


Social Impact Assessment  
for the 2016/17  
Levy Proposals: Addendum

A report to

South East  
Natural Resources Management Board

Prepared by

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# ABBREVIATIONS

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ABS	Australian Bureau of Statistics
ANZSIC	Australian and New Zealand Standard Industrial Classifications
ATO	Australian Taxation Office
CPI	Consumer Price Index
DEWNR	Department of Environment, Water and Natural Resources
EBIT	earnings before interest and tax
EBITD	earnings before interest, tax and depreciation
GOS	gross operating surplus
GRP	gross regional product
GSP	gross state product
LGA	local government area
NRM	Natural Resources Management
RISE	Regional Industry Structure and Employment
SENRMB	South East Natural Resource Management Board
SA	South Australia
SAILIS	South Australian Integrated Land Information System

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# EXECUTIVE SUMMARY

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## Introduction

The South East Natural Resources Management Board (the Board) is currently undertaking its annual review of its Business Plan 2016/17- 2018/19 which forms part of the South East Regional NRM Plan. In preparing the regional NRM plan, section 75 (3) (h) of the Natural Resources Management Act 2004 (NRM Act) requires that the Board identify its source or sources of funding for implementing the regional NRM plan, including sources such as levies.

This report is an addendum to the report ‘*Social impact assessment for the 2016/17 levy proposals*’ prepared by EconSearch (EconSearch 2015) for the Board. The purpose of this report is to enable the Board to report on the expected social and economic impacts of the imposition of a new levy scenario that was not considered in the original report.

## Method

The approach to the assessment of the Division 1 and Division 2 Levies involves the following steps.

1. Develop measures of household income
2. Develop business financial models and prepare indicators
3. Calculate the Division 1 Levy
4. Calculate the Division 2 Levy
5. Assess the impact of the Division 1 Levy on households
6. Assess the impact of Division 1 and Division 2 Levies on businesses
7. Assess the impact of Division 1 and Division 2 Levies on gross regional product

The level of impact of a levy is determined by the percentage change that would occur due to the effect of a levies introduction. A *minor* impact is an impact that has an effect which causes a shift that is less than one per cent. A *moderate* impact is an impact that has an effect which causes a shift between one and five per cent. A *significant* impact is an impact that has an effect which causes a shift that is greater than five per cent.

## Division 1 Levy Options and Scenarios

The Board has requested an impact assessment of this budget scenario for the following option:

1. the purpose for which rateable land is used (Option 4)

For this addendum the Board has requested that one budget scenario be analysed for the Division 1 Levy:

- scenario (1) uses a budget amount of \$4,644,000 for 2016/17

For Option 4 (the purpose for which rateable land is used), the Regional NRM Levy was set by the Board as detailed in Table ES-1. The rates outlined in the table are expressed as a flat rate per rateable assessment.

Table ES-1 Regional NRM Levy rates by land use, Option 4

Budget	Property	Rate (\$)
Scenario 1	Residential/Vacant/Other	\$60.42
	Commercial	\$115.96
	Industrial	\$137.77
	Primary producers	\$183.98

Source: NR South East

### Division 1 Levy - Distributional Impact

The distributional impact of budget Scenario 1 across the different property types can be summarised as follows. The total amount raised would be \$4,644,000, \$2,288,577 (49 per cent) from rural properties, \$1,990,857 (43 per cent) from residential/vacant/other properties, \$277,499 (6 per cent) from commercial properties and \$87,068 (2 per cent) from industrial properties.

### Division 1 Levy Impacts - Households

A summary of the impact of the Division 1 levy option on average and low personal income is detailed in Table ES-2. Under this option the levy would be a *minor* impost on both average income and low income households.

Table ES-2 Impact of Division 1 levy options on average and low personal income

Levy Option	NRM Levy/ Residential Property	Levy as a % of			
		mean after tax income	mean wages & salaries (net)	full age pension for couples	full age pension for singles
Option 4 (Purpose of use)					
Scenario 1					
Fixed Rate	\$60.42	0.11%	0.13%	0.12%	0.14%

Source: EconSearch analysis

### Division 1 Levy Impacts - Dryland Farms

Under Option 4 (purpose of use), the land based levy would comprise a very small proportion of variable and total costs of dryland farm in the region (cropping, cropping-livestock and sheep-beef). The levy would have *minor* impact on dryland farming profitability.



### Division 1 Levy Impacts – Non-farm Businesses

The impacts of introducing the land based levy on the financial performance of non-farm businesses was assessed. Non-farm businesses include a range of industry and commercial enterprises not directly associated with primary production.

The financial impact of the Division 1 land based levy on non-farm business income in the South East region is as follows:

- Option 4
  - The fixed levy for industrial properties (\$137.77) would have a *minor* impact on business profitability across all industries.
  - The fixed levy for commercial properties (\$115.96) would have a *minor* impact on business profitability across all industries except other services, where, due to its low median gross operating surplus (GOS), the levy would have a *moderate* impact.

### Division 2 Levy Scenarios

For 2016/17, the SENRM Board has resolved that the water levy for all prescribed water resource areas in the SENRM Region will be based on a fixed charge of per license and a rate on the quantity of water allocated. This is a modification of the approach taken in previous years, which was defined as a rate on the quantity of water allocated only.

For the purpose of this addendum the Board requested the impact assessment of the following option:

1. a fixed charge of \$200 and the quantity of water allocated

The Board has requested that one budget scenario be analysed for the above option:

- scenario (1) uses a budget amount for the NRM Water Levy of \$3,956,000 for 2016/17

### Division 2 Levy Impacts- Irrigation Farms

The impact of the water based levy scenarios on the financial performance of a range of irrigation farming enterprises was modelled. The key points to note from these analyses are as follows.

- With some profitable enterprises (dairy, winegrapes and potatoes) the impact on farm profitability would be *minor* (reduces EBIT by less than 1 per cent). However, the levy would have a *moderate* impact (reduces EBIT by more than 1 per cent but less than 5 per cent) with some other profitable industries (sheep).
- For marginal operations the impact on farm profitability would be *significant* (reduces EBIT by more than 5 per cent). The analysis showed that the lower profit margin and

higher water using industries (lucerne<sup>1</sup>) are the industries where the water based levy would have a *significant* impact on enterprise profitability.

### Division 1 and 2 Levies Combined Impacts - Irrigated Farms and Forestry

The impact of the combined land based and water based levies on the financial performance of a range of irrigated farming and forestry enterprises was modelled. The key point to note from the analyses is that the land based levy does increase the aggregate levy paid by landholders but only marginally increases the impact of levies over all.

The combined impact of the land and water based levy on forestry water licence holders has a *minor* impact across all options across the industry as a whole.

### Division 1 and 2 Levies Combined Impacts - Gross Regional Product

Gross regional product (GRP) for the SENRM region for 2013/14 was estimated to be \$3.66 billion, which represents 4 per cent of South Australia's Gross State Product (\$96.97 billion).

The levy amount to be collected under the Division 1 and 2 levies as a proportion of GRP are detailed in Table ES-3. It shows that the total amount to be collected under scenario 1 would be less than 0.3 per cent of SENRM region GRP.

Table ES-3 Aggregate levy income as a proportion of gross regional product (GRP)

Levy Scenario	Division 1 Levy	Division 2 Levy	Total Amount	Total Amount/GRP
Scenario 1	\$4,644,000	\$3,956,000	\$8,600,000	0.235%

Source: EconSearch analysis

<sup>1</sup> Costs are modelled for the Tintinara PWA, where licensees pump water from the aquifer. The cost of extracting water would be less in other regions (such as Kingston) where there are no costs for pumping as the water is artesian. Lower pumping costs would result in a greater EBIT for these enterprises resulting in a lower levy impact.

# 1. INTRODUCTION

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## 1.1 Background

This report is an addendum to the report '*Social impact assessment for the 2016/17 levy proposals*' prepared by EconSearch (EconSearch 2015) for the South East Natural Resources Management Board (the Board).

The Board is currently undertaking its annual review of its Business Plan 2016/17- 2018/19 which forms part of the South East regional NRM Plan. In preparing the regional NRM plan, section 75 (3) (h) of the *Natural Resources Management Act 2004* (NRM Act) requires that the Board identify its source or sources of funding for implementing the regional NRM plan, including sources such as levies. In identifying any such levy/s to be imposed, the NRM Act also requires that the regional NRM plan address:

- the basis upon which the levy/s has been applied (section 75 (3) (j));
- why particular levy/s have been chosen (section 75 (3) (j)); and
- the expected social impact of the imposition of such a levy/s (section 75 (3) (i)).

