



**Australian Government**  
**Grape and Wine Research and  
Development Corporation**



# **Annual Operational Plan**

2010-11

## **Mission**

*Delivering Innovation for a competitive and sustainable  
Australian Wine Industry*

## TABLE OF CONTENTS

<b>TABLE OF CONTENTS</b> .....	2
1. INTRODUCTION .....	4
2. PRINCIPAL OUTCOME AND MAJOR OBJECTIVES.....	5
3. CORPORATION STRUCTURE .....	5
4. FUNDS.....	7
4.1 GRAPE RESEARCH AND DEVELOPMENT LEVY ('GRAPE RESEARCH' LEVY).....	7
4.2 WINE RESEARCH AND DEVELOPMENT LEVY ('WINE GRAPES' LEVY) .....	7
4.3 AUSTRALIAN GOVERNMENT MATCHING FUNDS.....	7
5. FUNDING ALLOCATION .....	8
6. GRAPE AND WINE INDUSTRY AND RESEARCH ENVIRONMENT IN 2010-11 .....	9
7. ALIGNMENT TO THE FIVE YEAR R & D PLAN 2007-2012 .....	10
8. NATIONAL RESEARCH PRIORITIES AND THE RURAL RESEARCH AND DEVELOPMENT PRIORITIES	11
9. BUDGET .....	12
9.1 ESTIMATES OF INCOME.....	12
9.2 ESTIMATES OF EXPENDITURE .....	12
10. R&D OBJECTIVES, OUTCOMES, STRATEGIES AND PERFORMANCE.....	13
10.1 OUTPUT 1 DELIVERED BY PROGRAM 1: MARKET AND CONSUMER UNDERSTANDING.....	14
10.2 OUTPUT 2 DELIVERED BY PROGRAM 2: WINEMAKING EXCELLENCE .....	16
10.3 OUTPUT 3 DELIVERED BY PROGRAM 3: GRAPES FOR PURPOSE .....	19
10.4 OUTPUT 4 DELIVERED BY PROGRAM 4: SUSTAINABILITY OF INDUSTRY, ENVIRONMENTS AND COMMUNITIES .....	21
10.4 OUTPUT 5 DELIVERED BY PROGRAM 5: SMART SCIENCE, PRACTICAL SOLUTIONS .....	25
APPENDIX A – PROGRAM AREA INVESTMENT .....	27
APPENDIX B - TOTAL INVESTMENT – COMPOSITION OF GOVERNMENT RESEARCH PRIORITIES ATTRIBUTED TO EACH R&D PROGRAM.....	31
APPENDIX C - TOTAL INVESTMENT – COMPOSITION OF GOVERNMENT RESEARCH PRIORITIES ATTRIBUTED TO EACH R&D PROGRAM.....	32

## **Grape and Wine Research and Development Corporation 2010-11**

### **GWRDC Board of Directors**

Chair	Mr Rory McEwen
Executive Director	Dr John Harvey
Non Executive Directors	
Deputy Chair	Mr Jim Caddy
	Dr Helen Garnett
	Mr Andrew Kay
	Ms Mary Retallack
	Dr Terry Lee
	Mr Terry Hill
	Dr Anne-Maree Boland

### **Contact Addresses**

GWRDC  
PO Box 221  
GOODWOOD SA 5034

Office: 67 Greenhill Road  
WAYVILLE SA 5034

Phone: (08) 8273 0500  
Fax: (08) 8373 6608  
Email: [gwrdc@gwrdc.com.au](mailto:gwrdc@gwrdc.com.au)  
Web: <http://www.gwrdc.com.au>

## 1. Introduction

The Grape and Wine Research and Development Corporation (the Corporation) invests in collective research, development and extension (R,D&E) on behalf of its stakeholders. Every wine grape grower and winemaker, in partnership with the Australian Government has a stake in the success of this Corporation. Wine grape growers and winemakers contribute through the payment of a statutory levy on the tonnage of grapes grown and delivered to wineries (the grape research levy) and on the tonnage converted to wine (the wine grapes levy).

Levies are collected by the Levies and Revenue Service of the Australian Government Department of Agriculture, Fisheries and Forestry (the Department), and are paid to the Corporation for investment in appropriate R&D for the grape and wine sectors. These producer levies receive matching Australian Government funding once R&D investments are undertaken up to a maximum of 0.5% of Gross Value of Production (GVP).

The range of partnerships with R&D providers developed by the Corporation enables a combination of applied and strategic R&D and extension to be undertaken with benefits flowing to industry, the environment and the community.

As the investor, the Corporation's responsibilities are:

- to ensure programs in the Corporation's Five Year R&D Plan 2007-2012 (R&D Plan) produce their planned outcomes;
- to evaluate research outcomes and extend benefits of R&D;
- to report to and liaise with all stakeholders (including grape and wine industry groups, R&D providers and the Australian Government); and
- to maintain a watching brief for opportunities (including awareness of activities of other R&D organisations in Australia and overseas).

The Corporation is required, under Section 25 of the *Primary Industries and Energy Research and Development Act 1989* (the PIERD Act), to prepare each year an Annual Operational Plan (AOP) and to submit the plan to the Minister for Agriculture, Fisheries and Forestry for approval. The Minister responsible for approving this 2010-11 AOP is the Hon Tony Burke, MP.

## 2. Principal Outcome and Major Objectives

The PIERD Act best explains the overriding objectives of the Corporation which are:

increasing the economic, environmental and social benefits to members of primary industries and to the community in general, by improving the production, processing, storage, transport or marketing of the products of primary industries;

achieving the sustainable use and sustainable management of natural resources;

making more effective use of the resources and skills of the community in general and the scientific community in particular; and

improving accountability for expenditure upon research and development activities in relation to primary industries.

The Principal Outcome of the Corporation is the 'The generation of new information that enhances the profitability, international competitiveness and sustainability of the Australian wine industry through investment in research and development'.

Deliverables and performance information relating to this outcome are described in detail later in this document under 'R&D Objectives, Outcomes, Strategies and Performance Information' in Section 10.

## 3. Corporation Structure

Overall responsibility for strategic planning, the development of policy directing the delivery of that strategy for the benefit of all stakeholders and issues of corporate governance rests with the Corporation Board (the Board). The Board scrutinises and considers recommendations made by senior office holders within the Corporation as to the most effective and efficient functioning of the Corporation. The activities of the Board are broadly categorised into the formulation of strategy, setting policy, providing accountability and monitoring Corporation performance. To assist the Board in fulfilling these roles, the Board has four sub-committees.

The Audit Committee oversees the Corporation's finances and end of year financial audits. It also has responsibility for risk and fraud management controls, the conduct of internal audits using independent external service providers, the oversight, monitoring and review of compliance with all statutory and financial reporting requirements and the Corporation's compliance with the Australian Government's protective security framework. In accordance with best governance practice the Audit Committee is chaired by one of the Corporation's non-Executive Directors, Mr Andrew Kay and also comprises Ms Mary Retallack and Dr Terry Lee. The Chair, Executive Director and other non-Executive Directors of the Board are encouraged to attend meetings of the audit committee.

