IPART: 2025-26 review of WaterNSW's prices

Impacts of potential WaterNSW price increases on representative irrigation farms in regional NSW

A final report prepared for the Independent Pricing and Regulatory Tribunal (IPART)

11 March 2026

RICARDO
Member of WSP

Contents

Executive Summary vii

1. Introduction 6
   1.1. Background 6
   1.2. Scope 6

2. Approach and methodology 7
   2.1. WaterNSW price increase Scenarios 7
   2.2. Modelled regions 8
   2.3. Representative commodities 9
   2.4. Representative farm sizes 10
   2.5. Water use assumptions 11
   2.6. Farm budgets 12
   2.7. Variable and overhead (fixed) production cost definitions 13
   2.8. Farming yields 15
   2.9. Commodity prices 16
   2.10. Limitations 17

3. Results and analysis 20
   3.1. WaterNSW price increase scenarios relative to current WaterNSW prices 20
   3.2. WaterNSW price impacts relative to farm costs and revenues 22
   3.3. Scenario 1 - price impacts on farming margins 23
   3.4. Scenario 2 - price impacts on farming margins 33

4. Discussion 41
   4.1. Impacts on water entitlement and allocation values 41
   4.2. Potential shift to higher value crops 45
   4.3. Potential interface between higher WaterNSW charges and farm amalgamation trends 50
   4.4. Potential for higher water charges to incentivise greater water use efficiency 51
   4.5. Sensitivity of the modelled results to water usage assumptions 52
   4.6. Irrigation corporation businesses and stranded asset risk 52
   4.7. WaterNSW business model implications 53
   4.8. Comparing the margin analysis with NSW Gross Value of Production data 54

Appendix A - Farm budgets for commodity type across each region 56

Appendix B - Input costs justification for each commodity type across each region . 59

Tables

Table 1 Representative farms modelled for each commodity and valley (ha) vii

Table 2 Scenario 1 price impacts on farming margins across all commodities - average representative farms ($2025/26), 100% allocation and entitlement covering 100% of use 2
Table 3 Scenario 2 price impacts on farming margins across all commodities - average representative farms ($2025/26), 100% allocation and entitlement covering 100% of use 3
Table 4 Current and WaterNSW price increase Scenarios ($2025/26) 7
Table 5 Representative crop types for each WaterNSW valley modelled 9
Table 6 Modelled irrigated small and average representative farms sizes across each valley (ha) 10
Table 7 Variable costs modelled for each commodity ($2025/26) 13
Table 8 Total overhead costs modelled for each commodity ($2025/26) 14
Table 9 Total water charges modelled for each valley ($2025/26) 15
Table 10 Yields modelled for each commodity 15
Table 11 Prices modelled for each commodity ($2025/26) 16
Table 12 Percentage increase in WaterNSW prices under Scenario 1 - 15% annual cap increase - relative to 2025/26 prices, 100% allocation and water use 20
Table 13 Percentage increase in WaterNSW prices under Scenario 2 – Cost reflective prices in 2029/30 - relative to 2025/26 prices, 100% allocation and water use 21
Table 14 Price impacts on costs and revenues of farming enterprises - Scenario 1 and 2 – relative to 2025/26 charges, 100% allocation and entitlement covering 100% use 22
Table 15 Scenario 1 price impacts on cotton farm margins – small representative farms ($2025/26), 100% water allocation and 100% use 24
Table 16 Scenario 1 price impacts on cotton farm margins - average representative farms ($2025/26), 100% allocation and entitlement covering 100% use 25
Table 17 Scenario 1 price impacts on lucerne farm margins - small representative farms ($2025/26), 100% water allocation and 100% water use 27
Table 18 Scenario 1 price impacts on lucerne farm margins - average representative farms ($2025/26), 100% water allocation and 100% use 28
Table 19 Scenario 1 price impacts on rice farm margins – small representative farms ($2025/26), 100% water allocation and 100% use 29
Table 20 Scenario 1 price impacts on rice farm margins - average representative farms ($2025/26), 100% water allocation and 100% use 29
Table 21 Scenario 1 price impacts on wine grape farm margins – small representative farms ($2025/26), 100% allocation and entitlement covering 100% use 30
Table 22 Scenario 1 price impacts on wine grape farm margins - average representative farms ($2025/26), 100% water allocation and 100% use 31
Table 23 Scenario 1 price impacts on dairy farm margins – average representative farms ($2025/26), 100% water allocation and 100% use 32
Table 24 Scenario 2 price impacts on farming margins across all commodities - small representative farms ($2025/26), 100% water allocation and 100% use 33
Table 25 Scenario 2 price impacts on farming margins – average representative farms ($2025/26), 100% water allocation and 100% use 34
Table 26 Representative farm budget - cotton 56
Table 27 Representative farm budget - lucerne 56

Table 28 Representative farm budget - rice 57
Table 29 Representative farm budget - wine grapes 57
Table 30 Representative farm budget - dairy 58

Figures

Figure 1 Modelled regions for this analysis 8
Figure 2 Scenario 1 price impacts on cotton farm net margins – small representative farms ($2025/26), 100% water allocation and 100% water use 25
Figure 3 Scenario 1 price impacts on cotton farm net margins - average representative farms ($2025/26), 100% water allocation 100% water use 26
Figure 4 Scenario 1 price impacts on lucerne farm net margins – small representative farms ($2025/26), 100% water allocation and 100% use 27
Figure 5 Scenario 1 price impacts on lucerne farm net margins – average representative farms ($2025/26), 100% water allocation and 100% use 28
Figure 6 Scenario 1 price impacts on rice farm net margins – small representative farms ($2025/26), 100% water allocation and 100% use 29
Figure 7 Scenario 1 price impacts on rice farm net margins – average representative farms ($2025/26), 100% water allocation 100% use 30
Figure 8 Scenario 1 price impacts on wine grape farm net margins – small representative farms ($2025/26), 100% water allocation and 100% use 31
Figure 9 Scenario 1 price impacts on wine grape farm net margins – average representative farms ($2025/26), 100% water allocation and 100% use 32
Figure 10 Scenario 1 price impacts on dairy farm net margins – average farms ($2025/26), 100% water allocation and 100% use 33
Figure 11 Scenario 2 price impacts on cotton farm net margins – small farms ($2025/26), 100% water allocation and 100% use 36
Figure 12 Scenario 2 price impacts on cotton farm net margins – average farms ($2025/26), 100% water allocation and 100% use 36
Figure 13 Scenario 2 price impacts on lucerne farm net margins – small representative farms ($2025/26), 100% water allocation and 100% use 37
Figure 14 Scenario 2 price impacts on lucerne farm net margins – average representative farms ($2025/26), 100% water allocation and 100% use 37
Figure 15 Scenario 2 price impacts on rice farm net margins – small representative farms ($2025/26), 100% water allocation and 100% use 38
Figure 16 Scenario 2 price impacts on rice farm net margins – average representative farms ($2025/26), 100% water allocation and 100% use 38
Figure 17 Scenario 2 price impacts on wine grape farm net margins – small representative farms ($2025/26), 100% water allocation and 100% use 39
Figure 18 Scenario 2 price impacts on wine grape farm net margins – average representative farms ($2025/26), 100% water allocation and 100% use 39
Figure 19 Scenario 2 price impacts on dairy farm net margins – average representative farms ($2025/26), 100% water allocation and 100% use 40

Abbreviations

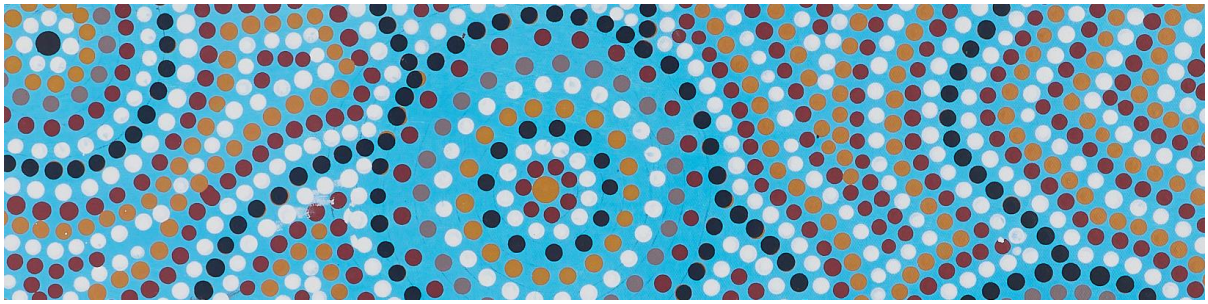
GM	Gross margin
GVP	Gross Value of Production
GSE	General Security Entitlement
Ha	Hectare
HSE	High Security Entitlement
IPART	Independent Pricing and Regulatory Tribunal
ML	Megalitre
NM	Net margin

Acknowledgment of Country

Ricardo (a member of WSP) acknowledges First Nations people as the First Peoples of Australia and the Traditional Custodians of its lands and waters. We pay respect to the deep connection First Nations people hold with Country, and celebrate the continuing effect of cultural knowledge and practices on Country and communities across Australia.

We pay our respect to Elders past and present, whose knowledge and leadership has protected Country and allowed First Nations spirituality, culture and kinship to endure through the ages.

We recognise the injustices and hardship faced by First Nations communities and reflect on opportunities for all Australians to play a part in reconciliation and the development of mutual understanding and respect across cultures.



About Ricardo (Member of WSP)

Ricardo, a member of WSP, is a global engineering, environmental, and strategic consultancy that delivers sustainable, high-impact solutions across transport, energy, and environmental sectors. Operating in over 20 countries with more than 3,000 specialists, Ricardo supports over 750 clients annually, including governments, infrastructure operators, and multinational organisations. The company contributes to global decarbonisation, clean technology development, and policy reform, with projects reducing over 10 million tonnes of CO_2 emissions. Ricardo combines technical excellence with independent, evidence-based advice to address complex challenges and deliver measurable outcomes.

Ricardo's Australian Water and Environment team provides technical and strategic expertise in water resource management, climate adaptation, environmental approvals, and ecosystem protection.

Ricardo's Australian Water and Environment capabilities

Our Australian team assists governments and businesses in making better decisions about globally significant challenges. We offer strategic, economic, engineering and technical services across several key areas:

Water Management & Markets

Expert guidance in water management, regulation and market analysis for sustainable resource management.

Economics Advisory

Comprehensive economic appraisals and specialist regulatory economic advice.

Infrastructure

Front end engineering and asset management for robust infrastructure solutions.

Resilience, adaptation & nature

Strategic advisory to enhance resilience against climate change and natural capital degradation.

Environment and planning

Planning and environmental assessments and advisory to drive net-zero and circular economy goals.

Executive Summary

Background and scope

The Independent Pricing and Regulatory Tribunal (IPART) is currently reviewing WaterNSW's rural and regional water charges. IPART issued a one-year determination (around 5.8% plus inflation for bulk water) for 2025-2026 to allow for a deeper investigation into costs, efficiency, and pricing structures, The one-year determination allows IPART to consider stakeholder concerns raised about large, proposed price increases for WaterNSW's rural valleys beyond 2025-26.

IPART engaged Ricardo to undertake representative farm financial modelling to understand how potential WaterNSW price increase scenarios could affect the financial performance of representative irrigation farms in rural valleys serviced by WaterNSW. Two price increase scenarios provided by IPART were modelled:

- Scenario 1 is WaterNSW's proposed prices in its September 2024 pricing proposal under the 15% per annum cap scenario (i.e. WaterNSW's 2024-25 fixed and variable charges increase by a maximum of 15% per annum out to 2029-30 in real terms)
- Scenario 2 is WaterNSW's proposed cost-reflective prices in 2029-30 in real terms as presented in WaterNSW's September 2024 pricing proposal).

Approach

Gross and net margin farm budgets were developed for the cropping enterprises most vulnerable to price increases in each of the WaterNSW valleys modelled. Cotton, lucerne and rice were modelled in the inland valleys. White wine grapes in the Hunter valley and dairy in the North and South Coast valleys were also modelled. Small and average representative sized farms were modelled. Table 1 summarises the crops and representative farm sizes in each WaterNSW valley that were modelled.

Table 1 Representative farms modelled for each commodity and valley (ha)

Valleys	Cotton		Lucerne		Rice		Wine grapes		Dairy	
	Small	Average	Small	Average	Small	Average	Small	Average	Small	Average
Border	450	1,200								
Gwydir	375	1,050								
Namoi	300	850								
Macquarie	300	800								
Lachlan	225	650	75	225						
Peel			60	140						
Murrumbidgee	100	400			100	400				
Murray			50	100	100	400				
Hunter							10	45		
North Coast										320
South Coast										513

Context for interpreting the findings

The modelling approach, assumptions and limitations are presented in full in Section 2.10. While the farm financial models are based on contemporary inputs and transparent assumptions, they remain simplified representations of real-world conditions and are subject to uncertainty, including that every farm is different which the model cannot account for. While Ricardo believes that the assumptions are representative of the conditions that are being modelled, and useful for IPART's consideration of farm financial impacts, the results should be interpreted in this context. In summary, the modelling assumes:

- Each of the representative farms own General Security water entitlements except for the Hunter wine grape enterprises which are assumed to hold High Security water entitlements. The entitlement holdings are assumed to meet the water application needs per hectare to irrigate the assumed farm size.
- As the farms are assumed to own the volume of water entitlements they require for the size of their farming enterprise, water allocation purchases were not required, and we assumed there would be no water allocation sales. The modelled results will not necessarily reflect a scenario where some irrigators rely on allocation purchases. Similarly, irrigators that sell water in some years have not been modelled.
- 100% water allocation for the whole modelled year and 100% of the water is used. The modelling therefore does not capture seasonal variability in water availability. In dry years, irrigators can go multiple seasons without water, and this has not been modelled.
- All water used in irrigation is assumed to be regulated water from WaterNSW. In practice, this will not hold for all farms and regions as some irrigators have access to groundwater and supplementary water stored in on farm dams in some years.
- Yields have been modelled as the average outcomes that could be expected for each commodity to inform the net and gross margins.
- Where the same crops are modelled across valleys, yields and commodity prices have been applied at a universal rate across valleys reflecting industry benchmarks, except for dairy in the North and South Coast which assumes different yields and commodity prices reflecting regional conditions.
- "Representative" farm sizes, while useful for modelling, are simplifications that cannot capture the full diversity of enterprise structures, costs and revenues. Representative farms reflect a plausible operating scale, but in practice, many farms fall outside these assumptions due to differences in land tenure, water access, capital constraints, levels of debt, labour availability, or enterprise mix. Consequently, a representative farm may describe a viable production model without describing how many farms are configured.
- Only income from irrigation has been modelled meaning that mixed farms irrigating lucerne to feed livestock have not been modelled. Off farm income from employment or other income sources has not been modelled.

Findings

Table 2 and Table 3 present the modelled impacts of Scenario 1 and Scenario 2 by crop type and WaterNSW valley for an average representative farm.

The results demonstrate that Scenario 1 will materially reduce farm profitability for cotton and lucerne farming enterprises across most valleys where cotton and lucerne are grown. Under Scenario 1 (at full price implementation in 2029/30), gross margins remain positive for most farming enterprises, but net margins will be significantly reduced. Cotton producers in the Namoi and Lachlan and lucerne producers in the Peel are particularly exposed and have negative net margins indicating irrigation is no longer profitable.