Section 92 in chapter five of the NRM Act enables the Board to specify the amount to be contributed by constituent councils (Division 1 Levy) towards the cost of performing its functions under the Act. Section 101 in chapter five of the NRM Act enables the Minister for Sustainability, Environment and Conservation to declare a water levy or levies (Division 2 Levy) that will return an amount as stated in the Regional NRM Plan.

Section 92 (2) and sections 101 (6) and (8) of the NRM Act further specifies the basis or method for determining the Division 1 and Division 2 Levies. The Board has previously adopted a fixed charge of the same amount on all rateable land as the basis for determining the Division 1 levy and the quantity of water allocated (with the exception of water taken pursuant to a notice under section 128) as the basis for determining the Division 2 levy (SENRM, 2013).

The purpose of this report is to report on the expected social and economic impacts of an extra levy option that the Board had not considered in the original report (EconSearch 2015).

This paper contains the following sections:

Section 2: Analysis of Division 1 Levy: provides estimates of the social and economic impacts of the Division 1 levy on households, dryland farm enterprises and non-farm businesses. The distributional impact of the levy by land use by local government area (LGA) within the South East NRM Region is also presented.

Section 3: Analysis of Division 2 Levy: presents representative farm data for the principal irrigation enterprise types in the region, and an assessment of the impact of the Division 2 levy on farm profitability.

Section 4: Analysis of the Division 1 and Division 2 Levy Combined: provides estimates of the impacts of the Division 1 and 2 levies combined on irrigated farm enterprises. It also presents the estimates of impact of the aggregate levy amount on gross regional product (GRP).

## 1.2 Method of Analysis

The approach to the assessment of the Division 1 and Division 2 Levies involves the following steps.

1. **Develop measures of household income:** the following measures of household income were prepared for average income households:

- mean taxable income (before and after tax)
- mean wages and salaries (gross and net)

And low income households:

- full age pension for singles and couples.

For average income households, standard rates of taxation and Australian Tax Office (ATO) data from 2012/13 on taxable income were used to estimate mean taxable income and mean wages and salaries by LGA. These ATO data refer to individual earnings rather than household income and therefore represent a conservative estimate of household income.

To assess the impact on low income household income the full age pension was used as a measure of household income. Data on household income by LGA were sourced from the 2011 Population Census to estimate the proportion of households on incomes on or below the full age pension.

2. **Develop business financial models and prepare indicators:** Two approaches were taken to develop business models. A 'bottom-up' approach was undertaken to develop farm models for typical dryland and irrigated commodity types for the region.

The following data sources were used to create/update the farm financial models:

- The Phylloxera and Grape Industry Board of South Australia's (PGIBSA) 2015 South Australian grape crush survey (winegrapes) (PGIBSA 2015)
- ABARES farm survey data (dairy, beef, sheep, cropping) (by special request).
- ABARES commodities data derived Australian Commodities Statistics Report (ABARES 2014)
- ABS consumer price index, ABS Cat No. 6401.0 (ABS 2015)
- Other industry sources.

The indicators were developed for each enterprise are variable costs, total costs and earnings before interest and tax (EBIT).

The second approach was a 'top-down' approach used to develop an enterprise gross operating surplus for non-farming businesses in broad industry sectors. These sectors correspond to Australian and New Zealand Standard Industrial Classification (ANZSIC) Industry divisions. Using previous analysis on business count data (ABS Cat. No. 8165.0) and extracting data on gross operating surplus for each industry division from the most recent RISE models for the relevant State Government region, an approximate estimate of the gross operating surplus for the median business for each industry division was estimated.

Forestry and logging industry level data were obtained from RISE models<sup>2</sup> developed by EconSearch for the Limestone Coast State Government region. Industry level earnings and costs were extracted from the model base data and used to develop the industry level indicator required for this analysis, namely earnings before interest, tax and depreciation (EBITD).

3. **Calculate the Division 1 Levy:** Given the basis for the Division 1 levy, the mean, median, minimum and maximum levy (where applicable) by land use type were calculated for each LGA. This was based on South Australian Integrated Land Information System (SAILIS) data on properties provided by DEWNR and levy quanta provided by the Board.
4. **Calculate the Division 2 Levy:** Given the basis for the Division 2 levy, the levy for individual enterprises (irrigated farms) and in aggregate (forestry) were estimated based on expected water consumption/allocation for each commodity (using the farm models and forestry models developed under step 2). The Division 2 levy quanta and options were provided by the Board.
5. **Assess the impact of the Division 1 Levy on households:** The measures of household income prepared under step 1 were compared with the Regional NRM Levy (step 3) to assess the likely effects of the Regional NRM Levy on households in the region. The distributional impact of the levy by land use by LGA was also assessed.
6. **Assess the impact of Division 1 and Division 2 Levies on businesses:** The measures of business income prepared under step 2 were compared with the Division 1 levy amounts (step 3) and/or the Division 2 amounts (step 4) to assess the likely effects of the levies on businesses.

The impact of the Division 1 levy was assessed for dry land farming enterprises and reported as a percentage of variable costs, total costs and EBIT.

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<sup>2</sup> RISE (Regional Industry Structure and Employment) models are developed annually by EconSearch for the Department of Premier and Cabinet for South Australia and each of the State Government regions, including the Limestone Coast.

The impact of the Division 1 levy was assessed for selected non-farming enterprises and reported as a percentage of gross operating surplus.

The impact of the Division 2 levy and the Division 2 and Division 1 levies combined was assessed for irrigation farming enterprises and reported as a percentage of variable costs, total costs and EBIT.

For the South East NRM Board the Division 1 and forest water levy was assessed against the forestry sector in aggregate, and reported as a percentage impact on EBITD.

7. **Assess the impact of Division 1 and Division 2 Levies on gross regional product:** the impact of the Division 1 and Division 2 levies in aggregate was assessed for the region as a whole and reported as a percentage of gross regional product (GRP).

EconSearch used the GRP derived from the 2013/14 RISE model previously developed for the Limestone Coast State Government region. The RISE model is a model designed to assist a regional analyst understand the structure of a regional economy and estimate the economic impact of change in the region.

As the Limestone Coast State Government region differs from the South East NRM region, a basis for adjusting estimated GRP had to be calculated. For the South East this involved identifying the contribution to GRP of the area within the Coorong (a part of the Mallee and Murray State Government region) and adding that to the Limestone Coast State Government region GRP. As GRP data were not available at this small area level, adjustments were made on the basis of employment.

## 1.3 Definition of terms

**Earnings Before Interest and Tax:** (EBIT) is defined as total income plus interest less total variable costs and total overheads. It is used as a term of gross profit for each of the farming enterprises contained in this report.

**Earnings Before Interest, Tax and Depreciation:** (EBITD) is defined as industry gross margin (total income less total variable costs) less wages and salaries. EBITD is used as a profit measure for enterprises when the level of depreciation is unknown. It is used for the forestry enterprises contained in this report.

**Gross Operating Surplus:** (GOS) is defined as total income less total cash costs and is expressed in current dollar terms. GOS may be used interchangeably with the term Gross Profit. A GOS value of zero represents a breakeven position for the business, where total cash costs equals total cash revenue (income). If GOS is a negative value the firm is operating at a cash loss and if positive the firm is making a cash profit. GOS does not include owner/operator wages, unpaid family work, or depreciation.

**Gross regional product:** (GRP) is a measure of the net contribution of an activity to the regional economy. GRP is measured as the value of output less the cost of goods and services (including

imports) used in producing the output. In other words, it can be measured as the sum of household income, 'gross operating surplus and gross mixed income net of payments to owner managers' and 'taxes less subsidies on products and production'. It represents payments to the primary inputs of production (labour, capital and land). Using GRP as a measure of economic impact avoids the problem of double counting that may arise from using value of output for this purpose.

**Minor impact:** is defined as an impact that has an effect which causes a shift that is less than one per cent.

**Moderate impact:** is defined as an impact that has an effect which causes a shift between one and five per cent.

**Significant impact:** is defined as an impact that has an effect which causes a shift that is greater than five per cent.