A Remuneration Committee oversees the Corporation's compliance with employment matters and has responsibility for the Corporation's policy on terms and conditions of employment, Executive Director performance appraisal and legal or regulatory matters that may have a material impact on employment and remuneration. The Committee is comprised of Mr Rory McEwen (Chair), Mr Jim Caddy (Deputy Chair) and Dr Helen Garnett.

The R&D Committee reviews, assesses and formulates recommendations to the Board regarding the preliminary and final stages of individual project applications or suites of projects and the consideration of major variations to existing programs of research. It also acts to recommend the initiation of major reviews of programs or suites of projects in order to ascertain the progress and success of investments and to inform future program development.

As well as the consideration of management recommendations regarding project proposals, the R&D Committee also considers appropriate actions to be undertaken regarding specific investment programs, the balance of funding between programs that align with the delivery of the outcomes of the Five Year R&D plan and progress reporting. The R&D Committee comprises Dr Terry Lee (Chair), Dr Helen Garnett, Mr Terry Hill, Dr Anne-Maree Boland and Dr John Harvey. All R&D Committee meetings are also attended by program management staff, Mr Keith Hayes, Dr Troy Fischer and Dr Mark Krstic.

A Regional Committee has been established specifically to oversee the Corporation's new regional "Grassroots" program and the related industry supplier based national extension program the "Innovators Network". The programs are central to the Corporation's strategy of making the results of research more applicable and available to industry. The Regional Committee comprises Mr Jim Caddy (Chair), Mr Andrew Kay, Mr Terry Hill and Corporation program management staff – Mr Geoff Crook, Dr Troy Fisher, Mr Keith Hayes and Dr Mark Krstic.

The Corporation has a small management team with a focus on R&D, its extension and adoption, business, compliance, communications and administration. This team works with the Executive Director to implement the Board's strategic direction and to deliver measurable outputs from its investments.

Key office holders are:

Dr John Harvey: Executive Director

Mr Geoff Crook: Finance and Compliance Manager

Mr Keith Hayes: R&D Manager of Programs 2 and 3

Dr Troy Fisher: R&D Manager of Program 4

Dr Mark Krstic: Innovation and R&D Manager of Program 5

Mrs Brenda Kovaleff: Administration Manager

## 4. Funds

### 4.1 Grape Research and Development Levy ('Grape Research' levy)

Grape producers contribute to grape research and development by means of a levy on fresh and dried grapes and grape juice used in the manufacture of wine and delivered to an establishment for processing. Wineries which grow their own grapes for winemaking are also required to pay this grape research levy.

This levy is payable on grapes and juice delivered to an establishment which processes more than 20 tonnes (fresh grape equivalent) in a year. The levy system for grape research is regulated by the following legislation:

Primary Industries (Excise) Levies Act 1999

Primary Industries (Excise) *Levies Regulations (Schedule 13)*.

The maximum rate permitted under the legislation is \$2 per tonne. The operative rate of the grape research levy is currently 198.4 cents per tonne.

For the purpose of setting grape research levy rates the relevant industry organisations which may make recommendations to the Minister are the Wine Grape Growers' Australia Inc. (WGGA) and the Winemakers' Federation of Australia Inc. (WFA).

### 4.2 Wine Research and Development Levy ('Wine Grapes' levy)

Winemakers' contributions to fund wine research and development are derived from a specific component of a levy on fresh grapes, dried grapes and grape juice used in the manufacture of wine (the remaining component of this levy finances the Australian Wine and Brandy Corporation). Wineries using less than 5 tonnes (fresh grape equivalent) for this purpose in a year are exempted from levy payment. The relevant legislation for this levy system is:

- *Primary Industries (Excise) Levies Act 1999*
- *Primary Industries (Excise) Levies Regulations (Schedule 26)*.

The maximum rate permitted under the legislation is \$10 per tonne. The operative rate of the wine research component of the levy (the wine research levy) is currently 497.6 cents per tonne (fresh grape equivalent).

The WFA is the peak wine industry body and may make recommendations to the Minister concerning the operative rate of the wine research levy.

### 4.3 Australian Government Matching Funds

The Australian Government matches the expenditure of the Corporation on grape and wine R&D activities to a limit of no more than either the total of industry levy contributions to eligible R&D activities or to 0.5% of the gross value of production, whichever is the lower amount.

Interest from the investment of Corporation funds, sales of assets, money collected as penalties imposed in regard to the collection of levy charges, and any other income generated by the Corporation are also available to fund R&D activities.

While two separate levies are sourced the Corporation no longer strictly differentiates between viticultural or wine making based research. Given that viticultural research often

has a winemaking outcome and that winemaking research often requires viticultural input, distinction is artificial and does not reflect either industry or Government's supply chain approach to research and development. In addition, R&D aimed at increasing the industry's long term sustainability and competitiveness has benefit for all levy payers. The challenge in all investments is to ensure there is a flow of benefits that arise from effective R&D and innovation that provide positive returns.

## 5. Funding Allocation

Funds are allocated to selected projects and programs of research which meet both the priorities of the grape and wine industry and the Australian Government's National Research Priorities (NRPs) and Rural Research and Development Priorities (RRDPs).

The Corporation's investment objectives are developed after industry consultation with regional, state and national associations. The Corporation holds three of its six board meetings every year in regional areas and as part of these visits ensures that all Board members and senior management gain a full appreciation of regional issues and priorities as they relate to R&D. Program management staff are also directly involved in regional planning for extension and innovation activities through the regional 'Grassroots' program which is coordinated nationally by the Corporation. Insights gained through these formal, and many informal, interactions with regions gives the Corporation a sound, independent grounding as to the issues that affect our levy payers, from which ever region they might contribute a levy dollar.

In developing research objectives, the Corporation also considers the views of its national peak industry bodies, the WFA and WGGGA through their joint input into industry committees and the industry's research and development Strategic Directions Group (SDG). In relation to the priorities that inform investments in Program 1 the Corporation also consults extensively with the wine industry's statutory marketing authority, the Australian Wine and Brandy Corporation (AWBC).

Wide consultation with industry from grassroots levy payers to national representative organisations provides a sound basis on which to further develop the objectives of the Corporation's Five Year R&D Plan 2007-2012 and to focus investments within the plan's program structure to accommodate continuing and emerging priorities of industry and the Australian government.

Program 1 will provide foundation data on industry production, answer researchable questions which help define market opportunity and consumer preference and strongly supports the Australian wine industry's precompetitive marketing efforts. The program is also central to the continuing efforts by industry to support work which helps to maintain and improve where possible the opportunities for the Australian wine industry to access international markets.

Program 2 investments aim to increase winemaking expertise and allow industry to tailor wines for its target markets with a greater variety of tools and technologies.

Program 3 fosters research that allows industry to sustainably produce grapes for any winemaking purpose or market whilst maintaining a commitment to the quality of all products and sectors of the industry.

