.

### b) Details of shares held by senior officers as nominee or held beneficially in a statutory authority or subsidiary

No shares are held by a senior officer as nominee or held beneficially in a statutory authority or subsidiary.

### c) Details of publications produced by the department about the activities of the department and where they can be obtained

Publication	Date produced	Availability
Department of Environment and Primary Industries Annual Report 2013-14	September 2014	Available online ( <a href="http://www.delwp.vic.gov.au">www.delwp.vic.gov.au</a> and <a href="http://www.data.vic.gov.au">www.data.vic.gov.au</a> ) or from our Customer Service Centre on 136 186

### d) Details of changes in prices, fees, charges, rates and levies charged by the department for its services, including services that are administered

Details of fees and charges are available on the department's website at [www.delwp.vic.gov.au](http://www.delwp.vic.gov.au).

### e) Details of any major external reviews carried out in respect of the operation of the department

Major external reviews	Conducted by	Purpose	Released
Investigation into allegations of improper conduct in the Office of Living Victoria	Ombudsman	To investigate allegations of improper conduct in OLV, specifically in relation to its procurement and contract management practices	August 2014
Effectiveness of Catchment Management Authorities	Victorian Auditor-General	Their legislative functions and how DEPI supports and monitors CMAs in fulfilling their roles and responsibilities	September 2014
Management and Oversight of the Caulfield Racecourse Reserve	Victorian Auditor-General	To examine the effectiveness of the management and oversight of the Caulfield Racecourse Reserve	September 2014
Effectiveness of Support for Local Government	Victorian Auditor-General	To assess the effectiveness, efficiency and economy of support provided to councils	February 2015
Digital Dashboard: Status Review of ICT	Victorian Auditor-General	To assess whether Victorian public sector agencies and entities are appropriately	April 2015

Major external reviews	Conducted by	Purpose	Released
Projects and Initiatives	General	planning, managing and implementing selected ICT projects	
Victoria's Consumer Protection Framework for Building Construction	Victorian Auditor-General	To assess whether key elements of the current domestic building consumer protection framework are effectively managed by relevant entities	May 2015

**f) Details of any major research and development activities undertaken by the department that are not otherwise covered either in the report of operations or in a document which contains the financial statement and report of operations**

Major research and development	Conducted by	Purpose
ARC Linkage Project on Population Attraction and Retention Stud	University of Queensland Victorian Government Graduate Careers Australia La Trobe University Bendigo	The research project examines the contribution of mobility to educational choice and post-university pathways. This provides insights into the factors that may assist retention and attraction of population in regional areas.
Species Models, Ecological Vegetation Classes and Strategic Management Prospects (previously NaturePrint)	Arthur Rylah Institute	The production of spatial models that are informative for policy development and management purposes within Environment and Landscape Performance (ELP). These products are sought by a range of ELP stakeholders, and will be used as key components for Native Vegetation reform, Ecological Vegetation Classes review and other projects.
Victorian Environmental Partnerships Program Stream 3 - Native Vegetation Monitoring	Arthur Rylah Institute	Key native vegetation interventions were identified for targeted monitoring. A robust monitoring design was developed to maximise the likelihood of detecting changes due to management interventions and to support the collection of evidence to test the assumptions about the relationships between management actions, threat mitigation and asset condition. Data was collected before and after management actions and initial results were summarised. The inclusion of retrospective sites for data collection and analyses were explored and included where possible.
Commonwealth Department of Sustainability,	Arthur Rylah Institute	This project targeted engaging Victorian recreational fishers to encourage involvement in natural resource management and

Major research and development	Conducted by	Purpose
Environment, Water Population and Communities – Fish Habitat Network helping Victorian recreational fishers habitat		biodiversity protection. Targeted communications, capacity-building activities and on-ground works will be undertaken to foster ownership and protection of fish habitat within the recreational fishing community; restore and rehabilitate coastal environments and urban waterways; and help enhance and conserve native fish populations. Key biodiversity outcomes included healthier, better protected, and resilient aquatic habitats and fisheries.
Strategic Rabbit Management	Arthur Rylah Institute	Collation and reporting of state-wide rabbit monitoring data; Monitoring the RHD Boost release; Testing of Decision Support Tools and assessing the effects of warren-ripping on weed succession. This included finalising the publication of three journal articles from the Ingliston rabbit management demonstration site and one article from the analysis of how warren ripping affects the abundance of foxes in addition to the provision of advice, publications and other technical material.
Murray Darling Basin Fish Survey 2014-2018	Arthur Rylah Institute	Under the Basin Plan Monitoring and Evaluation program, Basin scale fish condition monitoring has been identified as a priority in 2014 and onwards to support tracking of the high level fish targets identified in Schedule 7 of the Basin Plan.
Melbourne Strategic Assessment - Ecological Decisions Systems	Arthur Rylah Institute	The expansion of Melbourne’s Urban Growth Boundary will impact several species and ecological communities listed under Federal legislation. The Melbourne Strategic Assessment Monitoring and Reporting Framework has been established to measure the progress of the program in achieving outcomes for Matters of National Environmental Significance. The program is also committed to best practice land management of conservation areas using an adaptive management approach.
Fisheries Victoria (Regulation & Compliance Group) - Trout Assessments	Arthur Rylah Institute	Trout acoustic study and riparian literature review.
The effects of planned fire on	Arthur Rylah Institute	This project is investigating the relationship between planned burning and predation by