## 2. ANALYSIS OF THE DIVISION 1 LEVY

### 2.1 Division 1 Levy

The *Natural Resources Management Act 2004* sets out a number of alternative ways in which Division 1 (land based) levies can be determined. The basis for the levy can be chosen from the following:

1. The value of rateable land – if the value of rateable land is the basis for the levy, a council must use capital value, site value or annual value as the basis to impose the levy.
2. A fixed charge of the same amount on all rateable land – regardless of the size, value or location of the property, the levy would be the same for all rateable properties.
3. A fixed charge of an amount that depends on the purpose for which rateable land is used – given the existing land use classification of properties, it is likely that such a basis for determining the levy would include the following categories: residential, commercial, industry, primary production and vacant land/other.
4. The area of rateable land - regardless of the value, location or use of the property, the levy would be determined simply according to the size of the property.
5. The purpose for which rateable land is used and the area of the land – a combination of options (3) and (4) above.
6. The location of the rateable land – this would be according to local government area, NRM Group area or some other spatial definition.

For this addendum the Board has requested an impact assessment of the following option:

- the purpose for which rateable land is used (Option 4)

The Board has requested that the following budget scenario be analysed for Option 4:

- scenario (1) uses a budget amount of \$4,644,000 for 2016/17

For Option 4 (the purpose for which rateable land is used), the Regional NRM Levy for an individual property was set by the Board and is detailed in Table 2.1.

Table 2.1 Regional NRM Levy rates by land use and area, Option 4

Budget	Property	Rate (\$)
Scenario 1	Residential/Vacant/Other	\$60.42
	Commercial	\$115.96
	Industrial	\$137.77
	Primary producers	\$183.98

Source: NR South East



## 2.2 Distributional Impact of the Levy by Land Use by LGA

The Regional NRM Levy contribution, by land use, for Option 4 is shown for budget Scenario 1 in Table 2.2. These data are disaggregated at a regional level to demonstrate the individual contributions of each region within the South East.

Key points to note from the data presented in Table 2.2 are:

- Option 4, Scenario 1
  - The total amount raised would be \$4,644,000, \$2,288,577 (49 per cent) from rural properties, \$1,990,857 (43 per cent) from residential/vacant/other properties, \$277,499 (6 per cent) from commercial properties and \$87,068 (2 per cent) from industrial properties.

Table 2.2 Levy per property and contribution by land use type for Option 4<sup>a</sup>

Council Name	Residential/Vacant/Other Property				Commercial Property				Industrial Property				Rural Property				All Property	
	No. of Properties	Fixed levy per property (\$)	Total raised (\$)	(%)	No. of Properties	Fixed levy per property (\$)	Total raised (\$)	(%)	No. of Properties	Fixed levy per property (\$)	Total raised (\$)	(%)	No. of Properties	Fixed levy per property (\$)	Total raised (\$)	(%)	Total raised (\$)	(%)
Coorong	570	60.42	34,439	2%	70	115.96	8,117	3%	13	137.77	1,791	2%	637	184	117,198	5%	161,545	3%
Grant	3,019	60.42	182,404	9%	86	115.96	9,973	4%	61	137.77	8,404	10%	2,644	184	486,454	21%	687,234	15%
Kingston	2,018	60.42	121,925	6%	78	115.96	9,045	3%	36	137.77	4,960	6%	716	184	131,733	6%	267,662	6%
Mount Gambier City	12,949	60.42	782,362	39%	1,063	115.96	123,268	44%	222	137.77	30,584	35%	52	184	9,567	0%	945,781	20%
Naracoorte & Lucindale	3,658	60.42	221,012	11%	332	115.96	38,500	14%	69	137.77	9,506	11%	2,576	184	473,943	21%	742,960	16%
Robe	2,018	60.42	121,925	6%	81	115.96	9,393	3%	54	137.77	7,439	9%	487	184	89,600	4%	228,357	5%
Tatiara	2,826	60.42	170,743	9%	279	115.96	32,354	12%	75	137.77	10,332	12%	1,910	184	351,409	15%	564,839	12%
Wattle Range	5,893	60.42	356,047	18%	404	115.96	46,849	17%	102	137.77	14,052	16%	3,417	184	628,673	27%	1,045,622	23%
<b>Total</b>	<b>32,951</b>	<b>60.42</b>	<b>1,990,857</b>	<b>100%</b>	<b>2,393</b>	<b>115.96</b>	<b>277,499</b>	<b>100%</b>	<b>632</b>	<b>137.77</b>	<b>87,068</b>	<b>100%</b>	<b>12,439</b>	<b>184</b>	<b>2,288,577</b>	<b>100%</b>	<b>4,644,000</b>	<b>100%</b>

<sup>a</sup> Rate and property number data provided by NR South East.

Source: NR South East and EconSearch analysis

## 2.3 Impact on Personal Income – Average (Mean) Income

The impact on households (residential property owners) of the Regional NRM Levy was assessed on the basis of average (mean) individual income<sup>3</sup> by LGA. The total funds to be collected under Option 4, for Scenario 1, is shown in Table 2.3.

The key points to note from these data are:

- Option 4, Scenario 1
  - The fixed residential levy (\$60.42) would be 0.13 per cent of the mean after tax income and 0.14 per cent of mean net wages and salaries (Table 2.3).

Table 2.3 Impact of Regional NRM Levy on average personal income, by LGA for Option 4, Scenario 1

Local Government Area	Fixed NRM Levy/Residential Property	Levy as a % of mean taxable income <sup>a</sup>	Levy as a % of mean after tax income <sup>b</sup>	Levy as a % of mean wages & salaries (gross) <sup>c</sup>	Levy as a % of mean wages & salaries (net) <sup>d</sup>
Coorong	\$60.42	0.11%	0.14%	0.13%	0.15%
Grant	\$60.42	0.09%	0.12%	0.11%	0.14%
Kingston	\$60.42	0.11%	0.14%	0.13%	0.16%
Mount Gambier City	\$60.42	0.11%	0.13%	0.12%	0.14%
Naracoorte & Lucindale	\$60.42	0.11%	0.14%	0.13%	0.15%
Robe	\$60.42	0.11%	0.13%	0.13%	0.16%
Tatiara	\$60.42	0.11%	0.14%	0.13%	0.15%
Wattle Range	\$60.42	0.10%	0.13%	0.12%	0.14%
<b>Total</b>	<b>\$60.42</b>	<b>0.11%</b>	<b>0.13%</b>	<b>0.12%</b>	<b>0.14%</b>

<sup>a</sup> Mean for taxable individuals, as reported by the ATO for 2012/13.

<sup>b</sup> Mean taxable income less mean net tax paid for 2012/13.

<sup>c</sup> Mean wages and salaries (gross) is the average before tax income of wage and salary earners reported by the ATO for 2012/13.

<sup>d</sup> Mean salaries and wages (net) is the estimated average after tax income of wage and salary earners and has been calculated based on average tax rates and the reported gross wages and salaries.

Source: ATO (2015a,b), SAILIS and EconSearch analysis

<sup>3</sup> It is recognised that there is likely to be more than one income earner for many properties. In these cases the financial burden of the levy is shared between income earners and the impact on the household will be less than reported here.

## 2.4 Impact on Personal Income – Low Income

Understandably, the impact of a levy would be greater on low income households than on high income households. Typical of low income households are people receiving an age pension. The following analysis assesses the impact of levy Option 4 (Section 2.4.1) on recipients of the age pension (for both couples and for singles).

The impact on mean income earners of introducing the levy using Option 4 is outlined in Table 2.4. The key points to note from these data are:

- Option 4, Scenario 1
  - The fixed residential levy (\$60.42) per property would be 0.18 per cent of the full age pension for couples and 0.27 per cent of the full age pension for singles (Table 2.4)

Table 2.4 Impact of Regional NRM Levy on low personal income, Option 4<sup>a</sup>

Local Government Area	Mean NRM Levy/Residential Property	Levy as a % of:		% of households with income below	
		full age pension for couples <sup>a</sup>	full age pension for singles <sup>b</sup>	\$41,600 <sup>c</sup>	\$31,200 <sup>c</sup>
Coorong	\$60.42	0.18%	0.27%	51%	36%
Grant	\$60.42	0.18%	0.27%	33%	22%
Kingston	\$60.42	0.18%	0.27%	49%	36%
Mount Gambier City	\$60.42	0.18%	0.27%	45%	33%
Naracoorte & Lucindale	\$60.42	0.18%	0.27%	37%	25%
Robe	\$60.42	0.18%	0.27%	46%	31%
Tatiara	\$60.42	0.18%	0.27%	41%	26%
Wattle Range	\$60.42	0.18%	0.27%	46%	33%
<b>Total</b>	<b>\$60.42</b>	<b>0.18%</b>	<b>0.27%</b>	<b>43%</b>	<b>31%</b>

<sup>a</sup> Full age pension for couples as at 16 September 2015 was \$1,297 per fortnight (combined) or \$33,717 per annum (combined).