Program 4 emphasises the industry's responsibilities to environment and society and a readiness to use these ideals as a competitive advantage. Of particular focus will be the industry's response to the challenges of climate change and in defining how management practices will change to adapt to changed environments. The program also encompasses programs of research which address the industry's biosecurity issues.

Program 5 focuses the Corporation's efforts on the utilisation of innovative extension strategies to ensure that all stakeholders can benefit from the outcomes of their research investment and is one of the key strategic priorities of the Corporation. The program also

defines the Corporation's regional and industry consultation and engagement and provides mechanisms for both promoting innovation and ascertaining industry priorities.

This program also exemplifies the Corporation's commitment to the development of management and leadership skills within the industry and in championing the next generation of researchers through the Corporation's post graduate scholarship programs.

The Corporation is acutely aware that the new knowledge generated from investments in research is not innovation until one of the Corporations' stakeholders can use that knowledge to improve profitability, international competitiveness, sustainability or the communities upon which the wine industry relies. Above all else the Corporation will focus on making a tangible difference by facilitating innovation.

The Corporation utilises its flexibility to ensure interactive and professional responsiveness to industry objectives, issues and priorities and is committed to ensuring projects are outcome-oriented and process-driven. Accountability to Parliament, the Minister and industry within this framework is of prime importance.

## **6. Grape and Wine Industry and Research Environment in 2010-11**

The Australian wine industry in 2010 continues to trade under extremely difficult business conditions with our terms of trade, supply and demand imbalance and strong retail pricing pressures combining to threaten the economic sustainability of many wine industry businesses. A document entitled the Wine Restructuring Action Agenda (WRAA), recently released jointly by the four national wine industry organisations, has sought to identify and communicate the extent of the production issues currently confronting industry. The WRAA document has provided industry participants with regionally specific estimates of the amount of fruit that is currently being supplied to wineries at prices equal to or below costs of production. In aggregate, these figures suggest that about 20% of the total national vineyard area is currently uneconomic, an area equivalent to 40,000ha. It is currently estimated that nationally up to 15,000ha of vineyard has been taken out of production in the past twelve months with further rationalisation and restructuring expected in the coming season.

In light of these issues and in addition to the effect of heatwave conditions which were felt in a variety of production regions during November 2009, the Australian Bureau of Agricultural and Resource Economics (ABARE) has estimated that the national crush for the 2009-10 season will be approximately 1.62 million tonnes, down slightly on the figure of 2008-09.

The Corporation has instigated several reviews over the past twelve months to provide both management and board with additional information that will help the Corporation make better informed decisions about future investments. Work was commissioned to provide greater detail as to the economic impact of pest and diseases at a regional level, both in terms of damage to crops and the costs of control. Reviews have also been completed into the current and future value of research investigating tannin composition in grapes and in wine and on the work carried out over the last four years by the National Wine Grape Industry Centre in Wagga Wagga, through the Winegrowing Futures Program.

New Corporation investments in 2010-11 that complement ongoing investments and address emerging issues will focus on answering researchable questions that help to underpin and support the Australian wine industry's strategic marketing programs in emerging markets, particularly within South East Asia, help define quality standards for new planting material and continue fundamental research programs on pest and disease control and berry composition.

The Corporation will be working with other national wine industry organisations and other Research and Development Corporations throughout 2010-11 in a continuing process of streamlining our administrative processes and costs. It is likely that the national wine industry organisations will co locate their operations during the financial year and where possible share services that are duplicated between organisations.

As has been the case in previous years, the Corporation will continue to be strongly focussed on the manner in which we communicate the findings from our investments in research and development with the all of the Corporation's stakeholders. As investments into the Grassroots and Innovators Network extension programs enter a second year continuous improvements will be made to the programs as the Corporation strives to make these programs into benchmarks for extension in Australian agriculture.

## **7. Alignment to the Five Year R & D Plan 2007-2012**

The alignment of the Corporation's new and continuing investments into programs and the alignment of those investments to Government and industry priorities are provided in section 8 and Appendix A of this document. The objectives, outcomes, strategies and performance measure framework to which the Corporation reports are provided in Section 11.

Projects allocated funding in 2010-11, which align with a broad range of priorities, are summarised in Appendix A.

New projects beginning in 2010-11 will strengthen the Corporation's investment portfolio in the areas of consumer taste preferences, real time measurement of fermentation dynamics and the control of organic acid and tannin biosynthesis. Particular emphasis has been directed toward recycled water management, addressing specific issues of pest and disease management as identified in major reviews during 2009-10, supporting a national vine health technical reference group and defining a national quality standard for planting material.

Continued emphasis will be placed on the Corporation's role in developing and supporting emerging industry leaders and ensuring the value of R&D investment through the coordination of effective extension programs to encourage industry innovation.

The Corporation is committed to the continual evaluation of its investments through direct contact with research providers and industry collaborators, in addition to the use of a formal cost benefit analysis framework established in collaboration with the other Rural Research and Development Corporations as a measure of the performance of investments in all rural research and development funded nationally through these organisations.

## 8. National Research Priorities and the Rural Research and Development Priorities

Table 1 below shows how the Corporation's program structure links to the Australian Government's Rural Research and Development Priorities and National Research Priorities.

The Corporation's programs have been designed to align strongly with these priorities and further information on how the individual program areas respond to these priorities is contained in Section 10 of this AOP.

GWRDC Programs	Rural Research and Development Priorities	National Research Priorities
<p><b>Market and Consumer Understanding</b></p> <p>Sub Programs:</p> <ul style="list-style-type: none"> <li>a) Know Your Consumer</li> <li>b) Market Opportunities and Development</li> </ul>	<p><b>Supply Chains and Markets</b></p> <p>Better understand and respond to domestic and international market and consumer requirements and improve the flow of such information through the whole of the supply chain, including to consumers</p>	<p><b>Promoting and Maintaining Good Health</b></p> <p>Through strengthening Australia's social and economic fabric.</p>
<p><b>Winemaking Excellence</b></p> <p>Sub Programs:</p> <ul style="list-style-type: none"> <li>a) New Technologies and Products</li> <li>b) Managing and Enhancing Wine Quality</li> </ul>	<p><b>Productivity and Adding Value</b></p> <p>Improve the productivity and profitability of existing industries and support the development of viable new industries</p>	
<p><b>Grapes for Purpose</b></p> <p>Sub Programs:</p> <ul style="list-style-type: none"> <li>a) Vine Improvement and Performance</li> <li>b) Berry Composition</li> </ul>		
<p><b>Sustainability of Industry, Environments and Communities</b></p> <p>Sub Programs:</p> <ul style="list-style-type: none"> <li>a) Sustainable Production</li> <li>b) Environmental Custodians</li> </ul>	<p><b>Natural Resource Management</b></p> <p>Support effective management of Australia's natural resources to ensure primary industries are both economically and environmentally sustainable</p> <p><b>Climate Change and Climate Variability</b></p> <p>Build resilience to climate variability and adapt to and mitigate climate change</p>	<p><b>An Environmentally Sustainable Australia</b></p> <p>Transforming the way we utilise the land and water resources through a better understanding of human and environmental systems and the use of new technology.</p>
<p>c) Looking Ahead</p>	<p><b>Biosecurity</b></p> <p>Protect Australia's community, primary industries and environment from biosecurity threats</p>	
<p>d) The Next Generation</p>	<p><b>Supporting the Rural Research and Development Priorities</b></p>	
<p><b>Smart Science, Practical Solutions</b></p> <p>Sub Programs:</p> <ul style="list-style-type: none"> <li>a) Knowledge Development</li> <li>b) Industry Solutions</li> <li>c) Administration and Governance</li> </ul>	<p><b>Innovation Skills</b></p> <p>Improve the skills to undertake research and apply its findings.</p> <p><b>Technology</b></p> <p>Promote the development of new and existing technologies</p>	<p><b>Frontier Technologies for Building and Transforming Australian Industries</b></p> <p>Stimulating the growth of world-class Australian industries using innovative technologies.</p>