Major research and development	Conducted by	Purpose
predator-prey interactions for landscape resilience		introduced predators, especially foxes, to see if predation is exacerbating the impact of planned burning. It will provide land and fire managers with advice on best management practice in relation to the use of planned fire and mitigation of predator impacts on native mammals.
Murray Darling Basin Authority Population Models	Arthur Rylah Institute	The overarching objective of the project is to develop a set of population models for selected native fish to estimate the response of populations to flow management. It is anticipated that these models will provide an important tool for annual and long-term planning at both Basin and regional scales.
Land Mosaic Burn Fire Retrospective 2014/15	Arthur Rylah Institute	This project includes completion of legacy projects for the Landscape Mosaic Burn retrospective and growth stage optimisation reports to inform fire management.
2014-2015 Pre and Post-Fire Flora Monitoring of Planned Burning on Public Land	Arthur Rylah Institute	To undertake monitoring of flora using standard protocols at a selection of planned burn sites (125) in Victoria. This initiative will improve the standards for data collection, management and increase understanding of the interaction and response of flora to fire across Victoria's landscapes, assisting with the planning and operation of burns in the future.
Victorian Environmental Partnerships Program Galaxiid Conservation Projects 2013-15	Arthur Rylah Institute	Undertake the following specific conservation actions: translocation to establish new locations, detect and remove predators, breed individuals to bolster numbers.  (Victorian Environmental Partnerships Program F.3.1; 3.2; 7.1; 8.1; 8.2; 9.1; 9.2; 10.1; 10.2; 11.1; 11.2; 12.1 and 12.2)
Riparian intervention monitoring project	Arthur Rylah Institute	The focus of the proposed project is on building evidence to demonstrate the return on investment in riparian management. This will be accomplished using a robust experimental design at a subset of riparian intervention sites to measure ecological responses and understand sources of variability.
Victorian Waterway Management Strategy Instream Habitat	Arthur Rylah Institute	Demonstrating quantitative links between instream woody habitat metrics and river fish populations to inform habitat restoration.

Major research and development	Conducted by	Purpose
Victorian Environmental Partnerships Program Stream 3 - Threatened Species Monitoring	Arthur Rylah Institute	Key threatened species interventions will be identified for targeted monitoring. A robust monitoring design will be developed to maximise the likelihood of detecting changes due to management interventions and to support the collection of evidence to test the assumptions about the relationships between management actions, threat mitigation and asset condition. Data will be collected before and after management actions and initial results will be summarised.
Koala Management in Barwon South West Region	Arthur Rylah Institute	Provide recommendations for the management of koalas in the Barwon South West region to address issues relating to over browsing of native forest and management of commercial plantations.
Victorian Environmental Partnerships Program: Hooded Scaly-foot	Arthur Rylah Institute	The Hooded Scaly-foot (HSF) is listed as a Critically Endangered legless lizard in Victoria and restricted to native grasslands in only six localities in the state. This project will detect changes in the population status of the HSF, especially in response to habitat change (through direct intervention). A baiting program will also be instituted at Bael Bael Grassland Nature Conservation Reserve to reduce the impacts of fox predation on the HSF (and other grassland taxa). (RA. 12.1, 13.1, 14.1, 14.2, 15.2, 16.2)
Commonwealth Department of Sustainability, Environment, Water Population - Managing fire to protect biodiversity, carbon and build resilient landscapes	Arthur Rylah Institute	To explore the synergies and trade-offs that arise in planning fire regimes to protect biodiversity, carbon stocks and assets. Previous work has been undertaken exploring either carbon and fire or carbon and biodiversity and this project provides a novel approach to combining these previously disparate areas of investigation. It has also taken advantage of recent improvements to fire severity mapping which provide important guidance for fire management planning.
Guidelines for passage at small structures	Arthur Rylah Institute	The impact of barriers on fish migration has been identified as a major cause of the declines in active fish populations. Longitudinal connectivity within the river channel is essential for many species of fish to spawn and recolonise. Barriers such as road crossings, culverts and other waterway structures can