<sup>b</sup> Full age pension for singles as at 16 September 2015 was \$860 per fortnight or \$22,365 per annum.

<sup>c</sup> Derived from income distribution reported in 2011 Population Census. These income figures represent the maximum amounts of the annual income bands that the full age pension for couples and for singles is in.

Source: ATO (2015a,b), SAILIS and EconSearch analysis

## 2.5 Impact of the Land Based Levy on Dryland Farms

### 2.5.1 Farm financial models

The assessment of the impact of the NRM land levies involved an analysis using representative farm financial models. The representative models that have been used for this analysis were designed to be broadly representative of growers of the main dryland crops and livestock farming in the South East region. However, the diversity of farm size, enterprise mix, cost

structures and prices received that are inherent at the farm level cannot be adequately represented in models of this type and care is required in their interpretation and use.

The dryland farming models were sourced from ABARES by special request for the region 431 which includes the Kangaroo Island, Fleurieu Peninsula, the Adelaide Hills and the South East. Summary physical and financial indicators from the representative farm models are presented in Table 2.5. More detail from the model is provided in Appendix 1 (Appendix Tables 1.1 to 1.3).

Table 2.5 Key indicators for representative dryland farms in the South East region<sup>a</sup>

	Cropping	Cropping - Livestock	Sheep - Beef
Total farm area (ha)	1,508	1,016	1,224
Estimated capital value <sup>b</sup>	3,724,911	3,377,952	4,454,799
Gross income	\$820,483	\$559,048	\$525,421
Variable costs	\$285,926	\$165,193	\$178,310
Fixed costs	\$458,412	\$326,998	\$225,196
EBIT <sup>c</sup>	\$155,326	\$120,217	\$148,431

<sup>a</sup> All dollar values are in 2015 dollars.

<sup>b</sup> Based on capital improvements but excludes allowance for residence.

<sup>c</sup> Earnings before interest and tax.

Source: Appendix Tables 1.1 to 1.3

## 2.5.2 Impact of the levy on dryland farms

The impact of introducing the land based levy on the financial performance of the representative dryland farms is outlined in Table 2.6 for Option 4, Scenario 1. The key points to note from these results are as follows.

- None of the land based levy options or scenarios comprise more than 1.0 per cent of variable costs for any of the dryland farms.
- Logically, the impact on total costs is even smaller with none of the levy options or scenarios comprising more than 0.1 per cent of total costs.
- For Option 4, the land based levy would comprise a very small proportion of variable and total costs. The levy would have *minor* impact on farm profitability (reduces EBIT by less than 1 per cent).

Table 2.6 Financial impact of the land based levy on representative farms in the South East region, Option 4, Scenario 1

	Cropping	Cropping - Livestock	Sheep - Beef
Land based levy (\$)	183.98	183.98	183.98
Levy as a % of variable costs	0.06%	0.11%	0.10%
Levy as a % of total costs	0.02%	0.04%	0.05%
Levy impact on EBIT	-0.12%	-0.15%	-0.12%

Source: EconSearch analysis

## 2.6 Impact on Non-Farm Business Income

The financial impact of the Division 1 land based levy on non-farm business income in the South East region is detailed in Table 2.7 and Table 2.8.

Key points to note are:

- Option 4
  - The fixed levy for industrial properties (\$137.77) would have a *minor* impact on business profitability across all industries.
  - The fixed levy for commercial properties (\$115.96) would have a *minor* impact on business profitability across all industries except other services, where, due to its low median gross operating surplus (GOS), the levy would have a *moderate* impact.

Table 2.7 Financial impact of the land based levy on non-farm business income in the South East region, industrial industries

Industry	Median GOS (\$)	Option 4, Scenario 1
		Fixed Levy
Mining	444,617	0.03%
Manufacturing	1,403,939	0.01%
Electricity, Gas, Water	3,201,354	0.00%
Construction	16,081	0.86%

Source: EconSearch analysis

Table 2.8 Financial impact of the land based levy on non-farm business income in the South East region, commercial industries

Industry	Median GOS (\$)	Option 4, Scenario 1
		Fixed Levy
Wholesale Trade	893,135	0.01%
Retail Trade	211,338	0.05%
Accommodation and Food	454,949	0.03%
Transport, Postal and Warehousing	26,606	0.44%
Information Media and Technology	433,157	0.03%
Financial and Insurance	218,863	0.05%
Rental, Hiring and Real Estate	58,878	0.20%
Professional, Scientific & Technical Serv.	0	0.00%
Administrative and Support Serv.	0	0.00%
Public Administration	535,735	0.02%
Education and Training	161,465	0.07%
Health Care and Social	24,226	0.48%
Arts and Recreation Serv.	109,158	0.11%
Other Services	5,680	2.04%

Source: EconSearch analysis

## 3. ANALYSIS OF DIVISION 2 LEVY

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### 3.1 Division 2 Levy

The *Natural Resources Management Act 2004* also sets out a number of ways in which the Division 2 (water based) levy can be determined. Unlike the Division 1 levy, which must be based on just one of the available options, the Division 2 levy may be based on a combination of factors. The Act indicates that the water levy may be based on one or more of the following factors:

1. A fixed charge.
2. The quantity of water allocated.
3. The quantity of water received or taken.
4. The quantity of water passing through any works.
5. The size, type or capacity of any works.
6. The quantity of water used.
7. The share of the water that makes up the relevant water resource.
8. The area of land where the water may be used, or the area of the land where the water is used.
9. The effect that the taking or using of the water has, or may have, on the environment, or some other effect or impact that, in the opinion of the Minister, is relevant and that is capable of being determined, measured or applied.

For 2016/17, the SENRM Board has resolved that the water levy for all prescribed water resource areas in the SENRM Region will be based on a fixed charge of \$200 per license and a rate on the quantity of water allocated. This is a modification of the approach taken in previous years, which was defined as a rate on the quantity of water allocated only.

For this addendum the Board requested the impact assessment of the following option:

- a fixed charge of \$200 and the quantity of water allocated

The Board has requested that one budget scenario be analysed for the above option:

- scenario (1) uses a budget amount for the NRM Water Levy of \$3,956,000 for 2016/17

### 3.2 Farm financial model

The assessment of the impact of the NRM water levies involved an analysis using representative farm financial models updated with the most up-to-date data available. The representative models that have been updated for this analysis were designed to be broadly representative of growers of the main irrigation crops in the South East NRM region. However, the diversity of

farm size, enterprise mix, cost structures and prices received that are inherent at the farm level cannot be adequately represented in models of this type and caution is required in their interpretation and use.

A range of data sources were used to compile the detailed farm financial models, in 2015 dollars, as outlined below:

- Winegrape prices and yields for representative vineyards in the region were derived from the 2015 South Australian Winegrape Crush Survey (PGIBSA 2015).
- ABARES commodities data derived from the 2014 Australian Commodities Statistics Report, 2014 (ABARES 2015).
- ABS consumer price index, ABS Cat No. 6401.0 (ABS 2015).

Summary physical and financial indicators from the representative farm models are presented in Table 3.1. More detail from the model is provided in Appendix 1 (Appendix Tables 1.4 and 1.10).