## 9. Budget

The Board has maintained its policy, during the current period of uncertainty, to release part of the Corporation's accumulated reserves to ensure the delivery of strategically important research outcomes. Projections of income for 2010-11 are based on an anticipated crop of 1.75 million tonnes for the 2010 vintage, although the Corporation recognises that the risk to this estimate is on the downside. As a result, cash reserves will be deployed for operational flexibility in 2010-11, although the Board acknowledges that this may be restricted in future years.

### 9.1 Estimates of Income

For the financial year 2010-11, it is estimated that proceeds from levies will amount to \$12.058 million, if a crop of 1.75 million tonnes is achieved as indicated in Table 2. Australian Government contributions for 2010-11 are estimated to be \$13.355 million. The Corporation's estimate for income other than levies and Commonwealth matching funds for 2010-11 are also provided in Table 2.

**Table 2: Estimates of sources of levies and other income for 2010-11**

	\$m
Grape levies	3.437
Wine levies	8.621
Commonwealth Contribution	13.355
Other	0.709
<b>Total</b>	<b>26.122</b>

### 9.2 Estimates of Expenditure

A summary of the Corporation's estimate of expenditure for 2010-11 is provided in Table 3. These figures are indicative only, as changes in the Corporation's operating environment may require the Corporation to vary the total expenditure or specific allocations. The forecast funding shortfall of \$0.868m will be met from reserves.

**Table 3: Estimates of expenditure by groupings and total for 2010-11**

2010-11 Budget Allocation	\$m	%
<b>R&amp;D Activities</b>		
1. Market and Consumer Understanding	3.070	11.4
2. Winemaking Excellence	7.936	29.4
3. Grapes for Purpose	3.051	11.3
4. Sustainability of Industry, Environments and Communities	5.587	20.7
5. Smart Science: Practical Solutions	4.354	16.1
<b>Sub-total</b>	<b>23.998</b>	<b>88.9</b>
<b>Management</b>		
Employees	1.492	5.5
Suppliers	1.270	4.7
Depreciation and amortisation	0.231	0.9
<b>Sub-total</b>	<b>2.993</b>	<b>11.1</b>
<b>Total</b>	<b>26.991</b>	<b>100.0</b>

## 10. R&D Objectives, Outcomes, Strategies and Performance

The following R&D programs and output categories have been developed to align the Corporation's R&D objectives with those of the industry and government priorities.

Table 4 below shows how the Corporation's Outputs are structured to achieve its Outcome.



Please note this diagram (Section 10) will require editing. The Outcome in the bottom box should now read **“The generation of new information that enhances the profitability, international competitiveness and sustainability of the Australian wine industry through investment in research and development”**

Details provided in section 10 highlight each program area and the link between the objectives, strategies and performance measures of the Five Year R&D Plan. The objectives, strategies and performance measures for 2010-11 are also provided.

## 10.1 Output 1 delivered by Program 1: Market and Consumer Understanding

### 10.1.1 Sub Program (a) – Know Your Consumer

#### Objective

1. To ensure Australian wines are the preferred choice of consumers across a range of styles available in domestic and export markets.

This sub program sets out to improve understanding of consumer preferences for wine. This includes understanding both sensory and non-sensory characteristic of wine that appeal to different segments of consumers. A better understanding of consumer preferences should enable Australia's wine industry to target wine styles and products more effectively, thereby improving their competitiveness in a challenging global environment.

#### Strategies and Measures of Success

R&D Plan Strategy	R&D Plan Measure of Success	2010-11 Strategy	2010-11 Measure of Success
1. Conduct foundational studies that will help identify market opportunities and identify the preferences and expectations of consumers within those markets	Increase in value and volume of Australian wine sales	Identify both sensory and non-sensory characteristics of finished wine that may influence consumer preference in particular market segments	Determination of key sensory and/or non-sensory consumer preference attributes in at least two key markets or market segments
2. Develop qualitative and quantitative tools to measure consumer behaviour and preferences in domestic and export markets to direct product innovation	Progress toward and delivery of tools used by industry to measure consumer behaviour and preferences in a range of markets	Develop new or enhance existing qualitative and quantitative methods for assessing and measuring sensory and non-sensory consumer preferences	Implementation of new or enhanced methods for assessing sensory and/or non-sensory attributes into a range of existing and new consumer preference research programs

The development of qualitative and quantitative tools to predict consumer behaviour and preferences in domestic and export markets in order to inform product innovation begins with the development and testing of pilot stage quantitative tools for identifying sensory and non-sensory consumer preferences. In future years, these will lead to industry-ready applications, followed by the development of qualitative tools.

At this stage of the Corporation's R&D Plan, the strategy is to identify new and validate existing preferences and expectations of consumers to develop reliable means of assessing consumer responses to various wine styles and packaging. To do this the Corporation needs to identify the characteristics of finished wine that influence consumer preference.

### 10.1.2 Sub Program (b) – Market Opportunities and Development

## Objectives

1. To build wine market intelligence
2. To understand and comply with trade related technical and regulatory requirements

This sub program sets out to improve our understanding of key export and domestic wine markets and related trade and technical barriers. A better understanding of markets and market barriers will enable Australia's wine industry to respond to threats and opportunities in those markets, thereby increasing their competitiveness in a challenging global environment.

## Strategies and Measures of Success

R&D Plan Strategy	R&D Plan Measure of Success	2010-11 Strategy	2010-11 Measure of Success
1. Collaborate with other industry bodies to support the collection of timely and accurate information on all key markets for wine that adds value and opportunity for the Australian wine industry	Demonstrable use by and support of industry for the knowledge generated from the information collected	Continue to collect and disseminate industry-relevant data in a coordinated and resource efficient manner	Demonstrable use by and support of industry for the information collected
2. To assist in the identification of current and potential trade barriers in new and existing markets	Continued and improved market access	Collaborate with other industry bodies to support the identification and quantification of the impact of current and potentially new trade barriers	No reduction in market access for Australian wines through technical or regulatory issues
3. Support the development of innovative solutions to technical and regulatory issues	Continued and improved market access	Maintain a response capacity and capability to technical and regulatory issues as they arise	No reduction in market access through technical or regulatory issues

The Corporation will continue to collect and disseminate industry relevant information on all key markets, and continually monitor the usefulness and efficiency of the information collected. Over the life of the R&D Plan the information needs of the industry will be continually reviewed. The Corporation will use these reviews to continually prioritise its investments.