Major research and development	Conducted by	Purpose
		sometimes produce adverse conditions for upstream fish movement. There is an opportunity to set better design standards based on recent examples for design best practice in South-Eastern Australia. This project will develop a suite of fish passage design guidelines for use at small structures suitable for Victorian fish species.
Ecological Input for the Development of the Growling Grass Frog Masterplan for Melbourne Strategic Assessment 2014-15	Arthur Rylah Institute	Ecological input for the development of the Growling Grass Frog Masterplan for Melbourne Strategic Assessment.
Fisheries Research and Development Corporation Murray Cod	Arthur Rylah Institute	The project will: develop criteria against which datasets will be reviewed for inclusion and identify long-term datasets and assess how well they meet established criteria; review existing Australian and international case studies involving monitoring by anglers for their application to basin-wide management of Murray cod fisheries; explore innovative data analysis techniques and integration approaches and design and road test a consistent, cross-jurisdictional and long-term monitoring survey at representative pilot sites within each jurisdiction; and contribute to reporting requirements specified within Head Agreement.
Response of fish to commonwealth environmental water delivery in Goulburn River and Broken Creek	Arthur Rylah Institute	An assessment of the response of key fish species to environmental water delivery in the Goulburn River and Broken Creek, Victoria.
Snowy Project - eFlow Monitoring and Assessment Project	Arthur Rylah Institute	As a part of the adaptive management cycle for environmental water management, the initial focus for the Victorian portion of the Snowy River is to understand the effects of the existing flow regime on the ecological condition of the Victorian reaches of the system (Stage 1). This will inform the development of environmental flow recommendations (Stage 2).
Victorian Environmental	Arthur Rylah Institute	The aims for Victorian Environmental Flows Monitoring and Assessment Program Stage 5



Major research and development	Conducted by	Purpose
Flows Monitoring and Assessment Program (VEFMAP ) Stage 5		are to: continue the assessment and analysis of existing data, primarily for native fish and riparian vegetation; demonstrate the ecological importance of environmental water use in the state of Victoria; and increase the effectiveness of VEFMAP's contribution to the adaptive management of environmental water.
Develop and implement a program for monitoring the performance of fishways and fish passage works	Arthur Rylah Institute	Develop methods for assessing Victorian fishway types for their effectiveness in enabling fish passage.
Adaptive management of grassland weeds Cane Needle Grass ( <i>Nassella hyalina</i> ) and Blanket Weed ( <i>Galenia pubescens</i> )	Department of Economic Development, Jobs, Transport and Resources	To develop methods for implementing cost effective weed control over large scales. The project focusses on weed control in Natural Temperate Grassland to assist land management of the Western Grassland Reserves as part of the Melbourne Strategic Assessment.
Develop and pilot of environmental-economic accounting framework for the environment portfolio	Department of Environment, Land, Water & Planning and Parks Victoria	The objectives are to: establish a business framework to assess Victoria's parks current assets and the benefits they provide; apply new international standards for environmental-economic accounting from the United Nations System for Environmental-Economic Accounting; establish a program of works, including prioritisation of ecosystem accounting and valuation projects and data acquisition, to enable the ongoing assessment of the services provided by Victoria's parks along with key benefits generated; and develop a set of experimental ecosystem accounts for Parks Victoria that will serve as a pilot ecosystem accounts for public land.
Science based Monitoring, Evaluation and Reporting (Schedule 24)	La Trobe University	To scientifically review and refine the Department of Environment, Land, Water and Planning's existing approach to monitoring, evaluation and reporting of Bushfire Management Outcomes (BMOs); and to develop and document refined methods and evaluation approaches to support a consistent approach to data collection and evaluation of BMOs by the Bushfire Risk Landscape teams.