Table 3.1 Key indicators for representative irrigation farms in the South East NRM Board Region<sup>a</sup>

	Dairy	Potatoes	Lucerne (unconfined)	Lucerne (confined)	Winegrapes	Sheep (unconfined)	Sheep (confined)
Total farm area (ha)	280	300	250	250	70	1,200	1,200
Irrigated area (ha)	45	50	60	60	54	60	60
Estimated capital value <sup>b</sup>	\$2,109,922	\$925,000	\$775,000	\$775,000	\$2,470,000	\$3,150,000	\$3,150,000
Irrigation rate - water taken (ML/ha)							
Base component	3.2	1.4	6.6	2.8	0.6	2.1	2.4
Delivery supplement	0.2	0.0	7.5	3.1	0.0	2.0	2.4
Water taken (ML)							
Base component	143	69	394	166	32	125	147
Delivery supplement	11	0	448	189	0	121	142
Irrigation rate - allocation (ML/ha)							
Base component	7.2	6.6	10.3	10.3	2.5	9.1	9.1
Delivery supplement	0.6	0.0	11.7	11.7	0.0	8.8	8.8
Water allocation (ML)							
Base component	325	329	616	616	133	544	544
Delivery supplement	25	0	700	700	0	526	526
Gross Income	\$987,644	\$1,388,497	\$167,069	\$167,069	\$823,484	\$400,191	\$400,191
Variable costs	\$372,794	\$621,227	\$34,806	\$30,777	\$255,762	\$222,707	\$223,111
Fixed costs	\$274,641	\$115,326	\$110,504	\$110,504	\$298,994	\$80,191	\$80,191
EBIT <sup>c</sup>	\$362,684	\$651,943	\$28,793	\$32,823	\$268,728	\$97,293	\$96,889

<sup>a</sup> All dollar values are in 2015 dollars. Only Includes the levy on the quantity of water allocated.

<sup>b</sup> Based on irrigated area and capital improvements but excludes allowance for residence.

<sup>c</sup> Earnings before interest and tax.

Source: Appendix Tables 1.4 and 1.10



### 3.3 Impact of the Levies on Irrigation Farms

The rate and impact for budget Scenario 1 are described below in Table 3.2.

The key points to note from these results are as follows.

- With profitable enterprises (e.g. dairy, winegrapes and potatoes) the levy has a *minor* impact (reduces EBIT by less than 1 per cent) on farm profitability. However, the levy has a *moderate* impact (reduces EBIT by more than 1 per cent but less than 5 per cent) with some profitable industries (e.g. sheep).
- For marginal operations the impact on farm profitability would be *significant* (reduces EBIT by more than 5 per cent). The analysis showed that the lower profit margin and higher water using industries (e.g. lucerne<sup>4</sup>) are the industries where the water based levy would have a *significant* impact on enterprise profitability.

Table 3.2 NRM Water Levy rates (\$/ML) and financial impact of water based levy on representative farms in the South East, Budget Scenario 1

	Dairy	Potatoes	Lucerne	Lucerne (confined)	Winegrapes	Sheep	Sheep (confined)
<b>Option 3 (Fixed charge \$200 + water allocation)</b>							
Water based levy (\$/ML)							
Fixed charge	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00	\$200.00
Base component	\$2.58	\$2.58	\$2.58	\$2.58	\$2.58	\$2.58	\$2.58
Delivery supplement	\$0.26	\$0.26	\$0.26	\$2.58	\$0.26	\$0.26	\$2.58
Total levy payment (\$)	\$1,046	\$1,048	\$1,971	\$3,596	\$543	\$1,740	\$2,961
Levy as a % of variable costs	0.3%	0.2%	5.4%	10.5%	0.2%	0.8%	1.3%
Levy as a % of total costs	0.2%	0.1%	1.3%	2.5%	0.1%	0.6%	1.0%
Levy Impact on EBIT	-0.3%	-0.2%	-6.4%	-9.9%	-0.2%	-1.8%	-3.0%

Source: NR South East and EconSearch analysis

<sup>4</sup> Costs are modelled for the Tintinara PWA, where licensees pump water from the aquifer. The cost of extracting water would be less in other regions (such as Kingston) where there are no costs for pumping as the water is artesian. Lower pumping costs would result in a greater EBIT for these enterprises resulting in a lower levy impact.

## 4. ANALYSIS OF DIVISION 1 AND 2 LEVIES COMBINED

### 4.1 Impact of the Levies on Irrigation Farms

The following analysis represents the combined impact of the Division 1 land levy for primary producers (a fixed rate of \$183.98) and the Division 2 levy (fixed charge of \$200 plus a charge of \$2.58 per ML).

The key point to note from the results is that the land based levy does increase the aggregate levy paid by landholders but only marginally increases the impact of both levies (Table 4.1)

Table 4.1 Financial impact of the water based plus land based levy on representative irrigation farms in the SENRM region, Budget Scenario 1, Water Option 1 (fixed charge \$200 + water allocation)

	Dairy	Potatoes	Lucerne	Lucerne (confined)	Winegrapes	Sheep	Sheep (confined)
<b>Option 4: Purpose of use</b>							
Water based levy (\$)	\$1,046	\$1,048	\$1,971	\$3,596	\$543	\$1,740	\$2,961
Land based levy (\$)	\$183.98	\$183.98	\$183.98	\$183.98	\$183.98	\$183.98	\$183.98
Total levy payment (\$)	\$1,229	\$1,232	\$2,155	\$3,780	\$727	\$1,924	\$3,145
Levies as a % of variable costs	0.3%	0.3%	0.6%	1.0%	0.2%	0.5%	0.8%
Levies as a % of total costs	0.2%	0.2%	0.3%	0.6%	0.1%	0.3%	0.5%
Levies impact on EBIT	-0.3%	-0.2%	-7.0%	-10.3%	-0.3%	-1.9%	-3.1%

Source: EconSearch analysis

## 4.2 Impact of the Levies on Forestry

The analysis of the impact of the water based levy on forestry licence holders was based on an industry level rather than an enterprise level analysis. Enterprise level cost and return data were not available for this analysis; however forestry and logging industry level data was available from RISE models developed by EconSearch for the Limestone Coast State Government region. Industry level earnings and costs were extracted from the base data from these models (Table 4.2).

Table 4.2 Forestry data, South East, 2013/14

	2013/14 <sup>a</sup>
	(\$m)
<b>Output - Forestry and logging (A)</b>	376.0
Local purchases of goods and services (B)	91.0
Regional imports (C)	74.3
<b>Total purchases of goods and services (D=B+C)</b>	165.3
<b>Industry gross margin (E=A-D)</b>	210.7
Wages and salaries (F)	48.4
<b>Estimated Industry EBITD<sup>b</sup> (G=E-F)</b>	<b>162.2</b>

<sup>a</sup> Derived from Limestone Coast RISE model and EconSearch analysis.

<sup>b</sup> Earnings before interest, tax and depreciation.

Forestry water licence and allocation data was provided by the Board and is summarised in Table 4.3.

Table 4.3 Forestry water license and allocation data, South East, 2013/14

	Total
Forestry water licences	165
Water allocations (ML)	307,018

Source: NR South East

Based on the estimates described in Table 4.2 and Table 4.3, the impact of the water based levy is presented in Table 4.4. The impact of the water and land based levy options on forestry water licence holders in aggregate is presented in Table 4.5 for Scenario 1 (\$8.6m): land levy (\$4.64m) and water levy (\$3.96m).

The water levy alone (\$3.96m) has a *minor* impact on the industry as a whole (reduces EBITD by less than 1 per cent) (Table 4.4).

The combined land and water based levy for Scenario 1 (land levy (\$4.64m) and water levy (\$3.96m) has a *minor* impact as well Table 4.5.

As the EBITD calculation was developed from an industry wide data set care should be taken when interpreting these results. With an industry wide perspective the EBITD value calculated may be an inflated representation of the true earnings of the forestry sector in the South East. This is likely as the data used to calculate the EBITD represents the regional activity of both the forestry and the logging industries in the Limestone Coast State Government region. An inflated EBITD would result in a lesser levy impact being reported and so we would expect the true impact on the forestry sector to be slightly higher than the numbers reported below.

Table 4.4 Financial impact of the water based levy on the forestry industry in the South East<sup>a</sup>

	Water Levy (\$3.96m)
	Option 4
<b>Fixed charge \$200 + water allocation</b>	
Forest Water Levy - fixed charge (\$)	\$200.00
Forest Water Levy - base component (\$/ML)	\$2.58
Aggregate Levy payment	\$825,106
Levy impact on EBITD <sup>a</sup>	-0.5%

<sup>a</sup> Earnings before interest, tax and depreciation.