Under Scenario 2, the impacts are substantially more severe. WaterNSW charges rise to a level that represents a large structural shift in farm cost composition. Cotton and lucerne enterprises in multiple valleys will become unprofitable. Dairy enterprises on the North Coast will face extremely large increases in their charges that will potentially fully erode their gross margin. Rice and wine grapes remain comparatively less exposed; however their margins are still materially reduced. Scenario 2 therefore presents a high risk of accelerating structural adjustment, farm consolidation and producers exiting irrigation. Lower-margin commodities (cotton and lucerne) bear a disproportionate burden with farming enterprises in the Gwydir, Namoi, Macquarie, Lachlan and Peel being most affected. For the Peel, the modelled outcomes are very bleak. These price increases will significantly impact the profitability of lucerne irrigation which is already facing significant financial pressure.

Table 2 Scenario 1 price impacts on farming margins across all commodities - average representative farms ($2025/26), 100% allocation and entitlement covering 100% of use

Valley	Farm size (ha)	WaterNSW price impact ($/Year)	Current Gross Margin ($/Year)	% of annual Gross Margin attributable to the WaterNSW price increase	Current Net Margin ($/Year)	% of annual Net Margin attributable to the WaterNSW price increase
Cotton						
Border	1,200	275,495	2,050,000	13%	433,000	64%
Gwydir	1,050	177,541	1,730,000	10%	313,000	57%
Namoi	850	277,373	1,250,000	22%	99,000	No longer profitable
Macquarie	800	150,344	1,290,000	12%	206,000	73%
Lachlan	650	180,504	990,000	18%	116,000	No longer profitable
Murrumbidgee	400	29,511	640,000	5%	102,000	29%
Lucerne						
Lachlan	225	89,260	610,000	15%	97,000	92%
Peel	140	48,295	380,000	13%	-5,000	No longer profitable
Murray	100	22,647	270,000	8%	42,000	53%
Rice						
Murrumbidgee	400	59,021	1,020,000	6%	557,000	11%

Valley	Farm size (ha)	WaterNSW price impact ($/Year)	Current Gross Margin ($/Year)	% of annual Gross Margin attributable to the WaterNSW price increase	Current Net Margin ($/Year)	% of annual Net Margin attributable to the WaterNSW price increase
Murray	400	126,825	970,000	13%	502,000	25%
Wine grapes						
Hunter	45	2,411	120,000	2%	33,000	7%
Dairy						
North Coast	320	29,920	1,190,000	3%	235,000	13%
South Coast	513	49,777	2,010,000	2%	786,000	6%

Table 3 Scenario 2 price impacts on farming margins across all commodities - average representative farms ($2025/26), 100% allocation and entitlement covering 100% of use

Valley	Farm size (ha)	WaterNSW price impact ($/Year)	Current Gross Margin ($/Year)	% of annual Gross Margin attributable to the WaterNSW price increase	Current Net Margin ($/Year)	% of annual Net Margin attributable to the WaterNSW price increase
Cotton						
Border	1200	348,449	2,050,000	17%	433,000	81%
Gwydir	1050	393,624	1,730,000	23%	313,000	No longer profitable
Namoi	850	487,356	1,250,000	39%	99,000	No longer profitable
Macquarie	800	329,693	1,290,000	26%	206,000	No longer profitable
Lachlan	650	491,739	990,000	49%	116,000	No longer profitable
Murrumbidgee	400	37,964	640,000	6%	102,000	37%
Lucerne						
Lachlan	225	243,168	610,000	40%	97,000	No longer profitable
Peel	140	198,593	380,000	52%	-5,000	No longer profitable

Valley	Farm size (ha)	WaterNSW price impact ($/Year)	Current Gross Margin ($/Year)	% of annual Gross Margin attributable to the WaterNSW price increase	Current Net Margin ($/Year)	% of annual Net Margin attributable to the WaterNSW price increase
Murray	100	24,219	270,000	9%	42,000	57%
Rice						
Murrumbidgee	400	75,928	1,020,000	7%	557,000	14%
Murray	400	60,388	970,000	6%	502,000	12%
Wine grapes						
Hunter	45	3,681	120,000	3%	33,000	11%
Dairy						
North Coast	320	1,450,573	1,190,000	121%	235,000	No longer profitable
South Coast	513	552,026	2,010,000	28%	786,000	70%

Potential impacts on the structure of the irrigation industry in NSW

Over many generations, farmers in NSW have developed a deep understanding of soils, climate variability, water reliability and broader market conditions, enabling them to identify which crops and production systems are best suited to each valley. The financial impacts of higher WaterNSW prices may incentivise some farming enterprises to change to higher margin production systems. However, in our view, the potential for irrigators to shift to higher value crops at scale is modest at best. Water reliability variability for General Security Entitlements, particularly in the inland valleys, does not support permanent cropping at scale. Even where change to new production systems is possible, it requires significant capital and takes time for returns to cover the investment costs. For many smaller irrigators, the shift to higher value crops will not be possible financially. Additional water efficiency gains are also unlikely to offset large price increases, as most low-cost efficiency improvements have already been captured.

The price impacts could lead to further farm amalgamation within the sector. It is possible that some irrigators exit irrigation. Under this scenario, WaterNSW and some irrigation corporations would have a smaller customer base over which to recover their high proportion of fixed costs, potentially creating upward pressure on charges for the remaining users, compounding regional impacts even more and partially stranding some WaterNSW and irrigation corporation assets.

Our analysis of the impacts of different businesses with different types of water holdings and strategies shows that the impacts will vary. For some irrigators that do not hold any entitlement and rely on allocation purchases when irrigating, the impacts may be minimal given the market allocation price is likely to reduce by the amount of the WaterNSW price increase. In this case, the entitlement owner will be worse off due to lower returns on selling their allocation, along with higher fixed costs

of owning the entitlements. Our view is that all else being equal, water entitlement and allocation values will fall in most valleys over the long-term as a result of the WaterNSW price increases. Higher fixed and variable cost of holding entitlements will likely reduce the value of entitlements by the capitalised value of the price increases. In some valleys, entitlements may be increasingly viewed as a liability instead of an asset. The implications for entitlement values are hard to predict but potentially significant as many farm businesses carry debt against their water access entitlements and the price increases could trigger breaches of the loan to value ratios and require additional capital.

Conclusion

Consistent with Aither's recommendations in our 2016 report for IPART, WaterNSW pricing approaches that least distort future consumption and/or investment decisions should be considered, rather than imposing a solution or solutions that mechanistically require that the cost of sunk investments be recovered from current customers to the point that it exceeds WaterNSW customers' capacity to pay.

1. Introduction

1.1. Background

The Independent Pricing and Regulatory Tribunal (IPART) is currently reviewing WaterNSW's rural and regional water charges. IPART issued a one-year price determination (around 5.8% plus inflation for bulk water) for 2025-2026 to allow for a deeper investigation into costs, efficiency, and pricing structures, with significant stakeholder concerns raised about large, proposed price increases beyond 2025-26.

IPART's next price determination will set the prices WaterNSW is legally permitted to charge over the regulatory period from 1 July 2026. IPART engaged Ricardo to model the potential on-farm financial impacts of WaterNSW's proposed prices in 2029-30.

1.2. Scope

IPART engaged Ricardo to undertake representative farm financial modelling to understand how potential WaterNSW price increase scenarios could affect the financial performance of representative, lower-value irrigation farms in rural valleys serviced by WaterNSW.

A qualitative assessment of the following additional topics is set out in Section 4:

- how the potential price increases could affect water markets and water entitlement and allocation prices
- why increased water charges may not lead to a shift to higher value crops
- the interface between higher WaterNSW prices and farm amalgamation
- the potential for higher WaterNSW prices to incentivise more water use efficiency
- the sensitivity of the results to water availability and use assumptions
- the potential impact of higher WaterNSW prices on the financial viability of irrigation corporations and WaterNSW
- the difference between our modelling and Gross Value of Production data.

2. Approach and methodology

This section describes the approach and methodology used to assess the on-farm financial impacts of the WaterNSW price increase Scenarios across NSW river valleys.

2.1. WaterNSW price increase Scenarios

Current WaterNSW prices (2025-26) are modelled against two price increase Scenarios provided by IPART in 2029-30:

- Scenario 1 is WaterNSW's proposed prices in its September 2024 pricing proposal under the 15% per annum cap scenario (i.e. WaterNSW's 2024-25 fixed and variable charges increase by a maximum of 15% per annum out to 2029-30 in real terms)
- Scenario 2 is WaterNSW's proposed cost-reflective prices in 2029-30 in real terms as presented in WaterNSW's September 2024 pricing proposal).

The Scenarios were assessed using the proposed 2029/30 prices.

Table 4 displays WaterNSW's current prices and the two proposed price increase Scenarios.

Table 4 Current and WaterNSW price increase Scenarios ($2025/26)[1] [2]

Valleys	Current Prices (2025-26) $/ML			Scenario 1 - 15% pa cap[3] [4] (2029-30) $/ML			Scenario 2 – cost reflective (2029-30) $/ML		
	HSE Fixed	GSE Fixed	Usage	HSE Fixed	GSE Fixed	Usage	HSE Fixed	GSE Fixed	Usage
Border	14.15	5.17	9.91	58.44	22.11	25.77	61.65	23.58	32.98
Gwydir	21.96	5.1	21.7	39.47	9.7	41.25	54.01	14.09	66.27
Namoi	36.51	12.75	38.98	65.82	24.24	74.11	77.82	29.26	104.38
Macquarie	25.47	4.97	27.31	37.97	7.2	51.92	55.05	10.44	80.71
Lachlan	31.67	4.68	39.33	58.95	8.90	74.78	95.08	16.17	135.92
Peel	77.43	7.34	30.93	147.22	13.96	58.8	326.38	29.49	150.63
Murray	13.22	5.81	5.91	41.63	18.91	15.46	42.28	19.25	16.69
Murrumbidgee	7.49	2.58	6.71	18	6.22	13.6	19.45	6.78	16.07
Hunter	25.16	19.55	24.15	41.02	31.88	44	50.17	38.99	53.67

[1] These were provided by IPART in 2025/26 real terms.

[2] WaterNSW proposed to change the fixed to variable ratio in the Lachlan valley from 40:60 to 80:20. IPART modified WaterNSW's proposed prices to maintain the current fixed to variable ratio at 40:60 which is the tariff structure that has been modelled.

[3] Includes Murray-Darling Basin Authority charges for Murrumbidgee and Murray Valleys and Border Rivers Commission charges for Border Valley.

[4] WaterNSW's proposed 15% cap scenario assumed no real price increases for North Coast and South Coast customers, however, IPART asked Ricardo to investigate the potential impacts of a 15% cap in these valleys.

Valleys	Current Prices (2025-26) $/ML			Scenario 1 - 15% pa cap[3] [4] (2029-30) $/ML			Scenario 2 – cost reflective (2029-30) $/ML		
North Coast	15.3	11.86	22.64	30.77	23.85	45.54	867.3	672.49	1,053.44
South Coast	40.04	20.99	22.43	80.53	42.22	45.11	495.54	259.88	270.49

Note: HSE – High Security Entitlement

Note: GSE – General Security Entitlement

IPART's pricing Scenarios for the Border Valley (Table 4) include Rural Border Rivers Commission (BRC) charges. Rural Murray-Darling Basin Authority (MDBA) charges are included in the Murrumbidgee and Murray prices.

2.2. Modelled regions

Figure 1 shows the approximate geographical locations of WaterNSW valleys in grey. All valleys were modelled except Fish River, Lowbidgee, Lower Darling and Greater Sydney.

Figure 1 Modelled regions for this analysis[5]

[5] Image provided by IPART via email on 13 Feb 2026. This map is not to scale and is for illustrative purposes only.

2.3. Representative commodities

NSW's varied geography and climate support a diverse range of agricultural production, which varies across regions. While some commodities are well-suited to multiple geographies and climatic conditions, enterprises must vary production requirements in different regions to optimise the balance of inputs with output. To understand the cost implications of the proposed increases to WaterNSW bulk water charges on NSW farms and their financial viability, it is critical to account for this heterogeneity. Therefore, a 'representative farm' approach to modelling farm profitability has been adopted, whereby typologies of farms are developed to reflect the dominant irrigated crop types in each region that would be most impacted by these potential price increases. On average, lower value commodities such as cotton, lucerne and rice are modelled. For the North and South Coast, dairy farming has been selected, with the Richmond River (North Coast) and Bega River (South Coast) being the only suppliers of water to irrigators from a regulated source. For the Hunter region, white wine grape producers (who do not have wine processing facilities on site) are modelled. Regions were aligned with WaterNSW and IPART regulatory requirements.

To assess the cost impacts, farm budgets (net and gross margins) were developed for the most dominant lower-value commodity in each valley. Commodities of specific interest to IPART were selected for the Hunter (white wine grapes) and the North and South Coastal (dairy). Where more than one lower value crop is grown, additional crops for that valley were selected to ensure a fair commodity representation across valleys. Table 5 describes the regions and commodities that have been modelled.

Table 5 Representative crop types for each WaterNSW valley modelled

Valleys	Crop 1	Crop 2
Border Rivers	Cotton	N/A
Gwydir	Cotton	N/A
Namoi	Cotton	N/A
Macquarie	Cotton	N/A
Lachlan	Cotton	Lucerne
Peel	Lucerne	N/A
Murrumbidgee	Rice	Cotton
Murray	Rice	Lucerne
Hunter	White wine grapes	N/A
North Coast	Dairy	N/A
South Coast	Dairy	N/A

2.4. Representative farm sizes

Farm size is highly correlated with farm profits. In general, larger farms experience economies of scale benefits, with decreasing costs per unit of output. The focus of this analysis was to assess the impacts on farm financial profitability for irrigation farms most likely to be impacted by potential price increases. For this reason, large-scale farming operations were excluded. A small and average size representative farm was modelled for each dominant crop in each WaterNSW valley (refer to Table 6.):

Farm sizes were informed by and chosen utilising Ricardo's understanding of the regions from previous work and through desktop analysis of publicly available datasets (e.g. ABARES, industry benchmarks). Only one representative farm size was modelled for dairy in the North and South Coast.

Table 6 Modelled irrigated small and average representative farms sizes across each valley (ha)

Valleys	Cotton		Lucerne		Rice		Wine grapes		Dairy	
	Small	Average	Small	Average	Small	Average	Small	Average	Small	Average
Border	450	1,200								
Gwydir	375	1,050								
Namoi	300	850								
Macquarie	300	800								
Lachlan	225	650	75	225						
Peel			60	140						
Murrumbidgee	100	400			100	400				
Murray			50	100	100	400				
Hunter							10	45		
North Coast										320
South Coast										513

Box 1 - Farm sizes

In many NSW regions, a limited number of very large farms - often corporate or multi-property enterprises - account for a disproportionate share of total agricultural land and production. These operations substantially inflate average farm size statistics, even though most farms operate at a much smaller scale. As a result, the average farm size often reflects the influence of the largest producers rather than the scale at which most farms operate.

"Representative" farm sizes, while useful for modelling, are simplifications that cannot capture the full diversity of enterprise structures, costs and revenues. Representative farms reflect a plausible operating scale, but in practice, many farms fall outside these assumptions due to differences in land tenure, water access, capital constraints, labour availability, or enterprise mix. Consequently, a representative farm may describe a viable production model without describing how many farms are configured.

Farm size statistics are further complicated by aggregation effects. Many large farming businesses operate across multiple properties or valleys, while data is often reported at the enterprise or business level, rather than the physical property level. This can result in average farm sizes that appear larger than the operational units used for day-to-day production decisions, particularly in irrigated agriculture.

Regional variation also undermines the usefulness of single averages. NSW valleys differ substantially in terms of irrigation development, water reliability, soil capability and historical settlement patterns, leading to structurally different farm size distributions. Applying a single average or representative size across regions obscures these differences and can lead to misleading comparisons or policy conclusions.