Major research and development	Conducted by	Purpose
Bushfire and forests monitoring data validation and analysis (Schedule 26)	Interpine through the Bushfire and Natural Hazards Cooperative Research Centre	To evaluate the potential to leverage data management efficiencies between the Victorian Forests Monitoring Program and the Victorian Bushfire Monitoring Program.
Growth Stage and Habitat Analysis (Schedule 12)	La Trobe University University of Melbourne Deakin University Arthur Rylah Institute	To develop models for growth stage, habitat development and use at a landscape scale for use in assessing fire management outcomes.
Foothills fire and biota project: Managing Scale and Uncertainty in Fire Management Planning (Bushfire and Natural Hazards Cooperative Research Centre Schedule 11)	La Trobe University University of Melbourne Deakin University Arthur Rylah Institute	To develop remote sensing techniques to assess fire severity and patchiness on fuel hazard/habitat structure in foothill forests. This project gathers the known monitoring data for the past 40 years in the foothills forests and develops understanding of the relationships with fire and landscape factors to predict growth stage and ecological diversity, leading to development of resilience metrics and models to support decision making.
Relationships between flora, fauna, habitat attributes and vegetation growth stages in Victorian Tall Wet Forests	University of Melbourne	To refine the ecosystem resilience inputs into adaptive fire management and planning for Victorian Tall Wet Forests. It will gather new, and collate existing (flora, fauna and structural) data, and test, model and further develop the relationships between fauna, habitat attributes and vegetation growth stages and resilience for this ecosystem.
Resilience metric sensitivity analysis and growth stage optimisation in fragmented landscapes	University of Melbourne	As a component of the scientific review of the Bushfire Monitoring, Reporting and Evaluation approach this project will use an existing extensive vegetation dataset to explore how sampling design and the choice of focal species influences the outcome of the growth stage optimisation process, and develop methods to better utilise resilience metrics in fragmented landscapes.
Bushfire Climatology (Bushfire and Natural Hazards Cooperative Research Centre Schedule 1)	Monash University through the Bushfire and Natural Hazards Cooperative Research Centre	To develop regional climatology's (risk and planned burning) for use in risk based fire management planning.

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Drought Index- Victorian Spatial and Temporal Drought Index and Drought Factor (Extension of Phoenix RapidFire Project)	University of Melbourne	To develop a spatial and dynamic Drought Index and Drought Factor to improve bushfire predictions and to determine the potential impact of planned burning.
Fire Severity Rating (Bushfire and Natural Hazards Cooperative Research Centre Schedule 5)	Monash University through the Bushfire and Natural Hazards Cooperative Research Centre	To develop new fire danger rating/risk assessment measures based on power of fire/energy release measures using national and international case studies.
Severe Fire Behaviour - Improved Planning Responses (Bushfire and Natural Hazards Cooperative Research Centre Schedule 2)	University of Melbourne through the Bushfire and Natural Hazards Cooperative Research Centre	To enable the programming Phoenix RapidFire to support bushfire management and other planning responses by better characterising bushfire behaviour and damage potential, and developing functions to better apply Phoenix RapidFire to support land use and development planning.
2009 Black Saturday and Other Large Fire Events - Moisture and Atmospheric Conditions Project (Bushfire and Natural Hazards Cooperative Research Centre Schedule 3)	University of Wollongong	To review and reconstruct landscape moisture and atmospheric factors associated with the 2009 Black Saturday bushfires.
Risk in Catchments	University of Melbourne	To assess the risk of prescribed burning and bushfire in catchments.
Improved bushfire hazard (for planning and building) and decision-making	University of Melbourne	To provide an improved scientific and technical basis for bushfire risk assessment and management through finalising fuel and bushfire hazard (for building and planning) layer using updated vegetation information, and scope and design next generation approaches to hazard mapping and planning and building decision-making.
Landscape Moisture Modelling (Bushfire and Natural Hazards Cooperative)	CSIRO through the Bushfire and Natural Hazards Cooperative Research Centre	To develop models to predict the flammability of forest fuels in the landscape as a result of changes in fuel moisture content through the drying and wetting of fuels via exposure to the

Major research and development	Conducted by	Purpose
Research Centre Schedule 4)		weather and sun.
Managing bushfire in tall mist forests - fuel hazard and moisture relationships	University of Melbourne	To assess the processes that drive the flammability of tall forests and the change as forests age; and whether the conditions exist whereby tall forests can be prescribed burned with low intensity fire and what are these conditions.
Bushfire Spatial Data Models and Ignition Data (Bushfire and Natural Hazards Cooperative Research Centre Schedule 25)	Bushfire and Natural Hazards Cooperative Research Centre	To integrate three historic bushfire datasets (Department of Environment, Land, Water and Planning ignition point, Country Fire Authority ignition point and Department of Environment, Land, Water and Planning fire perimeter data); define a process for repeatedly and reliably updating a core database support fire ignition, risk modelling and management; and define the next steps for integrating other sources of fire data including impacts.
Probability of Fire Ignition and Escalation (Bushfire and Natural Hazards Cooperative Research Centre Schedule 7)	University of Melbourne University of Toronto Royal Melbourne Institute of Technology through the Bushfire and Natural Hazards Cooperative Research Centre	To develop a probabilistic framework for prediction of natural and human caused ignitions.
Multiplatform Analysis (Bushfire and Natural Hazards Cooperative Research Centre Schedule 21)	CSIRO through the Bushfire and Natural Hazards Cooperative Research Centre	To analyse imagery from five different remote sensing platforms and ground truth data for ten planned burns in order to determine the advantages and disadvantages of each platform to the Planned Burn Severity Mapping Project.
Planned burn mapping in Victoria using remote sensing (Bushfire and Natural Hazards Cooperative Research Centre Schedule 22)	CSIRO through the Bushfire and Natural Hazards Cooperative Research Centre	To identify and develop future management options and technologies for planned burn mapping which capture changes in time and space, including horizontal and vertical changes in vegetation structure using remote sensing technologies, in a manner which is of known cost and known accuracy. This is intended to better report on the annual fuel management program in Victoria, and capture data on the effectiveness of the annual fuel management program as a critical input into a risk-based approach to strategic bushfire management planning.