Source: EconSearch analysis

Table 4.5 Financial impact of the water and land based levy on the forestry industry in the South East, Scenario 1<sup>a</sup>

	Land Levy (\$4.64m) + Water Levy (\$3.96)
	Option 4
<b>Fixed charge \$200 + water allocation</b>	
Forest Water Levy - fixed charge (\$)	\$200.00
Forest Water Levy - base component (\$/ML)	\$2.58
Aggregate Land Levy (\$)	\$30,357
Aggregate Levy payment	\$855,464
Levy impact on EBITD <sup>a</sup>	-0.5%

<sup>a</sup> Earnings before interest, tax and depreciation.

Source: EconSearch analysis

### 4.3 Impact of Aggregate Levies on GRP

Gross regional product (GRP) for the SENRM region for 2013/14 was estimated to be \$3.66 billion, which represents 4 per cent of South Australia's Gross State Product (\$96.97 billion).

The levy amount to be collected under the Division 1 and 2 levies as a proportion of GRP are detailed in Table 4.6. It shows that the total amount to be collected under scenario 1 would be less than 0.3 per cent of SENRM region GRP.

Table 4.6 Aggregate levy income as a proportion of gross regional product (GRP)

Levy Scenario	Division 1 Levy	Division 2 Levy	Total Amount	Total Amount/GRP
Scenario 1	\$4,644,000	\$3,956,000	\$8,600,000	0.235%

Source: ABS (2015) and EconSearch analysis

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# APPENDIX 1 DETAILED REPRESENTATIVE FARM FINANCIAL MODELS

Appendix Table 1.1 Cropping, dryland, 2013/14 <sup>a</sup>

<b>Farm Characteristics</b>		
Total Farm Area	ha	1,508
Area harvested - wheat	ha	289
Area harvested - barley	ha	160
No. of Sheep	no.	933
Sheep sold	no.	528
Wool produced	kg	5,235
Cattle sold	no.	24
		<b>Total</b>
<b>Income</b>		
Grain		\$475,543
Wool		\$31,240
Livestock Sales		\$129,414
Other Income		\$184,286
<b>Gross Income</b>		<b>\$820,483</b>
<b>Variable Costs</b>		
Purchases - sheep		\$31,361
Purchases - beef cattle		\$703
Handling and marketing		\$3,556
Hired labour		\$14,303
Shearing and crutching		\$4,302
Fertiliser		\$90,613
Fodder		\$190
Crop and pasture chemicals		\$85,857
Fuel, oil and grease		\$55,040
<b>Total Variable Costs</b>		<b>\$285,926</b>
<b>Overheads</b>		
Repairs and maintenance		\$52,969
Administration		\$27,547
Contracts		\$21,013
Rates		\$22,404
Interest		\$79,182
Payment to sharefarmers		\$0
Other cash costs		\$92,662
Operator & family labour		\$62,765
Depreciation		\$99,870
<b>Total Overheads</b>		<b>\$458,412</b>
<b>EBIT</b>		<b>\$155,326</b>
<b>Total Farm Capital</b>		<b>\$4,656,139</b>

<sup>a</sup> Values represent the average (mean) of the survey sample in ABARES region 431 for 2013/14.

Source: ABARES special request, Farm Surveys Report for region 431

Appendix Table 1.2 Cropping-livestock, dryland, 2013/14 <sup>a</sup>

<b>Farm Characteristics</b>		
Total Farm Area	ha	1,016
Area harvested - wheat	ha	106
Area harvested - barley	ha	76
No. of Sheep	no.	1,952
Sheep sold	no.	1,367
Wool produced	kg	8,904
Cattle sold	no.	50
		<b>Total</b>
<b>Income</b>		
Grain		\$298,344
Wool		\$58,539
Livestock Sales		\$180,555
Other Income		\$21,610
<b>Gross Income</b>		<b>\$559,048</b>
<b>Variable Costs</b>		
Purchases - sheep		\$27,825
Purchases - beef cattle		\$2,100
Handling and marketing		\$9,457
Hired labour		\$10,122
Shearing and crutching		\$10,174
Fertiliser		\$41,221
Fodder		\$6,076
Crop and pasture chemicals		\$25,654
Fuel, oil and grease		\$32,563
<b>Total Variable Costs</b>		<b>\$165,193</b>
<b>Overheads</b>		
Repairs and maintenance		\$39,105
Administration		\$12,130
Contracts		\$15,085
Rates		\$13,999
Interest		\$53,360
Payment to sharefarmers		\$6,901
Other cash costs		\$60,821
Operator & family labour		\$66,473
Depreciation		\$59,125
<b>Total Overheads</b>		<b>\$326,998</b>
<b>EBIT</b>		<b>\$120,217</b>
<b>Total Farm Capital</b>		<b>\$4,222,440</b>

<sup>a</sup> Values represent the average (mean) of the survey sample in ABARES region 431 for 2013/14.

Source: ABARES special request, Farm Surveys Report for region 431



Appendix Table 1.3 Sheep- Beef, dryland, 2013/14 <sup>a</sup>

<b>Farm Characteristics</b>		
Total Farm Area	ha	1,224
Area harvested - wheat	ha	0
Area harvested - barley	ha	1
No. of Sheep	no.	3,589
Sheep sold	no.	2,259
Wool produced	kg	15,725
Cattle sold	no.	257
		Total
<b>Income</b>		
Grain		\$3,929
Wool		\$103,276
Livestock Sales		\$394,419
Other Income		\$23,797
<b>Gross Income</b>		<b>\$525,421</b>
<b>Variable Costs</b>		
Purchases - sheep		\$22,948
Purchases - beef cattle		\$29,240
Handling and marketing		\$14,731
Hired labour		\$19,283
Shearing and crutching		\$29,153
Fertiliser		\$27,637
Fodder		\$18,088
Crop and pasture chemicals		\$4,055
Fuel, oil and grease		\$13,176
<b>Total Variable Costs</b>		<b>\$178,310</b>
<b>Overheads</b>		
Repairs and maintenance		\$18,667
Administration		\$10,823
Contracts		\$10,731
Rates		\$12,941
Interest		\$26,515
Payment to sharefarmers		\$0
Other cash costs		\$60,743
Operator & family labour		\$51,395
Depreciation		\$33,380
<b>Total Overheads</b>		<b>\$225,196</b>
<b>EBIT</b>		<b>\$148,431</b>
<b>Total Farm Capital</b>		<b>\$5,568,498</b>

<sup>a</sup> Values represent the average (mean) of the survey sample in ABARES region 431 for 2013/14.

Source: ABARES special request, Farm Surveys Report for region 431

Appendix Table 1.4 Dairy: centre pivot irrigation, 2013/14 <sup>a</sup>

Total area	ha	280	
Irrigated area	ha	45	
Total cows	no.	361	
Milk production/cow	litres	5,351	
Milk price	\$/litre	\$0.50	
Irrigation - base component	ML/ha	3.2	
Irrigation - delivery supplement	ML/ha	0.2	
Water use - base component	ML	143	
Water use - delivery supplement	ML	11	
		<b>\$/unit</b>	<b>Total</b>
<b>Income</b>			
Milk income	\$/cow	\$2,654.10	\$957,976
Stock sales	\$/cow	\$54.10	\$19,529
Other			\$10,139
<b>Gross Income</b>			<b>\$987,644</b>
<b>Variable Costs</b>			
Stock purchases	\$/cow	\$35.52	\$12,820
Livestock materials	\$/cow	\$51.54	\$18,602
Other materials	\$/cow	\$65.58	\$23,671
Fodder	\$/cow	\$540.77	\$195,187
Fertiliser	\$/ha	\$98.87	\$27,682
Fuel & oil	\$/cow	\$99.21	\$35,810
Crop & pasture chemicals	\$/ha	\$10.80	\$3,025
Power & heating	\$/cow	\$112.98	\$40,778
Dairy supplies	\$/cow	\$39.92	\$14,408
Irrigation pumping costs	\$/ML	\$74.23	\$810
<b>Total Variable Costs</b>			<b>\$372,794</b>
<b>Gross Margin</b>			<b>\$614,850</b>
<b>Overheads</b>			
Repairs & maintenance			
vehicles & plant			\$29,340
irrigation equipment			\$1,043
Labour			\$116,154
Depreciation			\$37,197
Interest			\$22,476
Administration & other			\$68,431.18
<b>Total Overheads</b>			<b>\$274,641</b>
<b>EBIT</b>			<b>\$362,684</b>
<b>Total Farm Capital</b>			<b>\$2,109,922</b>

<sup>a</sup> The cost and return data were based on EconSearch (2013) and work undertaken for PIRSA by EconSearch and SRHS (2004) and were updated and modified for this study.