The area of annual crops, such as cotton that is irrigated can change significantly from year to year in response to water availability, commodity prices and climate conditions. Average and small representative sizes, therefore, fail to capture the temporal variability that is central to understanding farm behaviour, particularly in regulated irrigation systems.

For these reasons, average and small representative farm sizes should be treated as analytical constructs rather than descriptors of reality.

2.5. Water use assumptions

Our modelling assumes 100% water allocation against entitlements and 100% usage in the year of analysis (2029/30). The farms are assumed to own the volume of water entitlements they require for the size of their farming enterprise, so water trade was not modelled. The modelled results will not necessarily reflect a scenario where some irrigators rely on allocation purchases. Similarly, irrigators that sell water in some years have not been modelled.

All water used in irrigation is assumed to be regulated water from WaterNSW. In practice, this will not hold for all farms and regions as some irrigators have access to groundwater and supplementary water stored in on farm dams in some years.

Water use reflects typical water application rates (expressed in ML/ha) for each crop type. A smaller farm therefore is assumed to use less water than an average farm in aggregate but the application rate per hectare is the same.

Water application rates in the model align with historical water use profiles, developed from the ABS' Water Use on Australian Farms, industry benchmarks, reputable gross and net margin budgets and Ricardo's economic models developed for other projects.

Lucerne, cotton, dairy and rice are assumed to hold General Security Entitlements (GSE) and pay the applicable WaterNSW fixed and variable charges for GSE. Wine grapes in the Hunter valley are

assumed to hold High Security Entitlements (HSE) because they depend on reliable, well-timed irrigation to protect long-term vine health and product quality.

2.6. Farm budgets

A gross and net margin farm budget was developed for each representative farm and commodity for each valley. Appendix A summarises the assumptions underpinning the margin models for each commodity and valley for this analysis.

A gross margin (GM) farm model estimates the on-farm financial performance of a farm enterprise by calculating gross margin, defined as total annual farm revenue minus annual variable (operating) costs. Variable costs include expenses that change with the level of production, such as seed, fertiliser, feed, chemicals, fuel, and casual labour. WaterNSW's fixed and variable regulated water charges have been included as a separate variable cost in the farm budgets, so that the proposed WaterNSW price increases can be analysed.[6]

Unlike a gross margin model, which deducts only variable (operating) costs from revenue, a net margin (NM) model incorporates all costs to irrigate. This includes variable costs (e.g. seed, feed, fertiliser, water, fuel, casual labour), as well as overhead (or fixed) costs such as permanent labour, machinery depreciation, insurance, rates, administration, interest expenses and other capital costs.

All costs and revenues are presented in 2025/26 real terms. Farm input costs sourced prior to 2025-26 have been escalated to 2025/26 using the Producer Price Index (PPI).[1] Revenues are calculated using the best available information on current (i.e. 2025/26 prices unless stated otherwise) commodity prices for each crop. WaterNSW charges in 2029/30 exclude inflation and have not been discounted. The model therefore depicts the impacts of potential WaterNSW charges in 2029/30 under both scenarios on gross and net margins for representative farms operating in 2025/26.

Box 2 - Farm budget margin model approach

For this analysis, farm budgets, expressed as gross margins, are defined as the annual gross income received from a farming enterprise less the annual variable (including regulated WaterNSW charges) incurred in generating this income. Net margins include all overhead or fixed costs. Depreciation is expressed as an annuity to ensure annual revenues are compared to annual costs in 2029/30.

Annual gross margin = Annual irrigation income – annual variable costs (including water costs)

Annual net margin = Annual irrigation income – annual overhead costs – annua; variable costs (including water costs)

Household income from employment not associated with irrigation or other non-irrigation related sources of household income has not been modelled.

[6] This is consistent with IPART's approach to gross margin modelling for farming enterprises

[1] https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/producer-price-indexes-australia/latest-release#data-downloads (last accessed 17 February 2026).

2.7. Variable and overhead (fixed) production cost definitions

On-farm production costs have been categorised as either variable or overhead (fixed) costs. Each of these categories are described below. Specific inputs and costs may be different based on the commodity or valley where the crop is grown.

2.7.1. Variable costs

Variable costs vary annually with the scale of production. Variable costs include, but are not limited to, costs for planting and field preparation, fertiliser, chemicals and their application, irrigation pumping costs, harvesting, carting, machinery operations, contracting, licence costs and water costs. The fixed water entitlement charges that an irrigator must pay based on the nominal volume of their water entitlement have been included as a variable cost.[7] Appendix B sets out the rationale for the variable cost assumptions used in this modelling. Table 7 presents the variable costs modelled for each commodity.

Table 7 Variable costs modelled for each commodity ($2025/26)

	Cotton ($)	Lucerne ($)	Rice ($)	Wine grape ($)	Dairy North Coast ($)	Dairy South Coast ($)[8]
Variable costs ($/ha)	5,238	1,541	1,483	5,705	3,974	4,605

2.7.2. Overhead costs

Overhead costs do not vary in the short run and are therefore fixed and contingent on farm scale. Fixed costs include (but are not limited to) permanent labour, machinery, depreciation, insurance, rates, administration, interest expenses and other capital costs.

Capital and plant costs are upfront costs required to establish and operate an irrigation enterprise. This includes for example, the costs for farm buildings, infrastructure and machinery. For cotton enterprises for example, capital and plant expenditure would include purchasing cotton pickers and combine harvesters. For the purposes of this analysis, representative farms are assumed to already be established which means the cost of new machinery and plant is not included in the model. Depreciation costs are therefore captured as an annuity, or annual overhead cost, that reflects the assets' useful life and cost of capital. Overhead costs are held constant (i.e. do not differ) across valleys for cotton and rice farm budgets. Dairy and lucerne overhead costs have been modelled at different rates to reflect their distinct cost structures across valleys. Table 8 presents the total overhead costs modelled for each commodity.

[7] This is consistent with IPART's approach to gross margin modelling for farming enterprises

[8] Variable costs differ in the North and South Coast as purchased feed and agistment costs are higher in the South Coast than the North Coast in the year of this analysis.

Table 8 Total overhead costs modelled for each commodity ($2025/26)

Commodity	Overhead costs ($/ha)
Cotton	1,351
Lucerne	2,294 to 2,763
Rice	1,160
Wine grapes	1,998
Dairy - North Coast	2,999
Dairy - South Coast	2,884

2.7.3. Other water charges

Irrigators face additional water charges determined by their geographical location. These charges have been modelled separately. They include:

- Water Administration Ministerial Corporation (WAMC) collected by WaterNSW
- WAMC MDBA charges
- WAMC Border Rivers Commission (BRC) charges
- Murrumbidgee Irrigation charges
- Murray Irrigation charges.

Table 9 presents the total water charges modelled for each valley. All charges include the WaterNSW charges plus any additional charges that are applicable based on location.

Table 9 Total water charges modelled for each valley ($2025/26)

Valley	Total fixed and volumetric usages charges ($/ML)
Border [9]	22.22
Gwydir[10]	31.20
Namoi [12]	57.17
Macquarie[12]	36.90
Lachlan[12]	48.35
Peel[12]	48.20
Murrumbidgee[11]	37.38
Murray[12]	47.11
Hunter[13]	56.15
North Coast[14]	47.61
South Coast[15]	54.68

2.8. Farming yields

Yields in irrigated agricultural industries vary from farm to farm based on location, planting density, irrigation efficiency, seasonal conditions and a range of other factors. Yields have been modelled as the average outcomes that could be expected for that commodity type in that region to inform the net and gross margins, informed by desktop analysis of publicly available datasets (e.g. ABARES, industry benchmarks). Table 10 presents the yields modelled for each commodity.

Table 10 Yields modelled for each commodity

Commodity	Yield
Cotton	12.4 bales/ha
Lucerne	10 tonnes/ha
Rice	11 tonnes/ha
Wine grapes	5 tonnes/ha
Dairy - North Coast	484 kgMS/cow
Dairy - South Coast	622 kgMS/cow

[9] Includes WAMC charges collected by WaterNSW, WAMC Murray-Darling Basin Authority charges, WAMC Border Rivers Commission charges.
[10] Includes WAMC charges collected by WaterNSW, WAMC Murray-Darling Basin Authority charges.
[11] Includes WAMC charges collected by WaterNSW, WAMC Murray-Darling Basin Authority charges, Murrumbidgee Irrigation charges.
[12] Includes WAMC charges collected by WaterNSW, WAMC Murray-Darling Basin Authority charges, Murray Irrigation charges.
[13] Includes WAMC charges collected by WaterNSW.
[14] https://www.cottoninfo.com.au/sites/default/files/FINAL%20Furrow%20irrigated%202025-26.pdf (last accessed 17 February 2026)

2.9. Commodity prices

Commodity prices for cotton[15] and rice[16] have been applied at a universal rate across all valleys. These prices are based on the current price estimates using industry publications and market pricing. Forecast cotton prices for 2025/26 currently sit ~10% below the five-year average, whilst rice is ~ 4% above its five-year average.

Lucerne prices have been applied at a universal rate across all valleys and are based off current market estimates.[17] It should be noted that the average price of lucerne is approximately 20% higher than this time last year. Lucerne prices are historically variable, with elevated prices being experienced in drought years (2019-2020) and softer prices during wet years (2021-2022). Current lucerne prices ($475 tonne) are significantly higher than their 5-year average ($360 tonne). This impacts both the gross and net margin of lucerne enterprises reported here significantly.

We have taken a conservative approach to dairy revenues for milk solids (MS). These are based off 2024/25 prices for the North and South Coast because a reputable 2025/26 MS price was not available.[18] Early indications are that 2025/26 prices will be higher than this, with a 6-9% uplift forecast across both regions. Current prices are ~10-15% higher than their five-year average.

We have used 2024/25 prices for wine grapes because a reputable 2025/26 wine grape price was not available. The 2024/25 wine grape prices closely reflect expected wine grape prices in 2025/26. Whilst Hunter Valley white wine grape forecasts are not specifically forecast, the combination of below average white crush volumes and premium cool-climate positioning suggests that prices could remain stable to modestly improved relative to recent vintages, if the market balance improves. However, broader pressure on bulk wine grape pricing - noted in industry analysis - could temper gains, potentially keeping prices flat to slightly lower in nominal terms compared with 2025 unless demand strengthens.[19] The five-year average price is estimated at ~0-10% lower than current prices.

All prices reflect reasonable estimates of 2025/26 prices. Table 11 presents the prices modelled for each commodity.

Table 11 Prices modelled for each commodity ($2025/26)

Commodity	Price
Cotton	$573/bale
Lucerne	$475/tonne
Rice	$406/tonne
Wine grape	$1,702/tonne
Dairy - North Coast	$12.38/kg MS
Dairy - South Coast	$10.82/kg MS

[15] https://www.cottoninfo.com.au/sites/default/files/FINAL%20Furrow%20irrigated%202025-26.pdf (last accessed 17 February 2026)

[16] https://www.dpi.nsw.gov.au/about-us/publications/pdi/2025/rice (last accessed 17 February 2026).

[17] https://www.dairyaustralia.com.au/industry-reports/hay-and-grain-reports (last accessed 17 February 2026).

[18] https://assets.dairyaustralia.com.au/api/public/content/DFMP-NSW-Annual-Report-2024-25?v=4c52274b (last accessed 17 February 2026).

[19] https://assets.kpmg.com/content/dam/kpmgsites/au/pdf/2025/australian-wine-industry-insights-september-2025.pdf.coredownload.inline.pdf (last accessed 17 February 2026).

2.10. Limitations

While the farm financial models are based on contemporary inputs and transparent assumptions, they remain simplified representations of real-world conditions and are subject to uncertainty, including that every farm is different which the model cannot account for. While Ricardo believes that the assumptions are representative of the conditions that are being modelled, and useful for IPART in consideration of the farm levels financial impacts, the results should be interpreted in the context of the following model limitations:

- Each of the representative farms are assumed to own General Security water entitlements except for the Hunter wine grape enterprises which are assumed to hold High Security water entitlements. The entitlement holdings are assumed to meet the water application needs per hectare to irrigate the assumed farm size.
- As the farms are assumed to own the volume of water entitlements they require for the size of their farming enterprise, water allocation purchases and sales were not accounted for. The modelled results will not necessarily reflect a scenario where some irrigators rely on allocation purchases. Similarly, irrigators that sell water in some years have not been modelled.
- Our modelling approach assumes 100% water allocation and 100% usage in the year modelled. Water application rates in the model are representative of water requirements for each crop type and developed from the ABS' Water Use on Australian Farms and industry benchmarks. In reality annual agricultural production, revenue and variable costs are directly correlated to water use. Cotton, lucerne and rice farms (especially the larger farms) will dynamically respond to reduced water availability through reduced production. In years with lower annual water availability, farmers will only irrigate a land area aligned with the water available to them. The assumption that rice enterprises receive 100% GSE allocation and utilise 100% of that allocation reflects a favourable production year. Historically, rice is not planted in many seasons, as allocation levels and market prices often make it more economically rational for growers to sell their allocation rather than produce a crop.
- All water used in irrigation is assumed to be regulated water from WaterNSW. The models do not incorporate supplementary water sources such as rainfall, groundwater, on-farm storages, or water held outside the regulated system. In practice, irrigators often have access to multiple water sources and will allocate usage based on the marginal cost of extraction at the time (inclusive of all variable and access charges). Where the cost of regulated water exceeds that of alternative sources, irrigators are likely to reduce regulated water use and substitute toward lower-cost supplies. This behavioural response will partially moderate the operational impact of the higher proposed WaterNSW regulated water prices. The extent of this mitigation will depend on the cost differential between the regulated and alternative sources, multiplied by the substituted volume, at that time. However, alternative sources are often less reliable and may have water quality issues. Given water security considerations are paramount, irrigators may retain their entitlement holdings to preserve supply flexibility and drought resilience, but they will remain exposed to higher fixed WaterNSW entitlement charges.
- Yields have been modelled as the average outcomes that could be expected for each commodity to inform the net and gross margins using industry benchmarks.

- Where the same crops are modelled across valleys, yields and commodity prices have been applied at a universal rate across valleys reflecting industry benchmarks, except for dairy in the North and South Coast which assumes different yields and commodity prices reflecting regional conditions.
- Only income from irrigation has been modelled meaning that mixed farms irrigating lucerne to feed livestock have not been modelled. Off farm income from employment or other sources has not been modelled.
- Commodity farm profitability has been modelled using data from a single representative year, rather than across multiple seasons. This reflects data availability constraints and limits our ability to capture the full extent of seasonal variability that is inherent for these commodities. By relying on a single-year dataset, the modelling does not capture this variability and therefore may understate or overstate financial resilience under different seasonal conditions.
- This analysis did not undertake formal sensitivity testing to assess how these results might vary under alternative water availability, commodity price, yield or cost assumptions, due to time restrictions. As a result, the findings do not capture the potential range of impacts under different operating conditions.
- This analysis does not account for all differences in economies of scale between the different farm sizes modelled. For example, while variable costs are expressed on a per hectare basis and scale according to farm size, there may be some purchasing power for average farms relative to small farms not captured in the model.
- Continuously growing the same crop on a plot of land means the same nutrients are drawn from the soil. Over time, this degrades soil health and can affect crop yield. To reduce this effect, producers can rotate different commodities with different nutrient requirements onto a plot of land. In practice, farmers will adjust yields, input use, crop mix or management strategies in response to soil health, price changes and seasonal conditions (including water availability). By holding production settings constant, the modelling does not capture potential adaptive responses, which may either mitigate or amplify the financial impacts observed.
- Where the same crops are modelled across valleys, the same variable costs per hectare were applied reflecting industry benchmarks across valleys, except for dairy in the North and South Coast which assumed different variable costs. Production systems for lucerne, cotton and rice are broadly comparable in terms of seed technology, fertiliser requirements, irrigation practices and machinery operations across valleys. The farm margin budgets do not indicate material structural differences in per-hectare input use. While local factors such as freight, labour availability or soil conditions may create some cost variation at the farm level, these differences are not accounted for given time and budget implications.
- "Representative" farm sizes, while useful for modelling, are simplifications that cannot capture the full diversity of enterprise structures, costs and revenues. Representative farms reflect a plausible operating scale, but in practice, many farms fall outside these assumptions due to differences in land tenure, water access, capital constraints, levels of debt, labour availability, or enterprise mix. Consequently, a representative farm may describe a viable production model without describing how many farms are configured.
- Gross and net margin models provide an indication of the impacts of potential price increases on on-farm gross and net returns for representative farms. However, the margin models do not capture balance sheet status, debt to equity rations, debt servicing capacity and access to

additional debt if needed to stay financially viable if consecutive drought years occur. Each of these factors are unique to each farm and will impact farm financial viability and decisions on whether to continue to irrigate, trade water or exit irrigation. Similarly, variations in water entitlement holdings, allocation reliability, carryover provisions and reliance on the water market mean that water costs and risk profiles differ substantially between farms. The base farm budgets are sourced from reputable sources but may not fully capture current costs. For example, where farm budget cost inputs had to be escalated using PPI, the costs may not fully capture the costs of diesel and electricity that farmers currently face.