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Smoke: Emissions Modelling (Cooperative Research Centre Bushfire and Natural Hazards Cooperative Research Centre Schedule 10)	CSIRO Monash University Bureau of Meteorology through the Bushfire and Natural Hazards Cooperative Research Centre	To develop linked fire behaviour/fuel consumption and atmospheric model to predict smoke generation/accumulation-emission modelling component.
Smoke: Transportation Modelling (Bushfire and Natural Hazards Cooperative Research Centre Schedule 9)	CSIRO Monash University Bureau of Meteorology through the Bushfire and Natural Hazards Cooperative Research Centre	To develop a linked fire behaviour/fuel consumption and atmospheric model to predict smoke generation/accumulation-transportation modelling and evaluation component.
Smoke: Impacts on Community Health and Social Perceptions (Bushfire and Natural Hazards Cooperative Research Centre Schedules 8 and 8a)	University of Tasmania through the Bushfire and Natural Hazards Cooperative Research Centre	To understand and enable management of community health responses to smoke using knowledge of physiological and psychological response of vulnerable communities, and the likely levels of smoke these groups may encounter through a better understanding of smoke emissions Bushfire and Natural Hazards Cooperative Research Centre Schedule 10) and transportation (Bushfire and Natural Hazards Cooperative Research Centre Schedule 9).
Social Economic and Environmental Impacts of the 2013-14 Fire Season (Bushfire and Natural Hazards Cooperative Research Centre Schedule 20)	University of Wollongong	To describe the actual and potential costs and benefits of bushfire preparedness and response operations, through the assessment of specific case studies and an evaluation of overall fire season analysis.
Social Economic and Environmental Impacts of the 2012-13 Fire Season (Bushfire and Natural Hazards Cooperative Research Centre Schedule 16)	RMIT through the Bushfire and Natural Hazards Cooperative Research Centre	To determine social, economic and environmental impacts of the major 2012-13 Victorian Bushfires.

Major research and development	Conducted by	Purpose
Assessing and incorporating social, economic, ecological and community safety values of forests in bushfire risk decision-making	University of Melbourne	To explore public values related to bushfire risk management decision making in the peri-urban context- of relatively closely settled areas of Melbourne including the Dandenong and Yarra Ranges, Warburton Valley and West Gippsland.
Risk Communications (Bushfire and Natural Hazards Cooperative Research Centre Schedule 19)	Bushfire and Natural Hazards Cooperative Research Centre	To consider past research, both in Australia and overseas, on the communication of bushfire risk and how human factors influence decision-making.
Social values in bushfire management decision making Project (Bushfire and Natural Hazards Cooperative Research Centre Schedule 17)	Natural Decisions	To identify key areas of work needed to support integration of community values into Strategic Bushfire Management Planning.
Assessment and calibration of fuel moisture meters (Bushfire and Natural Hazards Cooperative Research Centre Schedule 23)	CSIRO through the Bushfire and Natural Hazards Cooperative Research Centre	To assess the performance and operating characteristics of fuel moisture sensors deployed across the DELWP Phase II sensor network, determine the relationships between litter and sensor fuel moisture in a range of vegetation types and develop guidelines for determination of location and characteristics of monitoring sites for a state-wide sensor network.
Science and policy impacts – establishing a Monitoring Evaluation and Reporting Framework (Bushfire and Natural Hazards Cooperative Research Centre Schedule 15 and 15a)	RMIT through the Bushfire and Natural Hazards Cooperative Research Centre	To review, describe and report on models and methods for assessing the effectiveness of science in influencing policy outcomes; assess and report on issues, opportunities and options for establishing a process for monitoring evaluation and review of science programs and projects; and develop and pilot a toolkit of evaluation options.