Source: EconSearch analysis

Appendix Table 1.5 Potatoes: centre pivot irrigation, 2013/14 <sup>a</sup>

Irrigated area	ha	50	
Potato price	\$/t	\$598	
Potato yield	t/ha	46	
Irrigation - base component	ML/ha	1.4	
Irrigation - delivery supplement	ML/ha	0.0	
Water use - base component	ML	69	
Water use - delivery supplement	ML	0	
			<b>\$/unit</b>
			<b>Total</b>
<b>Income</b>			
Sale of potatoes	\$/ha	\$27,769.93	\$1,388,497
<b>Gross Income</b>			<b>\$1,388,497</b>
<b>Variable Costs</b>			
Ground preparation and planting	\$/ha	\$1,686	\$84,307
Disease sprays	\$/ha	\$571.13	\$28,557
Pest sprays	\$/ha	\$197.26	\$9,863
Nutrient sprays	\$/ha	\$61.97	\$3,098
Herbicides	\$/ha	\$206.56	\$10,328
Fertiliser	\$/ha	\$643.51	\$32,176
Contract operations	\$/ha	\$3,515.73	\$175,787
Freight	\$/ha	\$1,078.89	\$53,944
Fuel	\$/ha	\$1,643.06	\$82,153
Labour	\$/ha	\$4,404.01	\$220,201
Irrigation pumping costs	\$/ML	\$74.23	\$5,121
<b>Total Variable Costs</b>			<b>\$621,227</b>
<b>Gross Margin</b>			<b>\$767,269</b>
<b>Overheads</b>			
Labour			\$53,773
Consumables			\$8,803
Maintenance			\$7,824
Depreciation			\$19,964
Insurance			\$7,944
Professional services			\$5,868
Office/administration			\$11,150
<b>Total Overheads</b>			<b>\$115,326</b>
<b>EBIT</b>			<b>\$651,943</b>

<sup>a</sup> The cost and return data were based on EconSearch (2013) and work undertaken for PIRSA by EconSearch and SRHS (2004) and were updated and modified for this study.

Source: EconSearch analysis

Appendix Table 1.6 Lucerne: flood irrigation, 2013/14<sup>a</sup>

Hay price	\$/tonne	\$245	
Hay yield	tonne/ha	2.7	
Seed price	\$/kg	\$4.24	
Seed yield	kg/ha	500	
Irrigated area	ha	60	
Hay production	tonnes	163	
Seed production	kg	30,000	
Irrigation - base component	ML/ha	6.6	
Irrigation - delivery supplement	ML/ha	7.5	
Water use - base component	ML	394	
Water use - delivery supplement	ML	448	
		<b>\$/unit</b>	<b>Total</b>
<b>Income</b>			
Hay	\$/ha	\$665.35	\$39,921
Seed	\$/ha	\$2,119.13	\$127,148
<b>Gross Income</b>			<b>\$167,069</b>
<b>Variable Costs</b>			
Seed cleaning	\$/ha	\$29.73	\$1,784
Fertiliser	\$/ha	\$82.54	\$4,952
Chemicals			
post emergents	\$/ha	\$36.85	\$2,211
dessicant	\$/ha	\$38.99	\$2,340
insecticides	\$/ha	\$8.48	\$509
Fuel & Oil	\$/ha	\$7.20	\$432
Freight			
seed/grain	\$/ha	\$3.00	\$180
fertiliser	\$/ha	\$1.70	\$102
hay	\$/ha	\$51.47	\$3,088
Aerial spraying	\$/ha	\$14.30	\$858
Hay mowing	\$/ha	\$50.04	\$3,003
Hay raking	\$/ha	\$33.60	\$2,016
Hay baling	\$/ha	\$102.94	\$6,177
Insurance - hay			
hay	\$/ha	\$2.88	\$173
seed	\$/ha	\$0.20	\$12
Irrigation pumping costs	\$/ML	\$17.67	\$6,971
<b>Total Variable Costs</b>			<b>\$34,806</b>
<b>Gross Margin</b>			<b>\$132,262</b>
<b>Overheads</b>			
Repairs & maintenance:			
vehicles & plant			\$19,561
irrigation infrastructure			\$1,043
Administration & other			\$4,831
Rates			\$5,507
Interest			\$7,035
Labour			\$61,879
Depreciation			\$10,647
<b>Total Overheads</b>			<b>\$110,504</b>
<b>EBIT</b>			<b>\$28,793</b>

<sup>a</sup> Values represent the costs and returns from a typical lucerne enterprise which, in most cases, will be part of a larger, whole farm operation. The overhead costs for the representative grower model were derived taking into account the fact that many farms run two or more enterprises. The cost and return data were based on EconSearch (2013) and work undertaken for PIRSA by EconSearch and SRHS (2004) and were updated and modified for this study.

Source: EconSearch analysis

Appendix Table 1.7 Lucerne: flood irrigation, contained aquifer 2013/14<sup>a b</sup>

Hay price	\$/tonne	\$245	
Hay yield	tonne/ha	2.7	
Seed price	\$/kg	\$4.24	
Seed yield	kg/ha	500	
Irrigated area	ha	60	
Hay production	tonnes	163	
Seed production	kg	30,000	
Irrigation - base component	ML/ha	2.8	
Irrigation - delivery supplement	ML/ha	3.1	
Water use - base component	ML	166	
Water use - delivery supplement	ML	189	
		<b>\$/unit</b>	<b>Total</b>
<b>Income</b>			
Hay	\$/ha	\$665.35	\$39,921
Seed	\$/ha	\$2,119.13	\$127,148
<b>Gross Income</b>			<b>\$167,069</b>
<b>Variable Costs</b>			
Seed cleaning	\$/ha	\$29.73	\$1,784
Fertiliser	\$/ha	\$82.54	\$4,952
Chemicals			
post emergents	\$/ha	\$36.85	\$2,211
dessicant	\$/ha	\$38.99	\$2,340
insecticides	\$/ha	\$8.48	\$509
Fuel & Oil	\$/ha	\$7.20	\$432
Freight			
seed/grain	\$/ha	\$3.00	\$180
fertiliser	\$/ha	\$1.70	\$102
hay	\$/ha	\$51.47	\$3,088
Aerial spraying	\$/ha	\$14.30	\$858
Hay mowing	\$/ha	\$50.04	\$3,003
Hay raking	\$/ha	\$33.60	\$2,016
Hay baling	\$/ha	\$102.94	\$6,177
Insurance - hay			
hay	\$/ha	\$2.88	\$173
seed	\$/ha	\$0.20	\$12
Irrigation pumping costs	\$/ML	\$17.67	\$2,941
<b>Total Variable Costs</b>			<b>\$30,777</b>
<b>Gross Margin</b>			<b>\$136,292</b>
<b>Overheads</b>			
Repairs & maintenance:			
vehicles & plant			\$19,561
irrigation infrastructure			\$1,043
Administration & other			\$4,831
Rates			\$5,507
Interest			\$7,035
Labour			\$61,879
Depreciation			\$10,647
<b>Total Overheads</b>			<b>\$110,504</b>
<b>EBIT</b>			<b>\$32,823</b>

<sup>a</sup> Values represent the costs and returns from a typical lucerne enterprise which, in most cases, will be part of a larger, whole farm operation. The overhead costs for the representative grower model were derived taking into account the fact that many farms run two or more enterprises. The cost and return data were based on EconSearch (2013) and work undertaken for PIRSA by EconSearch and SRHS (2004) and were updated and modified for this study.

<sup>b</sup> Costs are modelled for the Tintinara PWA, where licensees pump water from the aquifer. The cost of extracting water would be less in other regions (such as Kingston) where there are no costs for pumping as the water is artesian.