- The results will be significantly different if commodity prices rise or fall relative to the assumptions in the model which reflect current prices. We acknowledge farming is a long-term business and farmers are price-takers and therefore subject to commodity price fluctuations
- Consistent with our scope, the models have been developed using desktop research. We have not engaged with irrigators to validate the model assumptions.

3. Results and analysis

This section presents the modelled results for the two price increase Scenarios. All outcomes are presented in 2025/26 dollars. The results show the potential impact of the proposed WaterNSW price increases without water trading. As discussed in section 4.1, we expect both allocation and entitlement prices will fall over the medium-term as a result of the WaterNSW price increases, all else being equal.

3.1. WaterNSW price increase scenarios relative to current WaterNSW prices

The following sections describe the percentage increase in WaterNSW prices for each Scenario using the final prices expected in 2029/30. A 100% allocation and 100% usage in the year of analysis is assumed, as a result, no water trade is required or modelled.

3.1.1. Percentage impact – Scenario 1 – 15% Cap

Table 12 shows the percentage increases in WaterNSW charges in 2029/30 for each valley under Scenario 1 relative to 2025/26 charges (in $2025/26 terms).

Table 12 Percentage increase in WaterNSW prices under Scenario 1 - 15% annual cap increase - relative to 2025/26 prices, 100% allocation and water use[20] [21]

Valley	Scenario 1 – 15% annual cap: increase in prices		
	HSE Fixed	GSE fixed	Usage
Border		328%	160%
Gwydir		90%	90%
Namoi		90%	90%
Macquarie		45%	90%
Lachlan		90%	90%
Peel		90%	90%
Murrumbidgee		141%	103%
Murray		225%	162%
Hunter	63%		82%
North Coast		101%	101%
South Coast		101%	101%

[20] Includes WaterNSW charges and other water charges based on location as discussed in section 2.7.3.

[21] WaterNSW's proposed 15% cap scenario assumed no real price increases for North Coast and South Coast customers, however, IPART asked Ricardo to investigate the potential impacts of a 15% cap in these valleys.

Note: All commodities were modelled for GSE except wine grape (HSE)

Under Scenario 1, most valleys would experience 90% + increases for their fixed and volumetric usage charges by 2029-30. The Hunter (63% increase in fixed charge and 82% increase in volumetric charge) and Macquarie (45% increase in fixed charge and 90% increase in volumetric charge) would be the least impacted. The Border (328% fixed charge increase and 160% volumetric charge increase), Murray (225% fixed charge increase and 162% volumetric charge increase) and Murrumbidgee (141% fixed charge increase and 103% volumetric charge increase) would experience the biggest percentage increases.

3.1.2. Percentage impact – Scenario 2 – Cost reflective

Table 13 shows the percentage increases in WaterNSW charges in 2029/30 for each valley under Scenario 2 relative to 2025/26 charges (in 2025/26 terms).

Table 13 Percentage increase in WaterNSW prices under Scenario 2 – Cost reflective prices in 2029/30 - relative to 2025/26 prices, 100% allocation and water use[22]

Valley	Scenario 2 – Cost reflective: increase in prices		
	HSE Fixed	GSE fixed	Usage
Border		356%	233%
Gwydir		176%	205%
Namoi		129%	168%
Macquarie		110%	196%
Lachlan		245%	246%
Peel		302%	387%
Murrumbidgee		163%	139%
Murray		231%	182%
Hunter	99%		122%
North Coast		5,570%	4,553%
South Coast		1,138%	1,106%

Note: All commodities were modelled for GSE except wine grape (HSE)

Under Scenario 2 this would be an increase of ~100% to 350% for fixed and usage costs across most valleys. The North Coast would be most affected (~5,500% increase in fixed charges and 4,550% for volumetric charges). The Peel would experience significant increases above 300% for fixed and volumetric charges. The Hunter would be the least affected (100% fixed and 120% volumetric charge increase).

[22] Includes Murray-Darling Basin Authority charges for Murrumbidgee and Murray Valleys and Border Rivers Commission charges for Border Valley.

3.2. WaterNSW price impacts relative to farm costs and revenues

WaterNSW charges are a core input cost for many agricultural systems and directly influence profitability, financial resilience and long-term viability. While higher WaterNSW charges increase costs, the significance of that increase depends on how large it is relative to total farm costs and revenues. Assessing impacts across commodities and valleys enables us to identify which farms are most vulnerable to potential WaterNSW price increases. This analysis therefore provides desktop evidence base to understand the financial impacts of proposed WaterNSW price increases. Some valleys already face higher water costs than others and this needs to be considered when assessing the different financial implications across different valleys and the commodities grown (refer to Table 4 for 2025/26 WaterNSW charges).

Table 14 presents the proportion of current WaterNSW costs relative to the total cost base of each representative farming enterprise and then estimates how this proportion changes under both price increase Scenarios. It shows the resulting share of total annual farm costs and revenue attributable to WaterNSW charges, illustrating how the proposed price increases would alter enterprise cost structures and affect financial exposure across all commodities and valleys. Sections 3.3 and 3.4 provide a detailed analysis of these results.

Table 14 Price impacts on costs and revenues of farming enterprises - Scenario 1 and 2 – relative to 2025/26 charges, 100% allocation and entitlement covering 100% use

Valley	Base Prices (2025/26)	Scenario 1 – 15% annual increase cap		Scenario 2 – Cost Reflective	
	WaterNSW costs as % of total annual costs	WaterNSW costs as % of total costs per year	WaterNSW costs as % of total revenue per year	WaterNSW costs as % of total costs per year	WaterNSW costs as % of total revenue per year
Cotton					
Border	2%	5%	5%	6%	6%
Gwydir	3%	5%	5%	8%	8%
Namoi	5%	9%	10%	12%	13%
Macquarie	3%	6%	6%	9%	9%
Lachlan	4%	8%	8%	14%	15%
Murrumbidgee	1%	2%	2%	2%	2%
Lucerne					
Lachlan	10%	18%	18%	28%	32%
Peel	8%	14%	15%	29%	38%
Murray	3%	8%	7%	8%	8%
Rice					
Murrumbidgee	4%	8%	6%	10%	7%

Valley	Base Prices (2025/26)	Scenario 1 – 15% annual increase cap		Scenario 2 – Cost Reflective	
	WaterNSW costs as % of total annual costs	WaterNSW costs as % of total costs per year	WaterNSW costs as % of total revenue per year	WaterNSW costs as % of total costs per year	WaterNSW costs as % of total revenue per year
Murray	5%	13%	11%	14%	11%
Wine grape					
Hunter	1%	2%	1%	2%	2%
Dairy					
North Coast	1%	3%	2%	40%	59%
South Coast	2%	3%	2%	39%	58%

Scenario 1 will increase costs for all commodities and particularly for cotton, rice and lucerne. For example, the proposed WaterNSW increase in the Border Valley will see annual water costs rise from 2% of total annual costs to ~5%. Wine grapes and dairy will experience a smaller proportional impact on their annual cost base and as a proportion of their revenue.

Lucerne will be the most affected commodity from WaterNSW's proposed price increases under the cost-reflective scenario. This is not surprising due to this commodity's high sensitivity to water price changes (due to the volume of water required to irrigate) relative to its revenue profile and gross margin (refer to section 3.3.2 for the impacts on gross and net margins). This is the lowest value commodity that has been analysed.

Across nearly all commodities in Scenario 2, WaterNSW's percentage of total costs is substantially higher than current 2025/26 prices and Scenario 1. In several valleys and commodities, WaterNSW costs rise to ~12-30% of total costs and up to ~40% for dairy.

From a revenue perspective, WaterNSW costs as a percentage of revenue under Scenario 1 remained relatively low single digits (except for lucerne and rice grown in the Murray). In Scenario 2, this rises significantly for the more water intensive commodities. Cotton sees an increase to ~12% of revenue in some valleys (e.g. Namoi, Lachlan) and to ~32 – 38% for lucerne (e.g. Lachlan, Peel). Whilst the dairy industry is a less intensive user of irrigated water, cost reflective prices for Scenario 2 increase to approximately 60% of revenue for dairy farms in the North and South Coast.

Scenario 2 represents a material structural shift in farm cost composition across all most commodities and valleys, except wine grapes in the Hunter.

3.3. Scenario 1 - price impacts on farming margins

The following sections summarises by commodity, valley and representative farm size, the estimated annual WaterNSW price impact on a farming enterprise's current gross margin (GM) and net margin (NM), and the proportion of those margins that will be absorbed by the price increases under Scenario 1. It illustrates how the same dollar increase in WaterNSW prices translates differently across

enterprises, depending on scale and baseline profitability. While gross margins remain positive in most cases, the percentage absorbed at the net margin level is substantially higher, particularly for water-intensive and lower-margin crops, highlighting their degree of bottom-line sensitivity to water price changes.

The modelled outcomes produce identical net margin impacts for small and average representative cotton, lucerne and wine grapes due to the cost allocation method adopted. Overhead costs are applied on a per-hectare basis using industry benchmark estimates, resulting in proportional cost impacts across farm sizes.

3.3.1. Cotton

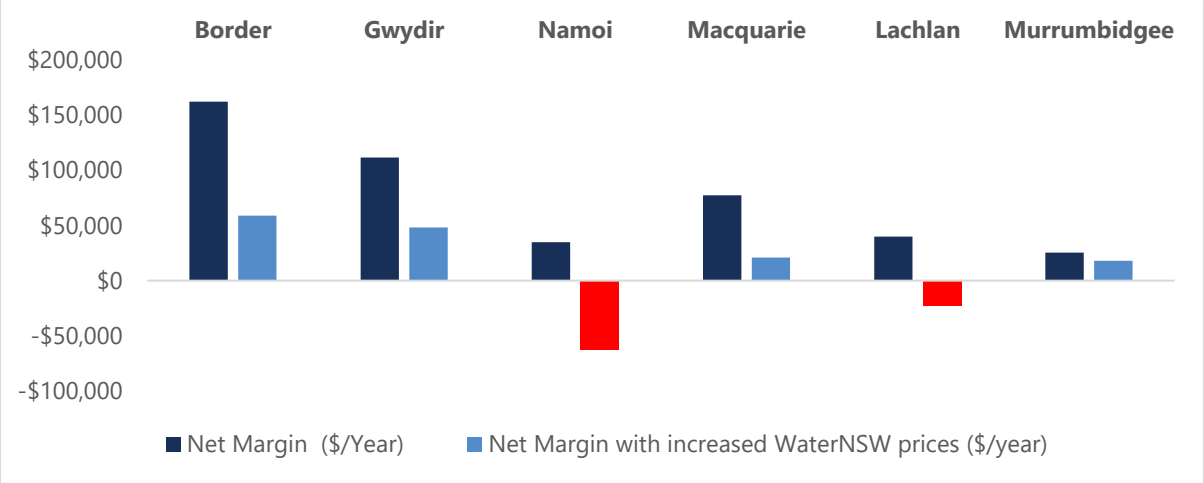
Small representative farms

Table 15 and Figure 2 present the impacts of the Scenario 1 price increase on farming margins for small representative cotton farms.

Table 15 Scenario 1 price impacts on cotton farm margins – small representative farms ($2025/26), 100% water allocation and 100% use

Valley	Farm size (Ha)	WaterNSW price impact ($/Year)	Current GM ($/Year)	% of annual GM absorbed by the WaterNSW price increase	Current NM ($/Year)	% of annual NM absorbed by the WaterNSW price increase
Border	450	103,311	770,000	13%	162,000	64%
Gwydir	375	63,408	620,000	10%	112,000	57%
Namoi	300	97,896	440,000	22%	35,000	No longer profitable
Macquarie	300	56,379	480,000	12%	77,000	73%
Lachlan	225	62,482	340,000	18%	40,000	No longer profitable
Murrumbidgee	100	7,378	160,000	5%	25,000	29%

Note: Gross and net margin values ($/year) are rounded to the nearest thousand



Note: Columns coloured red represent a negative net margin from increased WaterNSW prices ($/year)

Figure 2 Scenario 1 price impacts on cotton farm net margins – small representative farms ($2025/26), 100% water allocation and 100% water use

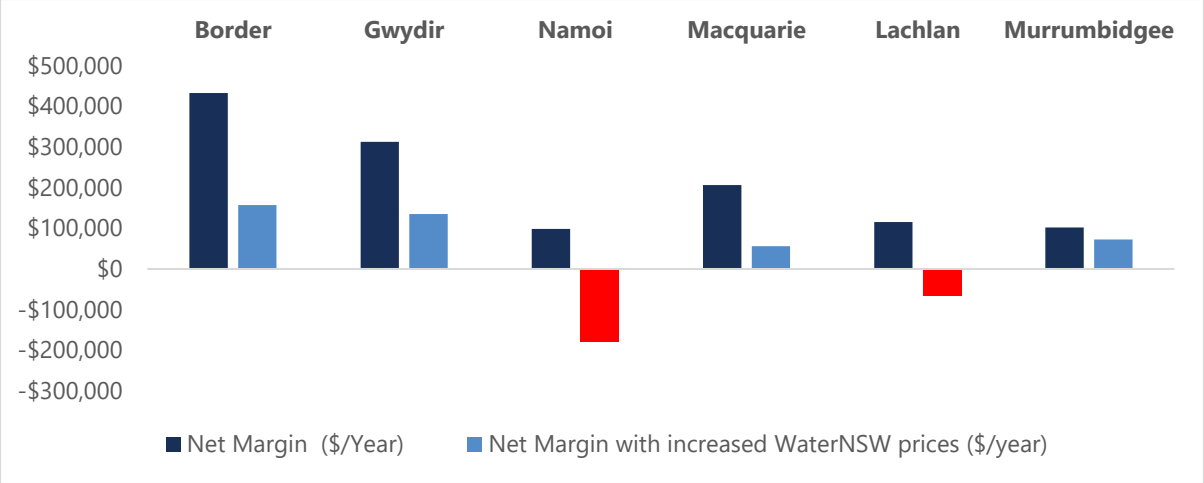
Average representative farms

Table 16 and Figure 3 present the impacts from the Scenario 1 price increases on farming margins for average cotton farms.