The Corporation will, in the first instance, maintain the current capacity to respond to regulatory and technical market barriers. Over the life of the R&D Plan, additional capability will be developed when required to ensure maintenance and/or improved market access through the resolution of regulatory and technical issues in partnership with the AWBC.

## 10.2 Output 2 delivered by Program 2: Winemaking Excellence

### 10.2.1 Sub Program (a) – Production Technologies

#### Objectives

1. To support the development of novel and improved winemaking processes
2. To provide winemakers with the knowledge and capability to respond to changing consumer demands.

This sub-program aims to improve winemaking processes to achieve greater definition of wine styles. A better understanding of winemaking processes will allow the Australian wine industry to optimise wine production costs in line with desired wine characteristics.

#### Strategies and Measures of Success

R&D Plan Strategy	R&D Plan Measure of Success	2010-11 Strategy	2010-11 Measures of Success
1. Development of novel yeasts and application of expanded knowledge of microbiology and fermentation technologies	<p>Definition of new wine styles predicted to appeal to the consumer</p> <p>A reduction in average winemaking costs</p>	<p>Continue to support research to improve fermentation efficiency through the generation of new yeast strains and other microbiological species with improved characteristics, to:</p> <p>Reduce the incidence of problem or “stuck” fermentations.</p> <p>Enhance flavour and aroma profiles in accordance with consumer preferences.</p> <p>Produce lower levels of ethanol.</p>	<p>Outcomes available from winemaking trials using new hybrid yeasts generated through selective breeding / adaptive evolution techniques.</p> <p>Progress achieved on the development of commercial yeast strains that produce lower levels of alcohol during fermentation.</p> <p>New knowledge available on the biology of <i>Oenococcus</i> spp. MLF bacteria that could beneficially impact the sensory properties of finished wine.</p>
2. Develop and test practical methods to articulate and	Increased industry capacity to rapidly respond	Determine significant factors affecting wine composition,	New knowledge published on the drivers of phenolic tastes in white

understand desirable attributes in wine from the perspective of emerging and established wine drinkers	to changing consumer demands	flavour and aroma properties.  Maintain investments in tannins research, based on identified knowledge gaps and contemporary industry needs.	wines.  Initiation of at least two new R&D projects to improve industry knowledge on wine composition and target compounds that can influence sensory attributes in wine. In particular: <ul style="list-style-type: none"> <li>• the relationship between tannin chemistry and mouthfeel in red wine: and</li> <li>• opportunities to manipulate the flavonoid pathway to produce better wine sensory outcomes.</li> </ul>
--	------------------------------	--	---

The use of specialised yeasts and an enhanced understanding of the impact of other significant microbiological species on fermentation processes creates the possibility to adapt winemaking outcomes towards preferred wine styles with different flavour, aroma and mouthfeel characteristics. Aligned with the outputs from consumer preference studies, this capability can provide a powerful tool to meet changing consumer trends, or the preferences of non-traditional wine markets. The program will investigate and take advantage of adaptive evolution techniques to isolate more robust yeast strains that perform better and can assist in minimising or preventing problem fermentations. In addition, there will be a continuing focus on the development of yeasts capable of producing wines with a lower ethanol concentration and on the influence of tannin composition and chemistry on wine styles means to meet growing consumer demand for wine styles with reduced alcohol content.

#### 10.2.2 Sub Program (b) – Managing and Enhancing Wine Attributes and Composition

##### Objectives

1. To enhance the quality of Australian wines at all price points.
2. To ensure that Australian wine continues to meet the most rigorous consumer and market standards.
3. To maintain wine quality during transport and storage.

This sub-program aims to improve the quality of Australian wines by seeking to better understand the sources of faults and spoilage and to develop and apply innovative technologies to minimise their occurrence or impact.

##### Strategies and Measures of Success

R&D Plan Strategy	R&D Plan Measure of Success	2010-11 Strategy	2010-11 Measures of Success
-------------------	-----------------------------	------------------	-----------------------------

<p>1. Development of objective measurement tools to inform wine design and best practice management of vineyard logistics.</p>	<p>Opportunities created to increase the value proposition of Australian wine sold at selected price points.</p>	<p>Investigate novel analytical techniques to measure important grape and wine quality parameters in the vineyard or in wineries.</p>	<p>Outcomes available from trials evaluating a new analytical tool to assess optimum berry ripeness and grape composition in the vineyard.</p> <p>Commissioning of at least one new project to evaluate specific grape or wine attributes utilising new analytical approaches.</p>
<p>2. Continue to support the development of knowledge and technical solutions to eliminate wine faults and maintain product integrity.</p>	<p>Reduction in levels of spoilage and in product returns from the market.</p>	<p>Explore novel technical solutions and treatment options to avoid or reduce the occurrence of faults and spoilage.</p>	<p>Generation and dissemination of results from protein stability and removal studies, using enzyme treatments, novel adsorbents and alternative fining agents.</p> <p>Availability of improved analytical methodology to detect and quantify important compounds implicated in bushfire smoke taint in grapes and wine.</p>
<p>3. Understand and quantify the variables associated with the key attributes of wine composition during transport and storage.</p>	<p>Reduction in levels of spoilage and in product returns from the market.</p>	<p>Invest in research to understand and quantify variables associated with the maintenance of wine quality during transport and storage.</p>	<p>Release of new knowledge to industry on ways to reduce transport and storage related spoilage issues.</p> <p>Availability of practical information on the impact of glass colour and thickness on the degradation of white wines post-bottling.</p>

Continuing emphasis will be placed on the development of new or enhanced technologies to reduce the impact of taints or faults, including those induced by environmental influences such as heat or light, during transport of wines to market or at the point of sale. Immediate areas of focus include investigations into the impact of glass type or thickness on photochemically induced degradation, and continuing studies on protein instability and the

prevention of in-bottle hazes through the use of, for example, novel adsorbents or enzymatic treatments.

### 10.3 Output 3 delivered by Program 3: Grapes for Purpose

#### 10.3.1 Sub Program (a) – Vine Improvement and Performance

##### Objectives

1. To optimise vineyard inputs and costs to the targeted end-use of grapes.
2. To optimise the characterisation, selection and testing of grapevine germplasm.
3. To develop a smarter approach to breeding and developing grapevine rootstocks.

This sub-program provides support for activities aimed at helping growers to utilise vineyard management practices to grow grapes appropriate for targeted winemaking end uses and different market segments. The availability of superior, field validated planting material is essential to this and the program has a strong emphasis on foundational research to develop and make these resources available to meet future needs.