Major research and development	Conducted by	Purpose
Experimentally examining mosaics created by planned landscape mosaic burns	University of Melbourne	Identification of fire management options that improve key assets and habitat for all flora and fauna; maintain or improve ecosystem diversity and resilience; and are effective for ecological fire management and threat reduction.
Relationships between biodiversity and baseline landscape mosaic burning in the 2009 bushfire areas ( <i>Faunal Refuges in Fire-prone Landscape</i> )	La Trobe University Deakin University	Ability to provide knowledge on how to promote ecosystem resilience in the landscape; an increased understanding of the impacts of our actions (or inactions) now and into the future; ability to quantify the long-term impacts of fire suppression activities on significant biodiversity assets following wildfire; and ability to provide advice on the desirable proportions and configurations of vegetation seral stages that maximize regional biodiversity, while also protecting human life and property and ecosystem services.
Retrospective approach to identify the biodiversity values of different fire mosaics	Arthur Rylah Institute	Identification of fire management options that improve key assets and habitat for all flora and fauna; maintain or improve ecosystem diversity and resilience; and are effective for ecological fire management and threat reduction.
Fire Transition Across Urban Boundaries (Bushfire and Natural Hazards Cooperative Research Centre Schedule 6)	CSIRO through the Bushfire and Natural Hazards Cooperative Research Centre	Improve our ability to assess bushfire ability to assess bushfire hazard and exposure into urban environments. This will improve our ability to determine and weigh the fire behaviour factors that enable and promote bushfire transition into urban environments, including critical thresholds improving the accuracy of bushfire risk assessments as described in the Strategic and Regional Risk Profiles.
Analysis of Rapid Eye imagery to map fire severity and ground truth (Bushfire and Natural Hazards Cooperative Research Centre Schedule 14)	Monash University through the Bushfire and Natural Hazards Cooperative Research Centre	To improve the capability of the DELWP to repeatedly and reliably map and report on planned burning outcomes and testing and improving the use of known readily available technology to improve current use within DELWP.
Fire Severity Mapping Review: Remote sensing	Monash University through the Bushfire and Natural Hazards Cooperative	Will guide DELWP's investment into current and future research investment into remote sensing, which is necessary to improving

Major research and development	Conducted by	Purpose
techniques (Bushfire and Natural Hazards Cooperative Research Centre Schedule 13)	Research Centre	DELWP's capability to repeatedly and reliably map and report on planned burning outcomes and defining current best practice and future research and development needs.
Assessing the economic value and vulnerability of nature based tourism industry in the Ovens and Alpine area of North East Victoria (Bushfire and Natural Hazards Cooperative Research Centre Schedule 18)	Victoria University through the Bushfire and Natural Hazards Cooperative Research Centre	Delivery of an improved framework for the assessment of the impact of bushfires focussing on the tourism industry in north eastern Victoria, informing future policy and strategic planning for the area.
Incendiary Cultures	University of Melbourne	Making the science of assessing bushfire risk and the context in which it is generated and used, more transparent. This will enable the development and alignment of processes that will give scientists and communities greater insights into how risk is assessed and acted on in everyday life, as well as providing the Department of Environment, Land, Water and Planning with knowledge about ways of engaging with people.
Otway's Social Research Project	Country Fire Authority	Identification of ways that facilitated dialogue adds value to deliberative decision making for fire planning processes at the individual, community and agency level.
Victorian Climate Initiative	Bureau of Meteorology CSIRO	To provide appropriate guidance on climate variability, predictability, and change that will: improve forecasts of water availability in the short-term (seasonal to interannual timescales); and underpin an improved assessment of the risks to water supplies from changes in climate over the medium to longer term.
Riparian Intervention Monitoring Program	Arthur Rylah Institute	Develop and implement a program of data collection and analysis that demonstrates the ecological responses to riparian management
River Monitoring and Assessment	Environment Protection Authority Victoria	To assess the inter-relationship between catchment land use/catchment clearing and riparian zones; how this is reflected in the