Table 16 Scenario 1 price impacts on cotton farm margins - average representative farms ($2025/26), 100% allocation and entitlement covering 100% use

Valley	Farm Size (ha)	WaterNSW price impact ($/Year)	Current GM ($/Year)	% of annual GM absorbed by the WaterNSW price increase	Current NM ($/Year)	% of annual NM absorbed by the WaterNSW price increase
Border	1,200	275,495	2,050,000	13%	433,000	64%
Gwydir	1,050	177,541	1,730,000	10%	313,000	57%
Namoi	850	277,373	1,250,000	22%	99,000	No longer profitable
Macquarie	800	150,344	1,290,000	12%	206,000	73%
Lachlan	650	180,504	990,000	18%	116,000	No longer profitable
Murrumbidgee	400	29,511	640,000	5%	102,000	29%

Note: Gross and net margin values ($/year) are rounded to the nearest thousand



Note: Columns coloured red represent a negative net margin from increased WaterNSW prices ($/year)

Figure 3 Scenario 1 price impacts on cotton farm net margins - average representative farms ($2025/26), 100% water allocation 100% water use

Cotton analysis

For smaller farms, the GM declines across all valleys with the highest impacts occurring in the Namoi (22%), Lachlan (18%), Border (13%) and Macquarie (12%) valleys. Murrumbidgee is the least impacted (5%). Despite this, cotton remains profitable on a GM basis. Impacts will be material but not structural. For average representative farms, a similar outcome is observed. Both small and average sized representative farms will see the price increases compress operating returns but not eliminate their entire GM.

NM impacts for all farming enterprises are substantially larger than GM impacts, with Scenario 1 absorbing all of a farming enterprise's net profit in the Namoi and Lachlan valleys. Whilst NMs remain positive in the Border, Gwydir, and Macquarie. The significant drop in NM (64-73%) is significant, leaving cotton producers very vulnerable to commodity price changes and consecutive dry years where cash flow becomes a problem. Impacts on larger farms should be less severe due to their ability to spread their fixed cost base over a larger productive area.[23] Cotton farming enterprises historically make strong returns in good seasons and consecutive dry seasons leaves them extremely vulnerable.

3.3.2. Lucerne

Small representative farms

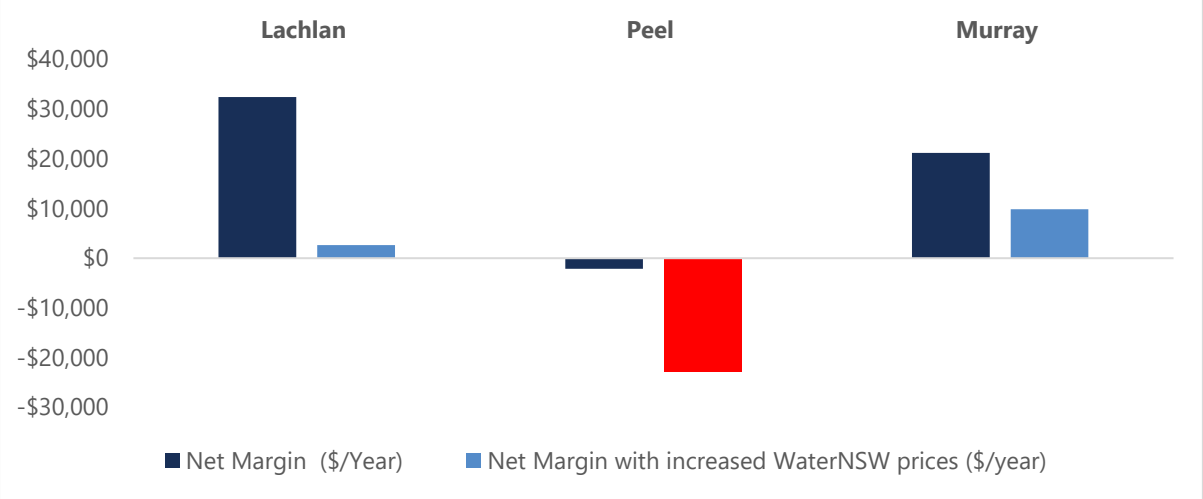
Table 17 and Figure 4 present the impacts of Scenario 1 price increases on farming margins for small representative lucerne farms.

[23] Larger farms were not modelled.

Table 17 Scenario 1 price impacts on lucerne farm margins - small representative farms ($2025/26), 100% water allocation and 100% water use

Valley	Farm size (Ha)	WaterNSW price impact ($/Year)	Current GM ($/Year)	% of annual GM absorbed by the WaterNSW price increase	Current NM ($/Year)	% of annual NM absorbed by the WaterNSW price increase
Lachlan	75	29,753	200,000	15%	32,000	92%
Peel	60	20,698	160,000	13%	- 2,000	No longer profitable
Murray	50	11,324	140,000	8%	21,000	53%

Note: Gross and net margin values ($/year) are rounded to the nearest thousand



Note: Columns coloured red represent a negative net margin from increased WaterNSW prices ($/year)

Figure 4 Scenario 1 price impacts on lucerne farm net margins – small representative farms ($2025/26), 100% water allocation and 100% use

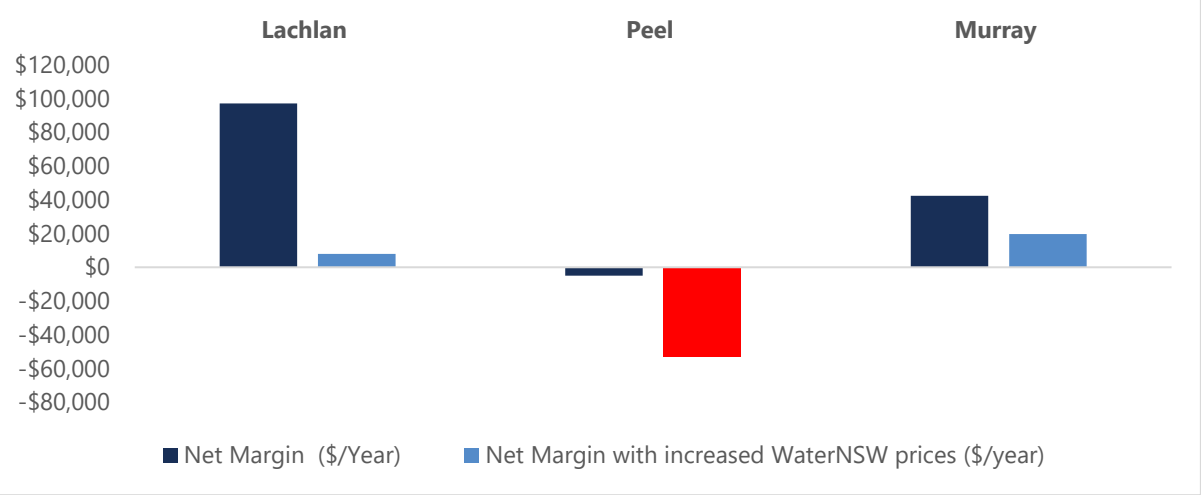
Average representation farms

Table 18 and Figure 5 present the impacts of Scenario 1 price increases on farming margins for average representative lucerne farms.

Table 18 Scenario 1 price impacts on lucerne farm margins - average representative farms ($2025/26), 100% water allocation and 100% use

Valley	Farm size (Ha)	WaterNSW price impact ($/Year)	Current GM ($/Year)	% of annual GM absorbed by the WaterNSW price increase	Current NM ($/Year)	% of annual NM absorbed by the WaterNSW price increase
Lachlan	225	89,260	610,000	15%	97,000	92%
Peel	140	48,295	380,000	13%	-5,000	No longer profitable
Murray	100	22,647	270,000	8%	42,000	53%

Note: Gross and net margin values ($/year) are rounded to the nearest thousand



Note: Columns coloured red represent a negative net margin from increased WaterNSW prices ($/year)

Figure 5 Scenario 1 price impacts on lucerne farm net margins – average representative farms ($2025/26), 100% water allocation and 100% use

Lucerne analysis

GM margins decline materially across all valleys, with impacts generally larger than cotton. While lucerne remains gross-margin positive in the Lachlan and Murray, the compression in GM is meaningful and reduces their operating headroom. From a net margin perspective, these two valleys will just break even with these price increases. This will put substantial pressure on farming enterprises that rely on lucerne as their main production commodity, significantly increasing their exposure to price changes and seasonal variation in water availability.

For the Peel, the modelled outcome is very bleak. These price increases will significantly impact the profitability of lucerne farming enterprises that are already facing significant pressures (see Box 3 - Section 4.2.1).

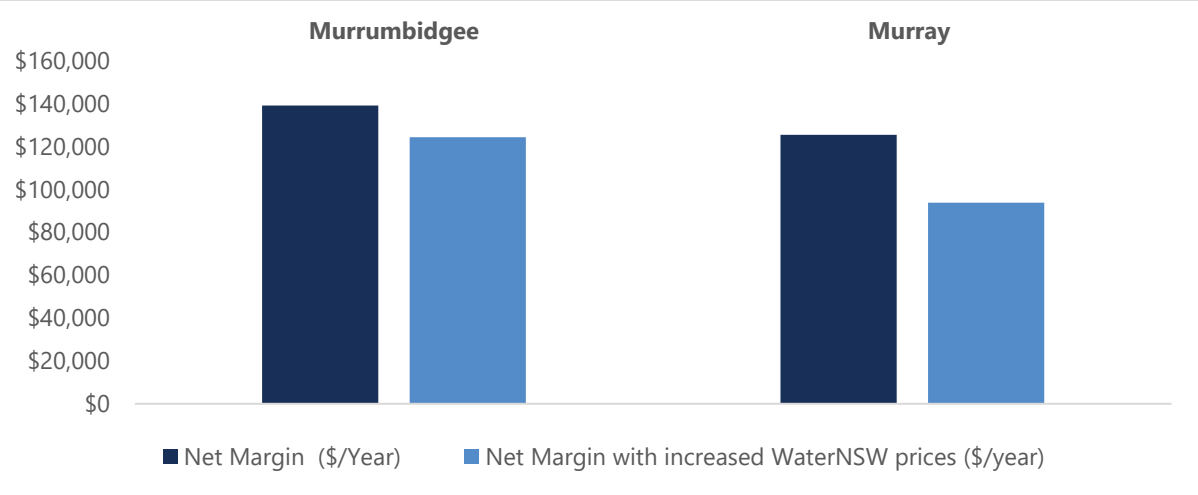
3.3.3. Rice

Table 19 and Figure 6 present the impacts of Scenario 1 price increases on farming margins for small representative rice farms.

Table 19 Scenario 1 price impacts on rice farm margins – small representative farms ($2025/26), 100% water allocation and 100% use

Valley	Farm size (Ha)	WaterNSW price impact ($/Year)	Current GM ($/Year)	% of annual GM absorbed by the WaterNSW price increase	Current NM ($/Year)	% of annual NM absorbed by the WaterNSW price increase
Murrumbidgee	100	14,755	260,000	6%	139,000	11%
Murray	100	31,706	240,000	13%	126,000	25%

Note: Gross and net margin values ($/year) are rounded to the nearest thousand



Note: Columns coloured red represent a negative net margin from increased WaterNSW prices ($/year)

Figure 6 Scenario 1 price impacts on rice farm net margins – small representative farms ($2025/26), 100% water allocation and 100% use

Average representative farms

Table 20 and Figure 7 present the impacts of Scenario 1 price increases on farming margins for average representative rice farms.

Table 20 Scenario 1 price impacts on rice farm margins - average representative farms ($2025/26), 100% water allocation and 100% use

Valley	Farm size (Ha)	WaterNSW price impact ($/Year)	Current GM ($/Year)	% of annual GM absorbed by the WaterNSW price increase	Current NM ($/Year)	% of annual NM absorbed by the WaterNSW price increase
Murrumbidgee	400	59,021	1,020,000	6%	557,000	11%
Murray	400	126,825	970,000	13%	502,000	25%

Note: Gross and net margin values ($/year) are rounded to the nearest thousand

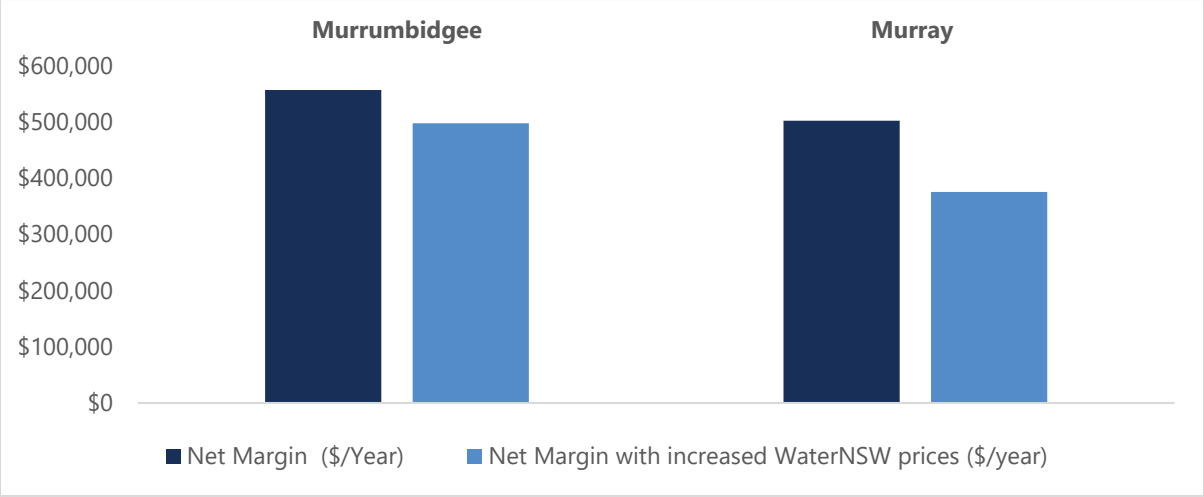


Figure 7 Scenario 1 price impacts on rice farm net margins – average representative farms ($2025/26), 100% water allocation 100% use

Rice analysis

Whilst GMs reduce by 6% in the Murrumbidgee and 13% in the Murray, rice GMs remain positive in these valleys, when seasonal conditions support rice production. NM's remains strong for both valleys, despite the impact of the WaterNSW price increases.

3.3.4. Wine grapes

Small representative farms

Table 21 and Figure 8 present the impacts of Scenario 1 price increases on farming profitability for small wine grape farms in the Hunter Valley.

Table 21 Scenario 1 price impacts on wine grape farm margins – small representative farms ($2025/26), 100% allocation and entitlement covering 100% use

Valley	Farm size (Ha)	WaterNSW price impact ($/Year)	Current GM ($/Year)	% of GM absorbed by the WaterNSW price increase	Current NM ($/Year)	% of NM absorbed by the WaterNSW price increase
Hunter	10	536	30,000	2%	7,000	7%

Note: Gross and net margin values ($/year) are rounded to the nearest thousand

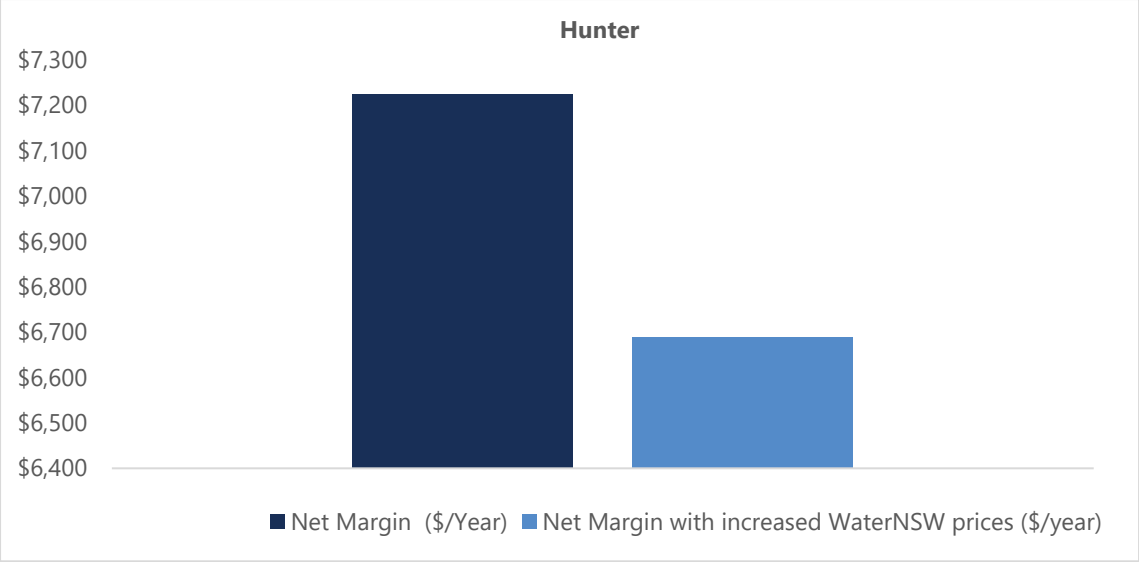


Figure 8 Scenario 1 price impacts on wine grape farm net margins – small representative farms ($2025/26), 100% water allocation and 100% use

Average representative farms

Table 22 and Figure 9 present the impacts of Scenario 1 price increases on farming margins for average representative wine grape farms.