##### Strategies and Measures of Success

R&D Plan Strategy	R&D Plan Measure of Success	2010-11 Strategy	2010-11 Measures of Success
1. Targeted project investments to benchmark vineyard inputs and costs	Increased availability of vineyard cost benchmarking data	Support Wine Restructuring Action Agenda (WRAA) initiatives to implement enhanced tools to help growers and winemakers assess the economic viability of their businesses.	Knowledge generated by Corporation investments incorporated into tools used by industry to quantify business viability.
2. Investigation and development of grapevine germplasm	Increased range of potentially valuable characterised grape vine germplasm available to industry	Maintain support for the development of grapevine germplasm according to industry needs.	Progress on fundamental grapevine genetics studies to improve the understanding of links between specific genes and key traits, for varietal improvement purposes.
			Investment in the development of an industry-supported quality accreditation system for grapevine

			material.
3. Investigation and development of grapevine rootstocks to better deal with emerging issues	Increase in the availability of rootstocks with commercially and environmentally important traits specific for Australian conditions	Continue investment in projects to develop grapevine rootstocks better able to address emerging issues.	<p>Progress towards the commercial release of hybrid rootstocks adapted to warmer growing conditions.</p> <p>Results emerging from rootstock breeding programs and field performance trials of salt excluding rootstocks.</p> <p>Progress on research to identify genetic markers for the rapid screening and selection of salt tolerant vine material.</p>

Development of new or improved grapevine germplasm will support longer term initiatives to provide appropriate planting material for the wine industry, as it positions itself to accommodate the changes inherent in a warming climate. In some cases, the studies involve and take advantage of the use of molecular tools to inform and accelerate conventional plant breeding methods for rootstocks and scion material. Projects within this program support these initiatives to deliver germplasm with greater tolerance to temperature extremes, reduced requirements for irrigation water, the ability to cope with more saline soil and water resources and changes in the incidence patterns of pests and diseases. Accordingly, this sub-program complements and maintains strong links with Program 4 sustainability objectives.

### 10.3.2 Sub Program (b) – Berry Composition

#### Objective

1. To produce fruit of known and desirable composition.

This sub-program aims to help grapegrowers produce fruit with the characteristics demanded by winemakers, in response to market demands.

#### Strategies and Measures of Success

R&D Plan Strategy	R&D Plan Measure of Success	2010-11 Strategy	2010-11 Measures of Success
Identification of	Improved	Support the	One new project

<p>measurable grape characteristics that translate to specific wine attributes.</p>	<p>opportunities for the manipulation of specific attributes of berry composition</p>	<p>development and application of novel techniques to understand, and manage grape compositional characteristics that lead to desirable wine outcomes.</p>	<p>initiated to further the understanding of berry acid metabolism under higher growing temperature regimes.</p> <p>Results available from initial studies on the impact of plant growth regulators (PGRs) to manipulate the timing and synchronicity of the ripening process.</p> <p>One new study initiated to better understand and manage the nexus between sugar ripeness and flavour ripeness using PGRs.</p>
---	---	--	---

The impact of a scenario of warmer growing temperatures is expected to change vine physiological responses, leading to an acceleration of berry ripening which can potentially affect berry composition. In this sub-program, research investments in the coming period will focus on finding ways to adapt and manage these changes to ensure that key grape compositional characteristics can be adequately maintained. For the coming year, this will involve new R&D investments in the area of berry development and ripening, as well as acidity management under imposed experimental temperature extremes.

#### **10.4 Output 4 delivered by Program 4: Sustainability of Industry, Environments and Communities**

##### 10.4.1 Sub Program (a) – Sustainable Production

###### Objectives

1. To further develop and maximise the adoption of vine health and integrated pest management practices.
2. To ensure the long term viability and sustainability of industry practices.

This sub program sets out to help grape growers produce fruit in a sustainable and viable way with particular regard to environmental issues. Work will be undertaken in the areas of:

- minimising water inputs per hectare of fruit grown;
- improving vine and soil health for sustainable production; and
- pest and disease control.

### Strategies and Measures of Success

R&D Plan Strategy	R&D Plan Measure of Success	2010-11 Strategy	2010-11 Measure of Success
1. Knowledge dissemination of vine health and pest management practices	Increase in adoption of best management practice for pest and disease control	Develop materials and run regional workshops to disseminate latest information in dealing with vine health and pest management issues	Increased grape grower awareness of vine health and pest management issues through attendance at a regional workshops series
2. Investigate and disseminate methods of improving sustainable viticultural practices	Long term protection of natural resources	Disseminate knowledge in the areas of water application efficiency, vine stress and soil health	Increased grape grower awareness of water use efficiency, including the use of recycled water, vine stress and soil health through field days, print media and other extension activities

#### 10.4.2 Sub Program (b) – Environmental Custodians

##### Objectives

1. To allow the Australian wine industry to build and utilise its reputation as an internationally recognised environmental custodian as a competitive advantage.
2. To define the opportunities and adapt to the challenges of climate change.

This sub program is focused on ensuring that the Australian wine industry is able to understand key environmental issues with a view to being able to demonstrate its commitment and leadership in addressing environmental issues as part of its responsibility to the Australian community as well as to domestic and international markets. Work will be undertaken in the following areas:

- investigating the effects of long term irrigation on soil health and water quality;
- management to cope with extreme weather events;
- lower environmental impact methods of pest and disease control; and ;
- better understanding of the impact of climate change at a national and regional level.

### Strategies and Measures of Success

R&D Plan Strategy	R&D Plan Measure of Success	2010-11 Strategy	2010-11 Measure of Success
1. Dissemination and maintenance of Australia's 'green credentials' which consider environment issues throughout the supply chain	Buyer recognition of Australian wines' environmental credentials; reduction of the Australian wine industry's environmental footprint	Provide support for tools and programs which reduce the environmental footprint of the industry and help demonstrate the footprint of the wine supply chain.	Improved awareness and participation of grape growers and wineries in credible environmental initiatives within the wine industry such as Entwine.
2. Collaborate with other parties to determine and disseminate the effects of climate change on the wine industry	Implementation of strategies to manage the challenges of climate change	Generate knowledge to help cope with extreme weather events and other impacts of climate change. Establish wine industry climate change research program including adaptation options.	Progress within projects that address implications and adaptation to climate change and variability and dissemination of this to industry.

In order to implement the R&D Plan's strategy of dissemination and maintenance of Australia's 'green credentials', work will be done to reduce the Australian wine industry's environmental footprint. Work will focus on dissemination of results of environmental research to grape growers and wineries with emphasis on improving their ability to adopt management practises that improve individual and industry environmental sustainability.

The next step in the Corporation's R&D Plan strategy is to collaborate with other agricultural industries to address priority cross commodity projects which determine and disseminate the effects of climate change at a national, regional or catchment level where the results of this initiatives can shown to benefit the wine industry and its environments.

### 10.4.3 Sub Program (c) – Looking Ahead

#### Objective

1. To ensure that the industry can proactively meet and minimise the impact of biosecurity and other threats.

This sub program sets out to ensure the wine industry can minimise the impact of biosecurity and other threats.