Source: EconSearch analysis

Appendix Table 1.8 Winegrapes: drip irrigation, 2013/14 <sup>a</sup>

Grape price	\$/t	\$1,307	
Grape yield	t/ha	11.7	
Irrigated area	ha	54	
Irrigation - base component	ML/ha	0.6	
Irrigation - delivery supplement	ML/ha	0.0	
Water use - base component	ML	32	
Water use - delivery supplement	ML	0	
		<b>\$/unit</b>	<b>Total</b>
<b>Income</b>			
Sale of grapes	\$/ha	\$15,249.71	\$823,484
<b>Gross Income</b>		<b>\$15,249.71</b>	<b>\$823,484</b>
<b>Variable Costs</b>			
Disease sprays	\$/ha	\$357.35	\$19,297
Pest sprays	\$/ha	\$53.71	\$2,900
Nutrient sprays	\$/ha	\$115.67	\$6,246
Herbicides	\$/ha	\$97.08	\$5,242
Fertiliser	\$/ha	\$1,264.68	\$68,293
Contract operations	\$/ha	\$2,023.99	\$109,295
Fuel	\$/ha	\$275.89	\$14,898
Labour	\$/ha	\$504.12	\$27,223
Irrigation pumping costs	\$/ML	\$74.23	\$2,368
<b>Total Variable Costs</b>			<b>\$255,762</b>
<b>Gross Margin</b>			<b>\$567,723</b>
<b>Overheads</b>			
Labour			\$147,876
Consumables			\$5,999
Maintenance			\$32,602
Depreciation			\$86,843
Insurance			\$5,811
Professional services			\$9,129
Office/administration			\$10,736
<b>Total Overheads</b>			<b>\$298,994</b>
<b>EBIT</b>			<b>\$268,728</b>

<sup>a</sup> Estimates of winegrape price were derived from information published by the Phylloxera and Grape Industry Board of South Australia in their *2009 South Australian Winegrape Utilisation and Pricing Survey*. These are weighted average values (price) across all wine growing regions in the South East from the 2009 vintage. The cost, yield and vineyard size data were based on EconSearch (2013) and on work undertaken for PIRSA by EconSearch and SRHS (2004).

Source: Phylloxera and Grape Industry Board of South Australia (2015) and EconSearch analysis

Appendix Table 1.9 Sheep: flood irrigation, 2013/14 <sup>a</sup>

No. of sheep	no.	2,289	
Total DSE	no.	4,212	
Average DSE	DSE/sheep	1.84	
Total area	ha	1,200	
Irrigated area	ha	60	
Irrigation - base component	ML/ha	2.1	
Irrigation - delivery supplement	ML/ha	2.0	
Water use - base component	ML	125	
Water use - delivery supplement	ML	121	
		<b>\$/unit</b>	<b>Total</b>
<b>Income</b>			
Wool	\$/sheep	\$37.31	\$85,404
Livestock sales	\$/sheep	\$132.26	\$302,776
Other Income			\$12,011
<b>Gross Income</b>			<b>\$400,191</b>
<b>Variable Costs</b>			
Shearing			
sheep	\$/sheep	\$2.60	\$5,947
rams	\$/sheep	\$0.10	\$230
shed labour	\$/sheep	\$0.81	\$1,865
woolclasser	\$/sheep	\$0.27	\$625
work cover	\$/sheep	\$0.21	\$477
wool packs	\$/sheep	\$0.40	\$919
shed sundries	\$/sheep	\$0.26	\$585
Dipping	\$/sheep	\$0.10	\$240
Crutching			
adult sheep	\$/sheep	\$0.73	\$1,662
lambs	\$/sheep	\$0.75	\$1,711
Animal health			
drench	\$/sheep	\$0.35	\$797
vaccine	\$/sheep	\$0.61	\$1,385
Stock purchases	\$/sheep	\$41.78	\$95,634
Freight			
livestock	\$/sheep	\$8.35	\$19,126
wool	\$/sheep	\$0.33	\$761
Stock selling charges			
commission	\$/sheep	\$6.81	\$15,595
yard fees	\$/sheep	\$0.65	\$1,490
levy-sheep	\$/sheep	\$0.20	\$458
levy-lambs	\$/sheep	\$1.50	\$3,434
Fodder			
hay	\$/sheep	\$2.07	\$4,742
grain	\$/sheep	\$4.04	\$9,248
Insurance	\$/sheep	\$0.15	\$346
Fertiliser	\$/ha	\$43.53	\$52,231
Fuel, oil & grease	\$/sheep	\$0.38	\$877
Irrigation pumping costs	\$/ML	\$18.56	\$2,323
<b>Total Variable Costs</b>			<b>\$222,707</b>
<b>Gross Margin</b>			<b>\$177,484</b>
<b>Overheads</b>			
Repairs & maintenance:			
vehicle & plant			\$7,215
irrigation infrastructure			\$1,043
Rates			\$2,257
Interest			\$3,062
Labour			\$55,136
Depreciation			\$11,477
<b>Total Overheads</b>			<b>\$80,191</b>
<b>EBIT</b>			<b>\$97,293</b>

<sup>a</sup> Values represent the costs and returns from a typical sheep grazing enterprise which, in most cases, will be just part of a larger, whole farm operation. The overhead costs for the representative grower model were derived taking into account the fact that many farms run two or more enterprises. The cost and return data were based on EconSearch (2013) and work undertaken for PIRSA by EconSearch and SRHS (2004) and were updated and modified for this study.

Source: EconSearch analysis

Appendix Table 1.10 Sheep: flood irrigation, contained aquifer, 2013/14 <sup>a</sup>

No. of sheep	no.	2,289	
Total DSE	no.	4,212	
Average DSE	DSE/sheep	1.84	
Total area	ha	1,200	
Irrigated area	ha	60	
Irrigation - base component	ML/ha	2.4	
Irrigation - delivery supplement	ML/ha	2.4	
Water use - base component	ML	147	
Water use - delivery supplement	ML	142	
		<b>\$/unit</b>	<b>Total</b>
<b>Income</b>			
Wool	\$/sheep	\$37.31	\$85,404
Livestock sales	\$/sheep	\$132.26	\$302,776
Other Income			\$12,011
<b>Gross Income</b>			<b>\$400,191</b>
<b>Variable Costs</b>			
<b>Shearing</b>			
sheep	\$/sheep	\$2.60	\$5,947
rams	\$/sheep	\$0.10	\$230
shed labour	\$/sheep	\$0.81	\$1,865
woolclasser	\$/sheep	\$0.27	\$625
work cover	\$/sheep	\$0.21	\$477
wool packs	\$/sheep	\$0.40	\$919
shed sundries	\$/sheep	\$0.26	\$585
Dipping	\$/sheep	\$0.10	\$240
<b>Crutching</b>			
adult sheep	\$/sheep	\$0.73	\$1,662
lambs	\$/sheep	\$0.75	\$1,711
<b>Animal health</b>			
drench	\$/sheep	\$0.35	\$797
vaccine	\$/sheep	\$0.61	\$1,385
Stock purchases	\$/sheep	\$41.78	\$95,634
<b>Freight</b>			
livestock	\$/sheep	\$8.35	\$19,126
wool	\$/sheep	\$0.33	\$761
<b>Stock selling charges</b>			
commission	\$/sheep	\$6.81	\$15,595
yard fees	\$/sheep	\$0.65	\$1,490
levy-sheep	\$/sheep	\$0.20	\$458
levy-lambs	\$/sheep	\$1.50	\$3,434
<b>Fodder</b>			
hay	\$/sheep	\$2.07	\$4,742
grain	\$/sheep	\$4.04	\$9,248
<b>Insurance</b>			
Fertiliser	\$/ha	\$43.53	\$52,231
Fuel, oil & grease	\$/sheep	\$0.38	\$877
Irrigation pumping costs	\$/ML	\$18.56	\$2,727
<b>Total Variable Costs</b>			<b>\$223,111</b>
<b>Gross Margin</b>			<b>\$177,080</b>
<b>Overheads</b>			
<b>Repairs &amp; maintenance:</b>			
vehicle & plant			\$7,215
irrigation infrastructure			\$1,043
<b>Rates</b>			
Interest			\$3,062
<b>Labour</b>			
Labour			\$55,136
<b>Depreciation</b>			
Depreciation			\$11,477
<b>Total Overheads</b>			<b>\$80,191</b>
<b>EBIT</b>			<b>\$96,889</b>

<sup>a</sup> Values represent the costs and returns from a typical sheep grazing enterprise which, in most cases, will be just part of a larger, whole farm operation. The overhead costs for the representative grower model were derived taking into account the fact that many farms run two or more enterprises. The cost and return data were based on EconSearch (2013) and work undertaken for PIRSA by EconSearch and SRHS (2004) and were updated and modified for this study.

Source: EconSearch analysis