Table 22 Scenario 1 price impacts on wine grape farm margins - average representative farms ($2025/26), 100% water allocation and 100% use

Valley	Farm size (Ha)	WaterNSW price impact ($/Year)	Current GM ($/Year)	% of GM absorbed by the WaterNSW price increase	Current NM ($/Year)	% of NM absorbed by the WaterNSW price increase
Hunter	45	2,411	120,000	2%	33,000	7%

Note: Gross and net margin values ($/year) are rounded to the nearest thousand

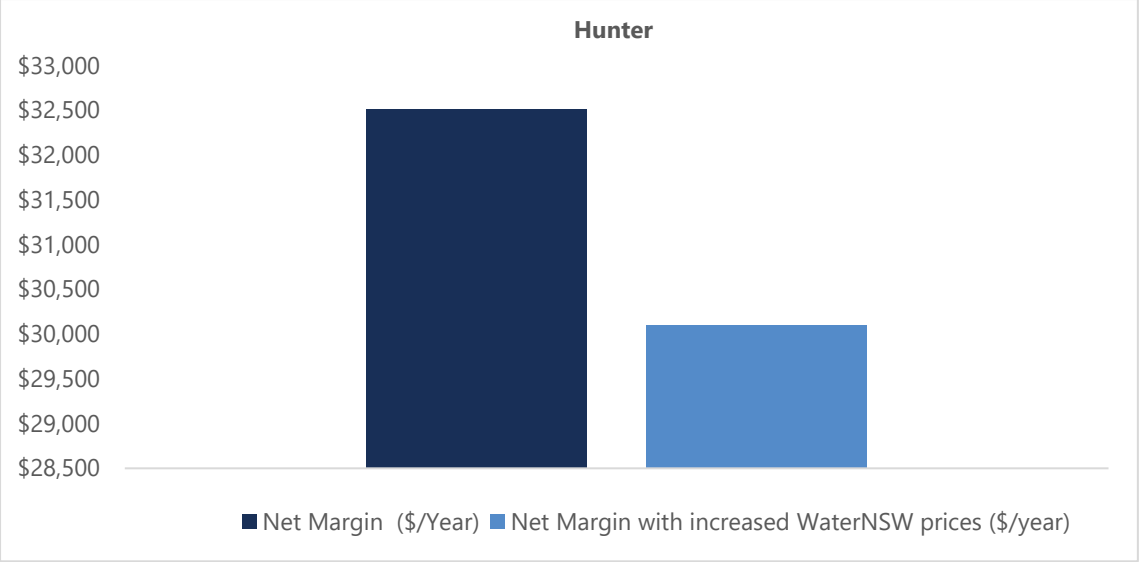


Figure 9 Scenario 1 price impacts on wine grape farm net margins – average representative farms ($2025/26), 100% water allocation and 100% use

Wine grape analysis

Whilst these price increases impact margins, water remains a small component of their cost base and these increases should not have a material impact on their profitability. But they will add further pressure to an already struggling industry. Profitability outcomes are typically stronger for businesses that are vertically integrated, particularly those with on-site processing facilities and established cellar door operations, as they capture value across both production and downstream sales channels (vineyards with onsite processing facilities were not modelled in this analysis).

3.3.5. Dairy

Average representative farms

Table 23 and Figure 10 present the impacts from the Scenario 1 price increases on farming margins for average representative dairy farms in the North and South Coast valleys.

Table 23 Scenario 1 price impacts on dairy farm margins – average representative farms ($2025/26), 100% water allocation and 100% use

Valley	Farm size (Ha)	WaterNSW price impact ($/Year)	Current GM ($/Year)	% of annual GM absorbed by the WaterNSW price increase	Current NM ($/Year)	% of annual NM absorbed by the WaterNSW price increase
North Coast	320	29,920	1,190,000	3%	235,000	13%
South Coast	513	49,777	2,010,000	2%	786,000	6%

Note: Gross and net margin values ($/year) are rounded to the nearest thousand

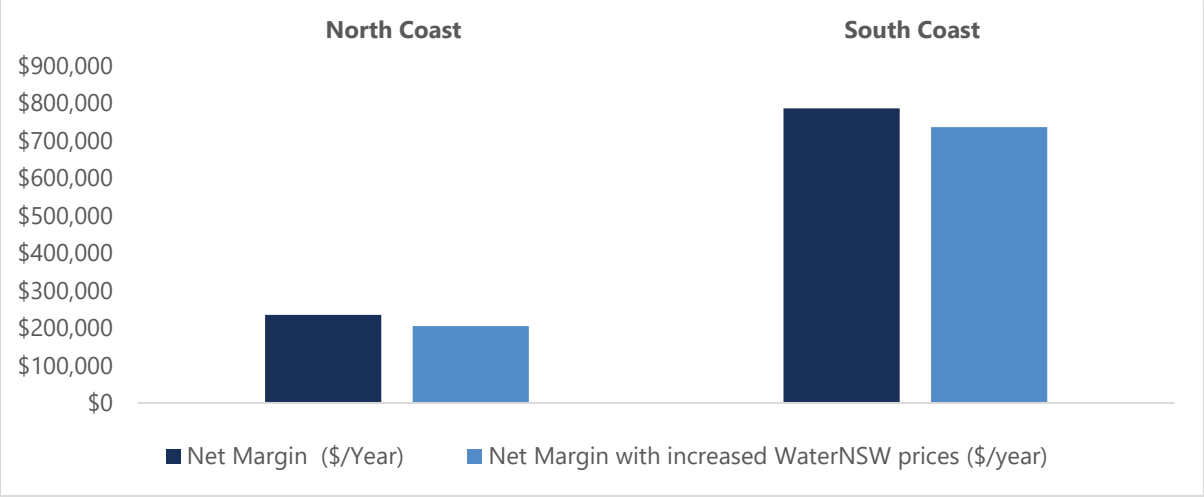


Figure 10 Scenario 1 price impacts on dairy farm net margins – average farms ($2025/26), 100% water allocation and 100% use

Dairy analysis

Dairy margins will not be as significantly impacted by the price increases in Scenario 1 compared to other commodities, with the GM impact estimated at 3%. NM profitability will remain strong but is estimated to drop by up to 15%. Dairy farms in these valleys are not high-volume water consumers from the regulated rivers.

3.4. Scenario 2 - price impacts on farming margins

The following sections summarises by commodity, valley and representative farm size, the estimated annual WaterNSW price impact on a farming enterprise's current GM and NM, and the proportion of those margins that will be absorbed by the proposed price increases under Scenario 2.

Scenario 2 outcomes are estimated to be substantially more negative than Scenario 1 (given the higher prices provided by IPART) and will cause severe impacts across all commodities and regions.

3.4.1. Small representative farms

Table 24 presents the impacts from the Scenario 2 price increases on farming margins for all representative small farms, for all commodities and valleys.

Table 24 Scenario 2 price impacts on farming margins across all commodities - small representative farms ($2025/26), 100% water allocation and 100% use

Valley	Farm size (ha)	WaterNSW price impact ($/Year)	Current GM ($/Year)	% of annual GM absorbed by the WaterNSW price increase	Current NM ($/Year)	% of annual NM absorbed by the WaterNSW price increase
Cotton						
Border	450	130,668	770,000	17%	162,000	81%

Valley	Farm size (ha)	WaterNSW price impact ($/Year)	Current GM ($/Year)	% of annual GM absorbed by the WaterNSW price increase	Current NM ($/Year)	% of annual NM absorbed by the WaterNSW price increase
Gwydir	375	140,580	620,000	23%	112,000	No longer profitable
Namoi	300	172,008	440,000	39%	35,000	No longer profitable
Macquarie	300	123,635	480,000	26%	77,000	No longer profitable
Lachlan	225	170,217	340,000	49%	40,000	No longer profitable
Murrumbidgee	100	9,491	160,000	6%	25,000	37%
Lucerne						
Lachlan	75	81,056	200,000	40%	32,000	No longer profitable
Peel	60	85,111	160,000	52%	-2,000	No longer profitable
Murray	50	12,110	140,000	9%	21,000	57%
Rice						
Murrumbidgee	100	18,982	260,000	7%	139,000	14%
Murray	100	15,097	240,000	6%	126,000	12%
Wine grapes						
Hunter	10	818	30,000	3%	7,000	11%

3.4.2. Average representative farms

Table 25 Scenario 2 price impacts on farming margins – average representative farms ($2025/26), 100% water allocation and 100% use

Valley	Farm size (ha)	WaterNSW price impact ($/Year)	Current GM ($/Year)	% of annual GM absorbed by the WaterNSW price increase	Current NM ($/Year)	% of annual NM absorbed by the WaterNSW price increase
Cotton						
Border	1200	348,449	2,050,000	17%	433,000	81%

Valley	Farm size (ha)	WaterNSW price impact ($/Year)	Current GM ($/Year)	% of annual GM absorbed by the WaterNSW price increase	Current NM ($/Year)	% of annual NM absorbed by the WaterNSW price increase
Gwydir	1050	393,624	1,730,000	23%	313,000	No longer profitable
Namoi	850	487,356	1,250,000	39%	99,000	No longer profitable
Macquarie	800	329,693	1,290,000	26%	206,000	No longer profitable
Lachlan	650	491,739	990,000	49%	116,000	No longer profitable
Murrumbidgee	400	37,964	640,000	6%	102,000	37%
Lucerne						
Lachlan	225	243,168	610,000	40%	97,000	No longer profitable
Peel	140	198,593	380,000	52%	-5,000	No longer profitable
Murray	100	24,219	270,000	9%	42,000	57%
Rice						
Murrumbidgee	400	75,928	1,020,000	7%	557,000	14%
Murray	400	60,388	970,000	6%	502,000	12%
Wine grapes						
Hunter	45	3,681	120,000	3%	33,000	11%
Dairy						
North Coast	320	1,450,573	1,190,000	No longer profitable	235,000	No longer profitable
South Coast	513	552,026	2,010,000	28%	786,000	70%

3.4.3. Cotton

Figure 11 and Figure 12 present the impacts from the Scenario 2 price increases on farming margins for small and average representative cotton farms.

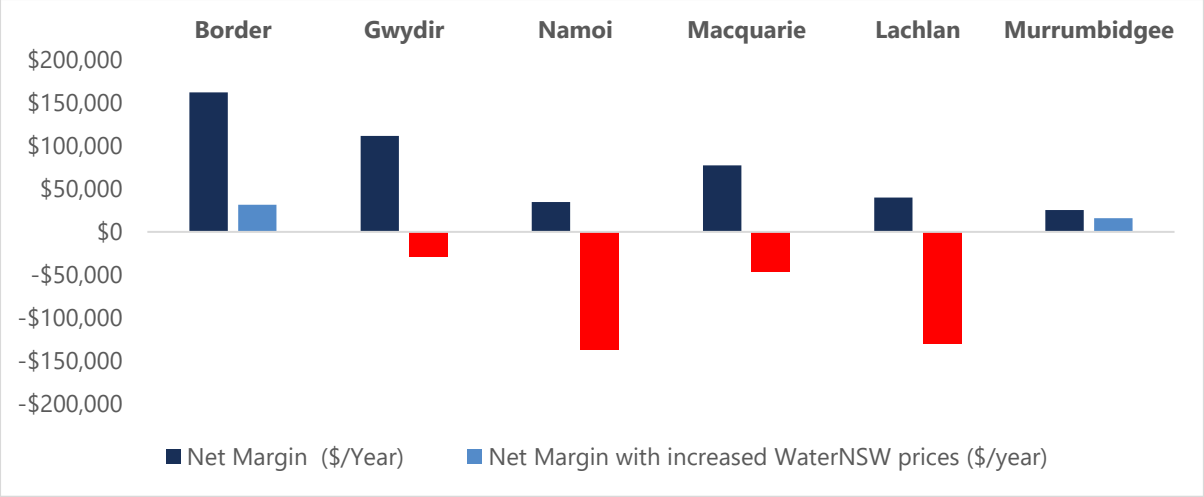


Figure 11 Scenario 2 price impacts on cotton farm net margins – small farms ($2025/26), 100% water allocation and 100% use

Note: Columns coloured red represent a negative Net Margin with increased WaterNSW prices ($/year)

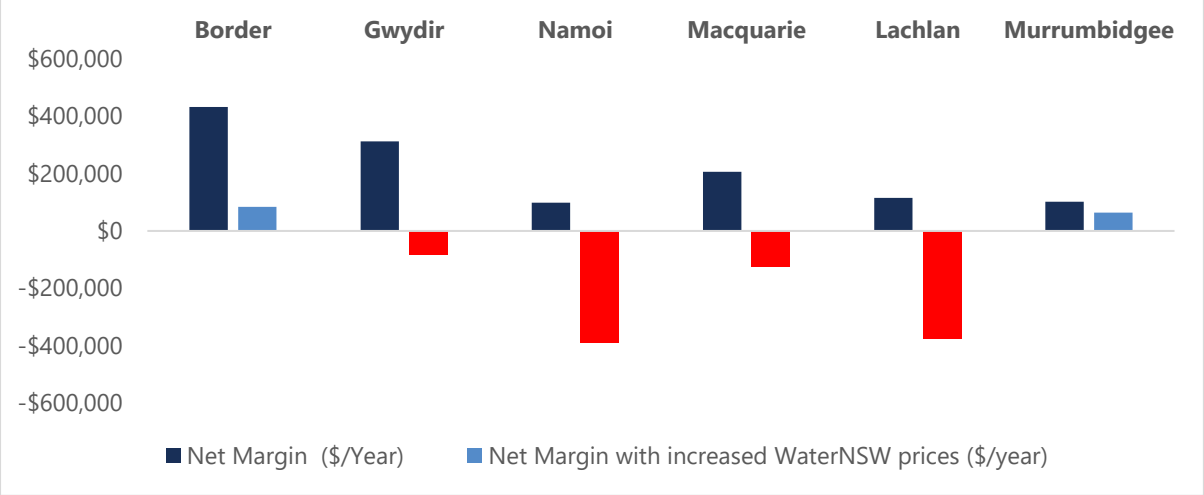


Figure 12 Scenario 2 price impacts on cotton farm net margins – average farms ($2025/26), 100% water allocation and 100% use

Note: Columns coloured red represent a negative Net Margin with increased WaterNSW prices ($/year)

Cotton analysis

Scenario 2 results in a material reduction in GM across all valleys, ranging from ~20-50% except for the Murrumbidgee (6%). While GM remains positive, the Namoi and Lachlan experience the largest proportional reduction in their GM. Whilst impacts for the Border are at the lower end of this (17%), the impacts are still significant. Farming enterprises in the Border have lower water costs relative to the valleys further south. This is also the case for farming enterprises in the Murrumbidgee.