#### Strategies and Measures of Success

R&D Plan Strategy	R&D Plan Measure of Success	2010-11 Strategy	2010-11 Measure of Success
Targeted research partnerships with national and international agencies to avert biosecurity threats	Development of agreed strategies to combat biosecurity threats	Generation of additional knowledge to assist industry's capacity to combat biosecurity threats and to manage incursions	Latest knowledge disseminated to industry

In order to implement the R&D Plan's strategy of targeted research partnerships with national and international agencies to avert biosecurity threats, the first step is to ensure that industry's prevention and response to threats are as robust as possible. Future work will establish partnerships with national and international agencies to ensure that threats are averted where possible, as well as to ensure that Australia has the capacity, protocols and knowledge to initiate response strategies if required with other state and national organisations.

### 10.4.4 Sub Program (d) – The Next Generation

#### Objective

1. To facilitate the training of the next generation of research and grape and wine industry leaders.

This sub program sets out to ensure the grape and wine industry can maintain the human and intellectual capital required for a prosperous and vibrant industry into the future.

#### Strategies and Measures of Success

R&D Plan Strategy	R&D Plan Measure of Success	2010-11 Strategy	2010-11 Measure of Success
Ensure sufficient resources are devoted to training future wine industry researchers and industry leaders	Increase in the appropriately trained human resources available to the industry	Attract high calibre candidates to undertake relevant leadership, Honours and PhD studies	Funding of at least 30 people to undertake relevant leadership, Honours or PhD Studies as well as tracking their career path after completion of the Corporation scholarship.

## 10.5 Output 5 delivered by Program 5: Smart Science, Practical Solutions

### 10.5.1 Sub Program (a) – Knowledge Development

#### Objective

1. To ensure that the full value of Corporation's investments is realised by all relevant stakeholders.

This sub program sets out to ensure dissemination and adoption of research outcomes.

#### Strategies and Measures of Success

R&D Plan Strategy	R&D Plan Measure of Success	2010-11 Strategy	2010-11 Measure of Success
Development of an extension and knowledge management system to deliver timely information to adopt into business practice	Increased R&D adoption rates and measurable cost benefit of R&D investments	Enhance website functionality, content, international linkages and end user relevance	Increased website visits within Australia  Improved content and industry usage as measured through user survey and other feedback
Evaluation of performance to ensure there are adequate returns to stakeholders from R&D investments	Increased R&D adoption rates and measurable cost benefit of R&D investments	Perform cost benefit analyses of selected completed projects	Completed analyses demonstrate positive rates of return on R&D investment

The Corporation focussed its efforts last year on establishing a new website which ensures all relevant information is easily accessible in one location and in a consistent format. The 2010-11 strategy will be to undertake some preliminary evaluation of the website's usage and to modify structure and functionality to improve access and uptake of information and knowledge.

## 10.5.2 Sub Program (b) – Industry Solutions

### Objective

1. To foster stronger links between industry research and the development of solutions for industry.

This sub program sets out to ensure dissemination and adoption of research outcomes.

### Strategies and Measures of Success

R&D Plan Strategy	R&D Plan Measure of Success	2010-11 Strategy	2010-11 Measure of Success
To foster an innovative culture within the Australian wine industry and to develop techniques and partnerships that will allow the most efficient and effective dissemination of knowledge to industry	Increased R&D adoption rates and measurable cost benefit	Implement national roll out of the Corporation's Innovators Network and Grassroots programs in key wine grape growing regions throughout Australia	Innovators Network and Grassroots programs viewed by Australian Wine Industry as key vehicles for extending R&D information into the industry

In 2010/11, the Innovators Network extension and knowledge development strategy will be the focus for improving the targeted delivery of key viticultural and wine knowledge to the service provider and early adopter segment(s) of the Australian Wine Industry for improved capacity development. This segment is critical for the dissemination of knowledge via the 'ripple' or cascading effect to the wider grape growing community across Australia.

## 10.5.3 Sub Program (c) – Administration and Governance

### Objective

1. To continuously improve the efficiency and effectiveness of Corporation's administrative and governance procedures.

This sub program sets out to ensure that the Corporation is efficiently administered.

### Strategies and Measures of Success

R&D Plan Strategy	R&D Plan Measure of Success	2010-11 Strategy	2010-11 Measure of Success
Continuous review and improvement of the Corporation administrative and governance functions	The Corporation administration expenditure to be aligned to industry needs, while maintaining appropriate levels of governance and administration	Review of Corporation operations	Full compliance with all governance requirements

## Appendix A – Program Area Investment

Contract Number	Project title
<b>Program 1: Market and Consumer Understanding</b>	
<b>Sub Program 1a - Know Your Consumer</b>	
UA 09/01	Understanding and leveraging the marketing opportunities of engaging wine buyers through virtual communities and other e-based sales channels
AWR 06/01	Stream 3.1 Wine and consumer needs
NWG 06/01	NWGIC Theme 5: Matching wine composition to consumers
To be contracted	Measuring consumer taste preference through wine shows
<b>Sub Program 1b - Market Opportunities and Development</b>	
ABS 09/01	Viticulture collection vintage 2010 (vineyard statistics collection)
BAE 08/01	Australian wine industry production and outlook - projections.
UA 08/04	Australia's place in the world's wine markets by 2030: empirical economic analysis of wine globalisation
UA 09/03	Mapping the decision influencers along the wine industry supply chain
USA 09/01	Testing consumer response to the potential introduction of environmental and sustainable claims on Australian wine labels in multiple countries
AWR 06/01	Stream 3.3 Technical, regulatory and trade issues
AWR 06/01	Stream 3.2 Consumer health and safety
OIV 05/01	Support for the role of Vice President, International Organisation of Vine and Wine (OIV)
<b>Program 2: Winemaking Excellence</b>	
<b>Sub Program 2a - New Technologies and Products</b>	
AWR 06/01	Stream 1.3 Microbial modulation of wine composition to increase wine value
UA 05/01	Better wine through novel and better informed application of microbiology
AWR 06/01	Stream 2.1 Optimising fermentation performance
AWR 06/01	Stream 1.1 Defining and controlling important volatile compounds in wine and their impact on wine aroma and flavour

AWR 06/01	Stream 1.2 Defining and controlling key phenolic compounds and their impact on wine sensory properties
AWR 09/01	Optimised control and management of phenolic composition for improved sensory outcomes and product quality in white wines
UA 06/04	New grape and wine chemistry research initiatives to bring long-term benefits to the Australian wine industry

#### **Sub Program 2b - Managing and Enhancing Wine Quality**

AWR 06/01	Stream 2.3 Process measurement and improvement
AWR 06/01	Stream 2.4 Industry applications
AWR 06/01	Stream 2.5 Protecting the quality and integrity of Australian wine
AWR 06/01	Stream 2.2 Novel winemaking processes
To be contracted	Smart Bungs