Major research and development	Conducted by	Purpose
Program		aquatic biota; assess the impact of key water quality hotspots that threaten priority reach values; and monitoring macroinvertebrates for changes to stream conditions over time at long term sites through a request for quote process.
In-stream woody habitat prioritisation: Maximising ecological outcomes for Victorian rivers	Arthur Rylah Institute	Develop robust predictions of where and how much in-stream woody habitat is required to maximise benefits to priority Victorian fish species and developing a monitoring program to assess the response to in-stream woody habitat additions.
Progress the development of Virtual Fencing for the protection of riparian areas	Agersens Goulburn Broken Catchment Management Authority	<p>Develop a commercially manufacturable collar (Concept Demonstrator) that can be demonstrated on a working Victorian farm.</p> <p>Agersens and partner organisations to carry out realistic R&amp;D programs using the commercial virtual fence collar.</p> <p>Complete the first stage of development of a working commercial virtual fence system and position the program for the next stage which will complete the prototype system.</p> <p>Use outcomes and demonstrations to attract additional grant funding and commercial investment.</p>
Restoring functional links between riparian zones and streams by enhancing structural retention	University of Melbourne Monash University Griffith University Melbourne Water Arthur Rylah Institute	Test whether increasing the retention of detritus from riparian plants in degraded rivers will deliver increases in biodiversity. If so, the project will provide a way of improving the prioritisation of river management investment.
Carbon Sequestration in Victorian freshwater wetlands project	Deakin University Goulburn Broken Catchment Management Authority	Quantify carbon stocks and sequestration rate in Victoria's freshwater wetlands, identify carbon hotspots in freshwater wetlands, and assess the impact of wetland drainage and restoration on carbon storage.
The effectiveness of invasive species management in wetlands	Arthur Rylah Institute	The goal of this project is to improve the effectiveness of the management of high priority invasive species in Victoria's wetlands. It will do this by synthesizing existing and new knowledge into guidance for use by wetland planners and managers to enable them to set objectives and undertake effective actions for invasive species management with predictable outcomes.

Major research and development	Conducted by	Purpose
<i>Integrated Forest Ecosystem Research Program – Socio-economic Core Project</i>	University of Melbourne	To assess how to improve community value of Victoria’s public forests; best assess, monitor and report community value; and incorporate community values into risk management decision making.
<i>Integrated Forest Ecosystem Research Program – Integration Core Project (Part A)</i>	University of Melbourne	The Integration Project is currently in two parts. Part A: <i>Integration Framework</i> will look at integration of socio-economic and biophysical models into a management decision-making framework.
Assessing bushfire risk to social and economic values of forests in fire prone landscapes: <i>Integrated Forest Ecosystem Research Program – Integration Core Project (Part B)</i>	University of Melbourne	To determine the main factors in bushfire spread and characterisation that lead to uncertainties in the predicted bushfire attributes.
Effects of fire, climate and management on the vulnerability and resilience of Victorian forests: <i>Integrated Forest Ecosystem Research Program – Vulnerability Core Project</i>	University of Melbourne	To identify tipping points that may result in irreversible change to forest structure and composition and the associated values they provide.
Interactions between fire, landscape pattern and biodiversity (including the Foothills fire and biota project): <i>Integrated Forest Ecosystem Research Program – Biodiversity Core Project</i>	University of Melbourne	To determine the responses of species to fire regimes and quantify response thresholds.

Major research and development	Conducted by	Purpose
The effect of changing fire and climate regimes on Victoria's forest hydrology: <i>Integrated Forest Ecosystem Research Program – Water Core Project</i>	University of Melbourne	To assess how to minimise the impact of fire on water quality and quantity of our catchments; and the relationships between various resilience 'states' and water quality and quantity.
Understanding and managing Victoria's forest carbon: <i>Integrated Forest Ecosystem Research Program – Carbon Core Project</i>	University of Melbourne	To assess how to maintain the carbon of Victoria's public forests; how to best monitor, report and predict forest carbon assets through time at the landscape scale; and assess the inherent and operational drivers that change forest carbon assets, including fire regime and climate.

### g) Details of overseas visits undertaken including a summary of the objectives and outcomes of each visit

Title of officer	Countries visited	Objectives	Outcomes
Regional Manager, Environment, Natural Resources & Fisheries	Canada	To visit the Canadian Province of British Columbia in response to a formal request by the British Columbian authorities under the Forest & Interface Fire Management Memorandum of Understanding - Co-operative Operating Plan	The traveller acted as one of two Liaison Officers on behalf of the Forest Fire Management Group and DELWP to British Columbia, Canada. The role of the Liaison Unit was to prepare and facilitate the deployment of 80 firefighters to assist the province of British Columbia respond to an extreme summer of wildfire emergencies. The Liaison Officer arrived in British Columbia prior to the confirmation of a formal request and the deployment of the firefighters. Advice was provided to senior representatives in Ministry of Forests, Lands and Natural Resource Operations on the resources available, likely deployment timelines, financial costs, media management and safety management. The outcome of the visit was achieved by ensuring the smooth and safe deployment of Australian firefighters to British Columbia.
Deputy Chief Fire Officer	Canada	To visit the Canadian Province of British Columbia in response to a developing bushfire	The traveller, as the second Liaison Officer, led a contingent of 80 Australian firefighters assisting in the suppression of major bushfires in British Columbia, Canada for five