For NM the effects are substantially more pronounced. In most valleys (Gwydir, Namoi, Macquarie and Lachlan), the WaterNSW price increase absorbs all of the baseline NM, significantly reducing financial buffers and increasing sensitivity to seasonal and commodity price volatility. Cotton farms in the Border will just remain positive, as will those in the Murrumbidgee. While cotton enterprises remain gross-margin viable, Scenario 2 materially heightens bottom-line risk, particularly in valleys with

thinner starting profitability. The higher prices under Scenario 2 would cause significant impacts to cotton farming profitability in most valleys.

3.4.4. Lucerne

Figure 13 and Figure 14 present the impacts from the Scenario 2 price increases on farming profitability for small and average representative lucerne farms.

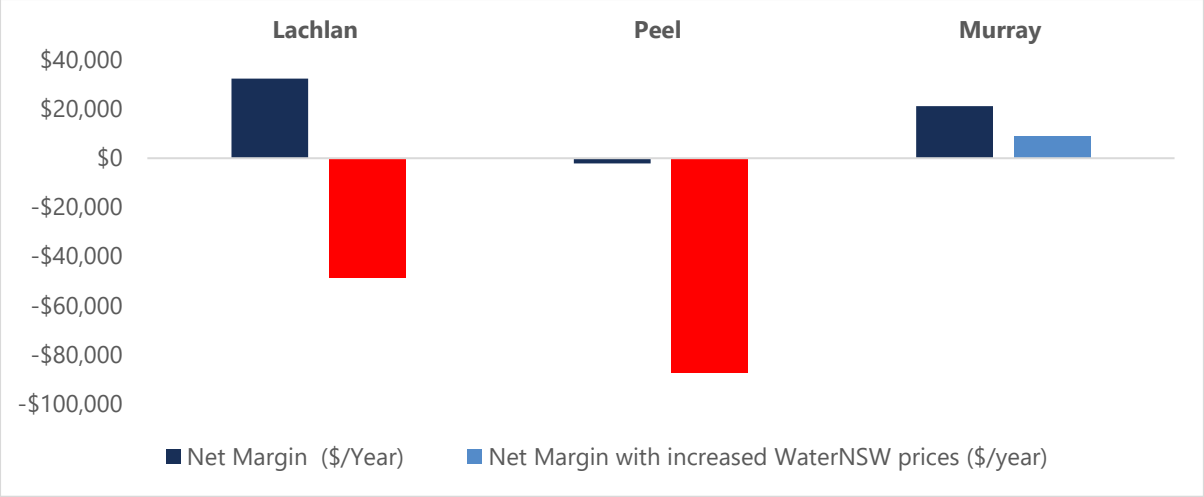


Figure 13 Scenario 2 price impacts on lucerne farm net margins – small representative farms ($2025/26), 100% water allocation and 100% use

Note: Columns coloured red represent a negative Net Margin with increased WaterNSW prices ($/year)

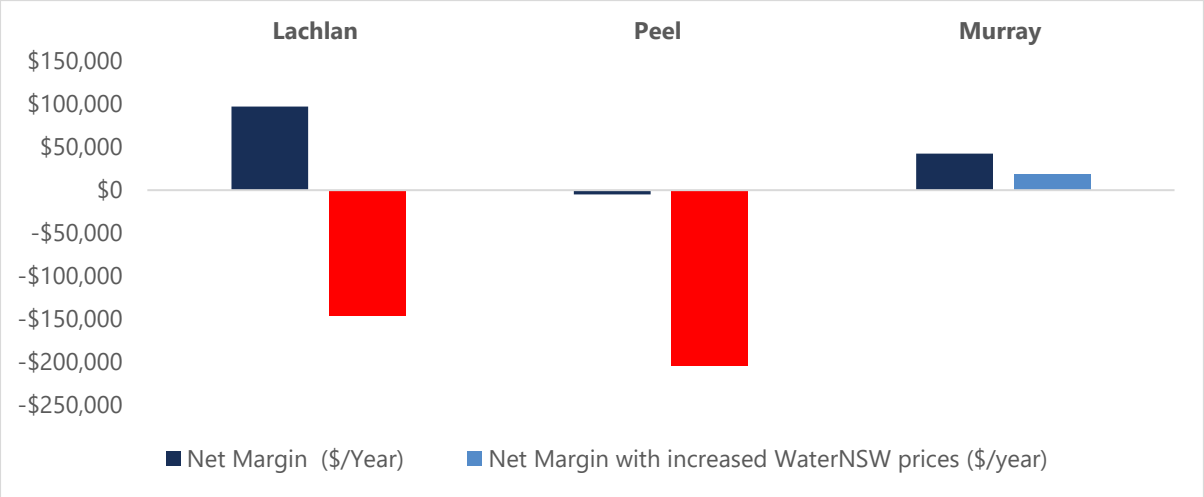


Figure 14 Scenario 2 price impacts on lucerne farm net margins – average representative farms ($2025/26), 100% water allocation and 100% use

Note: Columns coloured red represent a negative Net Margin with increased WaterNSW prices ($/year)

Lucerne analysis

Profitability for lucerne farmers is already low in most valleys. The higher prices in Scenario 2 further impact these valleys, with a substantial reduction in gross margins across all valleys. These impacts are generally larger than those observed for cotton. Given lucerne's high irrigation intensity and moderate revenue per hectare, WaterNSW price increases represent a significant share of total operating costs.

While GMs remain positive, the erosion is material and reduces the operating buffer available to manage seasonal variability across climate and price volatility.

The NM impacts are considerably more severe. In the Lachlan, the price increase absorbs all NM profitability, with farming enterprises in the Murrumbidgee expected to just break even. In the Peel, the price increases results in high negative net margins. Scenario 2 materially increases financial risk for lucerne enterprises, highlighting their structural sensitivity to irrigation cost increases and reduced resilience under tighter price conditions. Consecutive dry years would impart additional cash flow pressure on lucerne enterprises.

3.4.5. Rice

Figure 15 and Figure 16 present the impacts of Scenario 2 price increases on farming profitability for small and average rice farms.

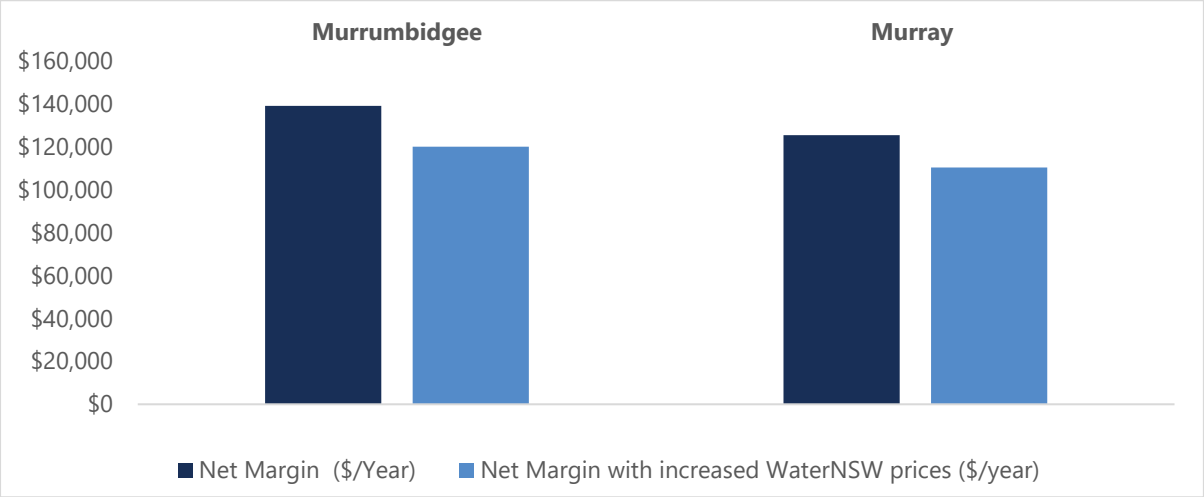


Figure 15 Scenario 2 price impacts on rice farm net margins – small representative farms ($2025/26), 100% water allocation and 100% use

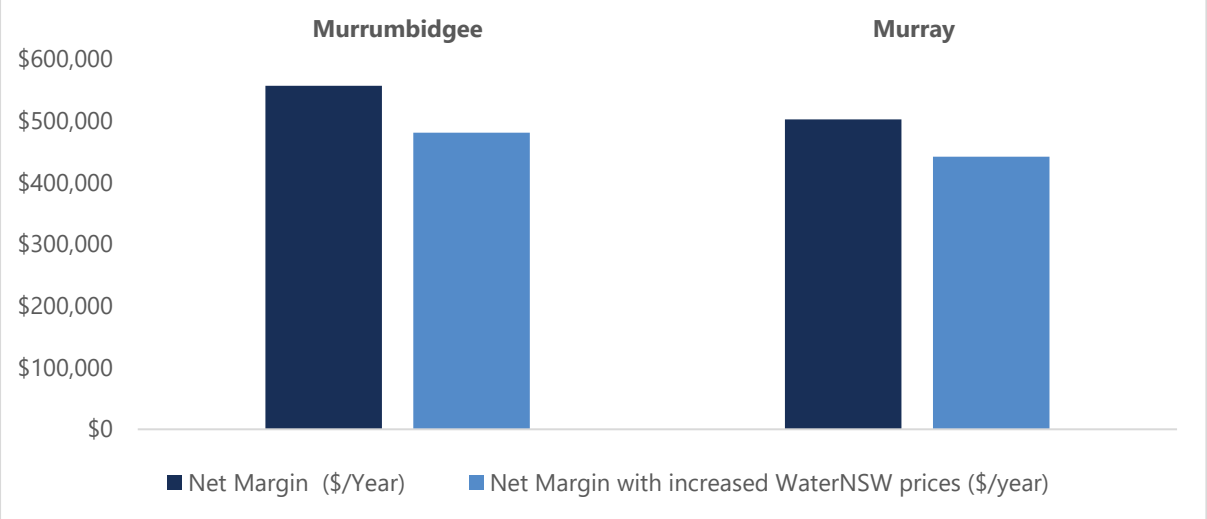


Figure 16 Scenario 2 price impacts on rice farm net margins – average representative farms ($2025/26), 100% water allocation and 100% use

Rice analysis

Scenario 2 results in a meaningful reduction in gross margins across the Murray and Murrumbidgee. Given rice's high irrigation requirements, the increase in WaterNSW prices translates into a noticeable rise in operating costs per hectare. While gross margins remain positive (reducing ~6%) under average yield and price assumptions, the compression is material.

At the net margin level, the impact is more pronounced (~13%), particularly in years where baseline profitability is moderate. The WaterNSW price increase absorbs a substantial share of net returns, heightening exposure to commodity price volatility. Although rice remains viable at the gross margin level, Scenario 2 materially increases bottom-line sensitivity in irrigation-dependent systems, but substantially less than cotton and lucerne producers.

3.4.6. Wine grapes

Figure 17 and Figure 18 present the impacts of the Scenario 2 price increases on farming profitability for small and average representative vineyards.

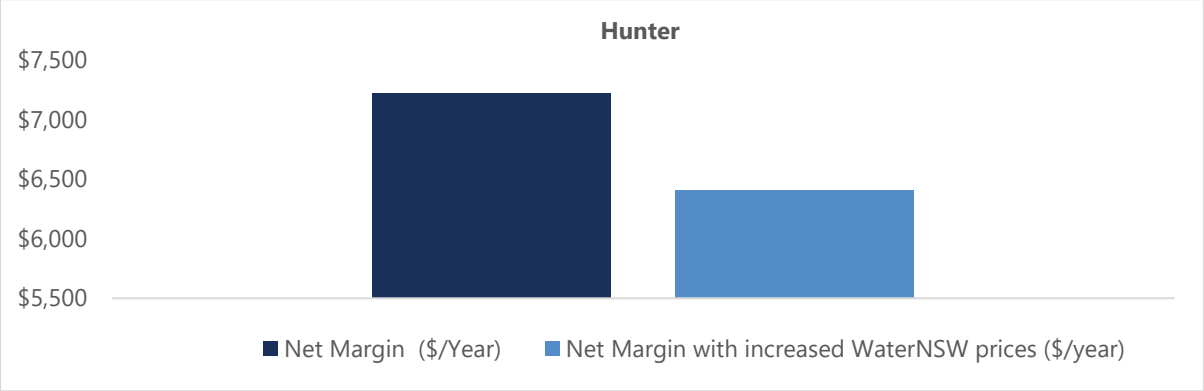


Figure 17 Scenario 2 price impacts on wine grape farm net margins – small representative farms ($2025/26), 100% water allocation and 100% use

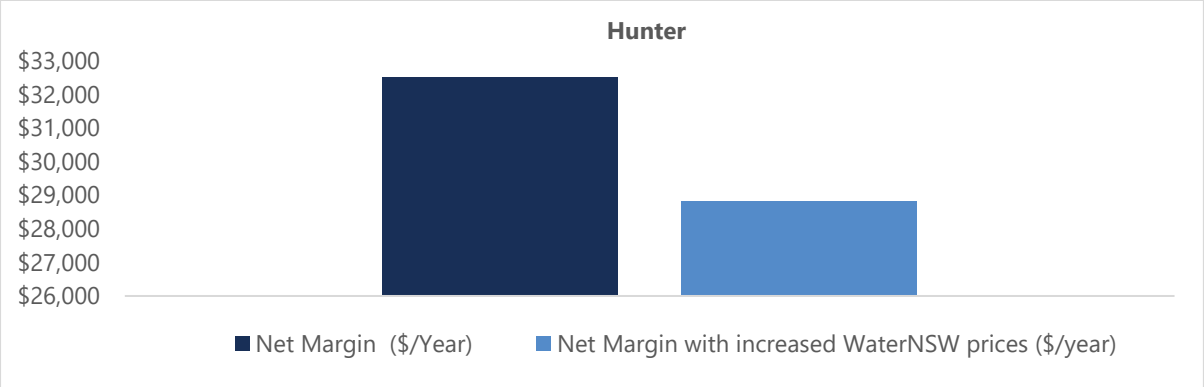


Figure 18 Scenario 2 price impacts on wine grape farm net margins – average representative farms ($2025/26), 100% water allocation and 100% use

Wine grape analysis

Under Scenario 2, the impacts on wine grape growers in the Hunter are significantly less pronounced than for cotton and lucerne, but higher than under Scenario 1. This is because wine grape growers use a significantly smaller amount of irrigated water compared to other commodities. Despite the use of a

higher-priced water product (HSE as opposed to GSE), this still does not significantly impact their GM (3%) or NM (11%) relative to other commodities. This industry remains financially challenging for most producers, and the proposed price increase would only increase the current challenges they are facing.

3.4.7. Dairy

Figure 19 present the impacts of the Scenario 2 price increases on farming profitability for typical dairy farms.