### **Program 3: Grapes for Purpose**

#### **Sub Program 3a - Vine Improvement and Performance**

CSP 09/03	Molecular and genetic strategies to reduce the susceptibility of wine grapes to fungal pathogens
CSP 09/04	Advanced grapevine genetics for varietal improvement
To be contracted	Australian vine quality standards scheme - vine assurance
To be contracted	Delivering chloride and sodium excluding rootstocks for quality wine production
CSP 05/03	Rootstock breeding program

#### **Sub Program 3b - Berry Composition**

CSP 09/05	Understanding and managing the timing of berry ripening and the flavour-ripe/sugar-ripe nexus
To be contracted	Organic acid metabolism and the control of grape berry acidity in a warming climate
NWG 06/01	NWGIC Theme 3: Multiseasonal impacts on vine productivity and grape composition
To be contracted	Improving the tannin composition of grapes

### **Program 4: Sustainability of Industry, Environments and Communities**

#### **Sub Program 4a - Sustainable Production**

To be contracted	Development of tools to increase knowledge and capacity of growers to implement sustainable pest management solutions
NWG 06/01	NWGIC Theme 4: Optimising resource use and protecting the environment
To be contracted	Building vineyard resilience through improved floor management practices

NWG 06/01	NWGIC Theme 2: Vine Health and the environment (protecting yield)
To be contracted	Optimising management of eutypa dieback
To be contracted	Support for National Vine Health Technical Reference Group
DAW 09/01	Completing the Smoke Effect Picture: Systems development to reduce the negative effects of smoke on grapes and wine
To be contracted	Cleaner production: new technology for water recycling and cleaner production
To be contracted	Sustainable recycled winery water irrigation based on treatment fit for purpose approach
GWR 09/15	Recycled Water project 1 - Communication and extension
	<b>Sub Program 4b - Environmental Custodians</b>
CSP 09/01	Achieving water use efficiency and improved drought tolerance with rootstocks
CSP 09/02	Enhanced varieties and clones to meet the challenges of climate change and deliver lower alcohol wines
DPI 09/01	Strategies to manage the impacts of global warming on winegrape production
GRD 09/01	Understanding frost risk in a variable and changing climate
MU 08/01	Adaptation of the Australian wine industry to climate change - opportunities and vulnerabilities
MU 08/02	Environment - genotype interactions and the physiological processes determining fruitfulness and yield in grapevines
PRO 0901	Improving winery refrigeration efficiency
SAR 09/01	A window into hotter and drier futures: phenological shifts and adaptive practices
SAR 09/02	Managing vineyard's rootzone salinity and maximising water saving by sub-surface irrigation techniques
UA 08/03	Integrating the carbon and water economies of grapevines for optimal management in challenging environments
	<b>Sub Program 4c - Looking Ahead</b>
DPI 08/01	The three R's - Rootstock, Resistance and Resilience to grape phylloxera
UM 09/01	Developing tools for predicting responses of viticultural pests and their natural enemies under climate change: modelling, management and extension
	<b>Sub Program 4d - The Next Generation</b>
ARL 05/01	Australian Rural leadership Foundation
various	Honours Scholarships
To be contracted	Wine Industry Leadership Program Project

various	PhD Scholarships
WFA 06/01	Leadership Development in the wine industry

**Program 5: Smart Science, Practical Solutions**

**Sub Program 5a - Knowledge Development**

NWG 06/01	NWGIC Theme 6: Knowledge management and capacity building
-----------	---

various	Performance evaluations
---------	-------------------------

**Sub Program 5b - Industry Solutions**

GWR 00/2	Support for the Strategic Directions Group
----------	--

To be contracted	Vineyard Irrigation - delivering water savings through emerging technology
------------------	--

AWR 06/01	Stream 4.1 Extension and knowledge transfer - the development and presentation of knowledge to industry personnel
-----------	---

AWR 06/01	Stream 4.2 Creating delivery mechanisms for the efficient transfer of knowledge and provision of technical information to the Australian wine and grape industries
-----------	--

AWR 06/01	Stream 4.3 Communication services and customised information delivery
-----------	---

To be contracted	Spring vine health field day forum
------------------	------------------------------------

To be contracted	Optimising industry returns from existing soil and water research
------------------	---

various	GWRDC Regional Program
---------	------------------------

various	Innovators Network
---------	--------------------

WFA 09/01	Australian Wine Environmental Stewardship Coordination
-----------	--

**Sub Program 5c - Administration and Governance**

RIR 04/01	Council of Rural R&D Corporations
-----------	-----------------------------------

\* - Funding to be provided to Winemakers' Federation of Australia, one of the representative organisations of the GWRDC, to assist in the training and development of the next generation of industry and research leaders.

**Appendix B - Total Investment – Composition of Government Research Priorities attributed to each R&D Program**

**2009-10 R&D Expenditure estimates across Rural Research and Development Priorities**

Rural R&D Priorities (RRDP)	Productivity and Adding Value (\$000)	Supply Chain and Markets (\$000)	Natural Resource Management (\$000)	Climate Variability and Climate Change (\$000)	Biosecurity (\$000)	Supporting the Priorities		Total (\$000)
						Innovation Skills (\$000)	Technology (\$000)	
1. Market and Consumer Understanding		3,070 11%						3,070 11%
2. Winemaking Excellence	7,936 29%							7,936 29%
3. Grapes for Purpose	1,863 7%		1,188 4%					3,051 11%
4. Sustainability of Industry, Environments and Communities			1,751 7%	2,702 10%	327 2%	807 3%		5,587 22%
5. Smart Science, Practical Solutions				149 1%		3,052 11%	4,146 15%	7,347 27%
Total Expenditure	9,799 36%	3,070 11%	2,939 11%	2,851 11%	327 2%	3,859 14%	4,146 15%	26,991 100%

**Appendix C - Total Investment – Composition of Government Research Priorities  
attributed to each R&D Program**

**2010-11 R&D Expenditure estimates across NRP Goals**

National Research Priorities (NRP)	An Environmentally Sustainable Australia			Promoting and Maintaining Good Health	Frontier Technologies for Building and Transforming Australian Industries	Safeguarding Australia	Total
	(\$000)			(\$000)	(\$000)	(\$000)	(\$000)
	A1	A5	A7	B4	C5	D3	
1. Market and Consumer Understanding				3,070 11%			3,070 11%
2. Winemaking Excellence				7,936 29%			7,936 29%
3. Grapes for Purpose	1,188 4%			1,863 7%			3,051 11%
4. Sustainability of Industry, Environments and Communities		1,751 6%	2,702 10%		807 3%	327 2%	5,587 21%
5. Smart Science, Practical Solutions			149 1%		7,198 27%		7,347 28%
<b>Total</b>	1,188 4%	1,751 6%	2,851 11%	12,869 47%	8,005 30%	327 2%	26,991 100%

**LEGEND to APPENDIX C**

- A1 Water – a critical resource
- A5 Sustainable use of Australia’s biodiversity
- A7 Responding to climate change and variability
- B4 Strengthening Australia’s social and economic fabric
- C5 Promoting an innovation culture and economy
- D3 Protecting Australia from invasive diseases and pests