Title of officer	Countries visited	Objectives	Outcomes
		situation subsequent to a formal request by the British Columbian authorities under the Forest & Interface Fire Management Memorandum of Understanding - Co-operative Operating Plan	weeks. The firefighters included senior incident management teams and aviation personnel. DELWP has a long standing "mutual aid agreement" with British Columbia and with the United States of America. The agreements are activated to provide additional personnel during prolonged, severe fire seasons in North America and in Victoria providing invaluable experience for all involved.
Chief Executive, Office of Living Victoria	USA	To attend Harvard Kennedy School Executive Education course "Strategic Management of Regulatory and Enforcement Agencies" in Boston, USA	The Traveller attended the Strategic Management of Regulatory and Enforcement Agencies Program at the Harvard Kennedy School, Cambridge, Massachusetts. The program brings regulatory and enforcement leaders from across the world to develop leading-edge, risk-based regulation skills and practices. This occurred initially as part of the Traveller's leadership of the DELWP-wide regulation and compliance reform agenda
Executive Director / Chief Information Officer	Malaysia	To present and lead interactive table discussions at FutureGov Summit in Kuala Lumpur, 8-10 October 2014	This travel provided opportunities to build awareness overseas of Victoria's strengths in ICT in driving productivity and service improvements, as well as view the innovative application of ICT in the Asia-Pacific region and meet with ICT leaders to gain insights into big data analytics, cyber security, leveraging open data, and future technology developments. On return, the traveller was able to incorporate these learnings in the department's Digital First strategy, and to organise additional discussions for Victorian CIOs with USA contacts on their successful ICT shared services model as an input into Victoria's Project Atlas. The traveller also participated in a panel debate on Bring Your Own Device models.
Manager Engagement - Fire & Emergency Management	USA & Canada	Travel to Boise Idaho to attend and present at the Human Dimensions of Wildland Fire & Safety Summit, and to meet with staff from the Department of Environment and	Development of strong connections with the USA and Canadian Land & Fire Management Agencies that enabled knowledge-building and access to diverse research and practical tools that are directly informing DELWP Fire & Emergency Management engagement projects for 2015-16, and future long-term capability-building

Title of officer	Countries visited	Objectives	Outcomes
		Sustainable Resource Development Alberta, Canada and Parks Canada	

#### **h) Details of major promotional, public relations and marketing activities undertaken by the department to develop community awareness of the services provided by the department**

There were no major promotional, public relations or marketing activities undertaken in 2014-15 by the department to develop community awareness of services.

#### **i) Details of assessment and measures undertaken to improve the occupational health and safety of employees, not otherwise detailed in the report of operations**

Details of initiatives undertaken to improve the health, safety and wellbeing of employees are included in the DELWP 2014-15 Annual Report which is available at [www.delwp.vic.gov.au](http://www.delwp.vic.gov.au).

#### **j) General statement on industrial relations within the department and details of time lost through industrial accidents and disputes, which are not otherwise detailed in the report of operations**

Information about industrial relations and time lost through industrial accidents and disputes is included in the DELWP 2014-15 Annual Report which is available at [www.delwp.vic.gov.au](http://www.delwp.vic.gov.au).

#### **k) List of major committees sponsored by the department, the purpose of each committee and the extent to which the purposes have been achieved**

Details of major committees sponsored by the department are included in the DELWP 2014-15 Annual Report which is available at [www.delwp.vic.gov.au](http://www.delwp.vic.gov.au).

#### **l) Details of all consultancies and contractors including:**

- consultants/contractors engaged
- services provided
- expenditure committed to for each engagement.

Information is available on request.

## Acronyms used:

ARC	Australian Research Council
BMOs	Bushfire Management Outcomes
CIO	Chief Information Officer
CMAs	Catchment Management Authorities
CSIRO	Commonwealth Science and Industrial Research Organisation
ELP	Environment & Landscape Performance
DEDJTR	Department of Economic Development, Jobs, Transport and Resources
DEPI	Department of Environment and Primary Industries
DELWP	Department of Environment, Land, Water and Planning
HSF	Hooded Scaly-foot
ICT	Information and communications technology
OLV	Office of Living Victoria
R&D	Research and Development
RHD	Rabbit Haemorrhagic Disease
RMIT	Royal Melbourne Institute of Technology
USA	United States of America
VEFMAP	Victorian Environmental Flows Monitoring and Assessment Program