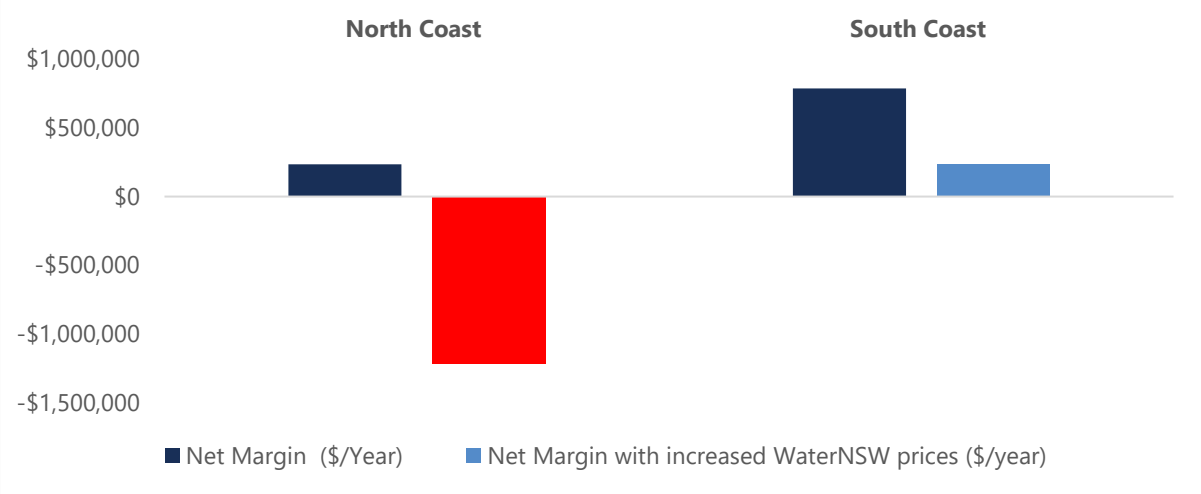


Figure 19 Scenario 2 price impacts on dairy farm net margins – average representative farms ($2025/26), 100% water allocation and 100% use

Note: Columns coloured red represent a negative Net Margin with increased WaterNSW prices ($/year)

Dairy analysis

The extremely large price increase proposed in Scenario 2 for the North Coast (~47 times) will fully erode the NM of farming enterprises in this region. Despite the lower water usage requirements for dairy farming enterprises (compared to all other commodities except wine grapes) the magnitude of this price increase will severely impact the gross operating budget for these producers. The NM impacts are even more severe.

Dairy farming enterprises GM on the South Coast will remain profitable but will be severely impacted with a 28% reduction in their GM and a 70% reduction in their NM.

4. Discussion

To support the farm financial modelling, IPART requested us to consider other factors including:

- The impact of higher WaterNSW charges on water markets, including entitlement and allocation prices
- The prospect for transition to higher value horticulture crops
- the interface between higher WaterNSW prices and farm amalgamation
- the potential for higher WaterNSW prices to incentivise more water use efficiency
- the sensitivity of the results to water availability and use assumptions
- the potential impact of higher WaterNSW prices on the financial viability of irrigation corporations and WaterNSW
- the difference between our modelling and Gross Value of Production data.

The remainder of this section addresses the questions IPART asked under each of these themes.

4.1. Impacts on water entitlement and allocation values

The quantitative analysis only considered the impacts of the proposed price increases on irrigators that already own the full entitlement required for their land holdings to meet their production outputs. Impacts on irrigators that use allocation markets to buy or sell water was outside the scope of this analysis and have not been modelled. Therefore, this section analyses the impacts of increases in WaterNSW charges on water markets and water allocation and entitlement values.

4.1.1. Water entitlement holdings in NSW

The largest share of consumptive entitlements is typically held by irrigated agriculture businesses, which range from family-owned farms to large-scale corporate enterprises. These include broadacre irrigators producing cotton and rice in the MDB valleys, dairy operations reliant on secure water supplies for pasture production, and high-value horticulture businesses growing almonds, citrus, wine grapes and vegetables. The reliability profile of entitlements held often reflects the needs of different enterprise types: Permanent plantings generally hold HSE licences to manage production risk and protect long-term capital investment, while annual cropping enterprises tend to hold GSE licences and participate more actively in seasonal allocation markets.

Alongside traditional farming businesses, corporate agribusinesses and institutional investors have become more prominent entitlement holders over the past two decades. Some vertically integrated agricultural companies hold water to secure supply for their own production systems, while others hold entitlements as standalone assets and lease allocations to irrigators. In mature trading systems such as the NSW Murray and Murrumbidgee, water has increasingly functioned as a separable factor of production, enabling movement between industries and regions in response to seasonal conditions, commodity prices and risk management strategies.

4.1.2. Background on water entitlement and allocations

NSW's water markets are comprised of two distinct but related water markets: the entitlement market and the allocation market. The drivers of market activity and price formation for entitlements and allocations differ and operate over different time horizons. [24]

Water entitlements are long-term capital assets representing a perpetual right to a share of available water resources within a specified system. They can be traded permanently or leased and are primarily used to adjust long-term water holdings and manage investment risk. Their value depends on the net benefits the holder expects to receive over time, either by using (or trading) the allocations attached to that entitlement.

- The primary drivers of entitlement prices include:
- Reliability characteristics (e.g. of HSE and GSE in different valleys) which affect expected allocation volumes and risk profiles
- Long-run expectations about water availability and allocations, influenced by climatic patterns, infrastructure and water planning
- Commodity returns per megalitre, which determine the economic value of water inputs relative to alternative uses or other commodities that can be produced
- Expectations about scarcity and policy settings, including regulatory frameworks and inter-jurisdictional trade rules
- The cost of capital and interest rate conditions, which influence the present value of future returns.

Water allocations represent the volume of water made available against an entitlement for use within a given water year. Allocation markets operate on a seasonal basis and are used to manage seasonal variability in water availability and are more sensitive to short-run supply and demand conditions.

Key drivers of allocation prices include:

- Seasonal rainfall and catchment inflows - which determine how much water becomes available for allocation each year
- Storage levels and allocation announcements - which influence market supply expectations
- In-season crop water demand - driven by commodity prices and growing conditions
- Carryover provisions and hydrological connectivity - which facilitate trade and risk management where systems are linked.

4.1.3. Analysis of impact of higher WaterNSW charges on water entitlement prices

Fixed WaterNSW charges levied on the entitlement volume form part of an irrigator's cost base. While WaterNSW price increases will affect entitlement values, climatic conditions, water reliability, commodity returns and water scarcity remain dominant determinants of entitlement prices.

In summary, water entitlement prices will likely fall.

A water entitlement is an asset. Existing owners have purchased this asset for its future stream of net benefits (the value of the allocations it yields) minus the ongoing costs of holding it (fixed charges,

[24] Consultant Report - Aither - Review of water trading 2018 - Final Report.pdf

administration costs, etc.). A changing holding cost structure will cause entitlement holders to consider their entitlement portfolio with a possible reduction in holdings.

A simple asset-pricing relationship is:

$$\text{Entitlement Price} \approx \sum_{t=1}^{\infty} \frac{\mathbb{E}[\text{Allocation}_t \times (\text{Allocation Price}_t - \text{variable use costs}) - \text{Fixed Charges}_t]}{(1+r)^t}$$

Where t = time and r = discount rate.

If fixed costs of holding an entitlement go up, then the expected returns of this asset will go down. As a result, the entitlement price will likely fall if all other inputs remain constant. The indicative worked example below presents this dynamic from a purely financial perspective, noting that the value of water entitlements are closely linked to land values and entitlement holders may hold entitlements to preserve the value of their land.

Indicative worked example: Assume per 1 ML of entitlement:

- Expected average allocation yield: 0.80 ML/year
- Expected allocation (temporary) price: $200/ML
- Variable delivery/pumping/transaction costs: $20/ML used
- Discount rate: 5%
- Fixed charges currently: $40 per ML entitlement per year

Annual expected net benefit calculation:

- Net margin per ML used: $200 - 20 = 180$
- Annual gross benefit: $0.80 \times 180 = 144$
- Minus fixed charges: $144 - 40 = 104$

Present value of the entitlement (no growth, constant expectations) = 104 / 0.05 = **$2,080 per ML**

If fixed charges increase to $80

- Annual gross benefit less fixed charges: $144 - 80 = 64$

Present value of the entitlement is now = 64 / 0.05 = **$1,280 per ML**

4.1.4. Analysis of impact of higher WaterNSW charges on water allocation prices

In summary, water allocation prices will likely fall

The opportunity cost of water is the value of its next best alternative use. For existing water entitlement holders, the annual opportunity cost of water is the price it could command in the allocation market. Allocation prices are primarily driven by the marginal growing conditions in a season:

- Demand - marginal value of water in production (crop/livestock returns, risk, carryover value)
- Supply - water that is actually available (allocations, rainfall, storage releases, delivery constraints).

In a particular season, imagine irrigator willingness to pay for allocation water is $200 per ML. Almost all irrigation businesses are price takers, so they are unable to pass on higher costs to processors. For

allocation prices above $200 per ML, the gross margins become so low that the farmer is indifferent to growing and they may become a seller instead.

Currently in NSW, the buyer of the allocation needs to pay for the WaterNSW usage charge as part of the trade application. So, if the willingness to pay is $200 per ML and the usage charges are $10 per ML, then the cost of the allocation is $190 per ML (which would go to the seller).

If the WaterNSW variable costs increase to $20 per ML, then it is unlikely that the buyer will be able to pay any more than $200 per ML, all other things held constant, so the seller of the allocation receives $180 per ML. As a result, the price for the allocation itself goes down. This increase in the variable charges leading to lower value of the allocation would also affect the entitlement values (see above).

This analysis assumes all irrigation businesses are price takers. If this was not that case for some businesses, then the impact on the value of allocation may be less than the full amount of the variable charge increase.

4.1.5. Financial and socio-economic impacts of lower water entitlement prices

Lower asset values may have material implications for irrigators' financial positions. For many farm enterprises, water entitlements represent a substantial proportion of their total asset value and form part of the security against which debt is held. A decline in entitlement value will reduce balance sheet strength and equity. This will constrain their refinancing capacity, limit access to working capital and increase financial stress, particularly for leveraged businesses (Section 4.2.2).

There are also important exit and intergenerational implications. Irrigators seeking to retire or sell their farming enterprise may face a weaker market, with fewer buyers and increased price sensitivity to ongoing water costs from potential buyers. If a buyers' market eventuates, irrigators may be left no choice but to accept a lower sale price for both their land and associated water entitlements. After debt repayment and transaction costs, this could materially reduce the residual capital available for retirement, family succession or reinvestment outside agriculture.

Reduced asset values will also have flow-on regional effects. Lower farm equity and diminished retirement proceeds could translate to less capital circulating within these regional communities. This could affect local spending, service demands and broader business activity. Over time, sustained downward pressure on irrigated asset values may contribute to reduced investment in the impacted valleys, further impacting the community.

4.1.6. Impacts of the price increase Scenarios on enterprises with different water holdings

The assessment completed in section 3 assumes that each enterprise owns 100% of their water use requirement and that they receive a 100% allocation in the year of the analysis. Therefore, they would not need to buy or sell any additional allocations.

However, water entitlement ownership is not uniform across irrigators. Impacts may differ based on the volume and reliability of the entitlement held, and the degree of exposure to allocation markets. The following examples illustrate these differences drawing on the analysis above which shows that:

- Entitlement owners are likely to be negatively affected by higher fixed and variable charges
- Allocation buyers are unlikely to be affected if price increases cannot be passed through.

Irrigators holding excess entitlement

When irrigators hold entitlement more than average seasonal needs, fixed holding costs (including WaterNSW entitlement charges) represent a recurring fixed cost against which the value of unused water must be weighed. As entitlement is a capital asset (that may not be fully utilised every season), higher fixed costs can reduce the net benefit of holding excess water rights. Higher WaterNSW fixed costs will decrease the net margins for the enterprise.

In such cases, irrigators may:

- Increase sales of temporary allocations to offset higher fixed costs in seasons when water is not needed
- Consider permanent entitlement disposals to reduce ongoing fixed cost exposure
- Reduce strategic buffer holdings previously held for risk mitigation.

The likelihood of these responses is difficult to predict as it depends on a range of factors including whether there are opportunities to sell water to willing buyers and the value placed on holding the entitlement versus selling it. Water entitlements underpin land values and the incentive to hold may be higher than the ongoing liability that higher fixed charges impose.

As outlined above, these enterprises will pay higher variable costs for WaterNSW charges on the water they use. The value of allocation sales may reduce given the buyer also needs to pay for the higher variable charges. It is also noted that entitlement prices may fall so the benefit from selling the entitlement asset reduces by the capitalised increase in the WaterNSW costs.

Irrigators holding less entitlement than they need (reliant on allocation purchases)

Irrigators who do not hold enough entitlement to meet seasonal requirements rely on temporary allocation purchases. For these farming enterprises, higher WaterNSW prices increase the fixed costs for the entitlements they own and the variable costs for the water they use. This will affect their net margins. As outlined in Box 4, the willingness to pay for allocations is unlikely to change and the impact on the buyer is therefore negligible, assuming there is no ability to pass through higher costs and perfectly competitive markets. Therefore, enterprises with no held entitlements may have limited net impact if the allocation prices reduce by the increase in the WaterNSW costs.

4.2. Potential shift to higher value crops

NSW's varied geography and climate support a diverse range of agricultural production across its regions. While some commodities are suited to multiple geographies and climatic conditions, farming enterprises will adjust production systems to optimise the balance between inputs and outputs in each location. Over many generations, farmers in NSW have developed a deep local knowledge of soils, climate variability, water availability and broader market conditions, enabling them to identify which commodities and production systems are best suited to each valley. This often restricts what commodities can be grown in what locations. The following sections explain the reasons for this.

4.2.1. Water reliability

Water reliability is critical, particularly for more permanent plantings. Commodities such as orchards and vineyards require consistent annual water supply to protect long-term capital investment. New,

higher value horticulture is highly unlikely to emerge in valleys at scale to replace annual crops irrigated with GSE where allocation reliability is uncertain over the long-term. For example, allocations to GSE were zero or very low for many valleys during the 2017-2020 drought which means trees would have died, leading to a loss of capital to establish permanent horticulture.

Box 3 - Peel valley in focus

Lucerne and fodder commodities have been the dominant irrigated commodities grown in the Peel Valley since the expansion of regulated irrigation following the construction of Chaffey Dam (completed in 1979). Unlike valleys such as the Namoi or Murrumbidgee, the Peel did not transition strongly into cotton or large-scale horticulture, meaning lucerne has remained structurally important for 40+ years, as the core irrigated enterprise. Some of the main reasons for this include:

- The Peel Valley is a smaller regulated system with relatively limited storage capacity (primarily Chaffey Dam). Allocation reliability can be variable, which discourages permanent plantings or high-value commodities that require consistent multi-year water security. Farmers therefore tend to favour more flexible annual commodities or fodder systems that can adjust to seasonal allocation variability.
- Many Peel Valley irrigation enterprises are smaller in scale compared to larger systems such as the Namoi or Murrumbidgee. The capital investment required to transition into high-value horticulture (e.g. orchards, intensive vegetables) is prohibitive without scale efficiencies. Existing irrigation layouts are also optimised for pasture or broadacre cropping rather than permanent horticulture.
- The Peel Valley has cooler winters, and more variable seasonal conditions compared to major irrigation districts further west. While suitable for certain commodities (e.g. lucerne, fodder, some cereals), it is less suited to higher-value irrigated commodities that require warmer or more stable climatic conditions.
- The region lacks large-scale processing, packing, or export infrastructure for a diverse range of high-value commodities. Without established supply chains, secure offtake agreements and labour pools, transitioning to alternative commodities becomes riskier and less commercially attractive.
- Producers in smaller valleys like the Peel tend to adopt conservative production strategies due to higher exposure to climate risk and tighter margins. Limited succession pathways and capital access can also reduce appetite for structural change.
- The Peel Valley sits immediately adjacent to Tamworth, a major regional centre. This proximity Increases demand for rural-residential and lifestyle properties, creates upward pressure on land values unrelated to agricultural productivity, introduces non-agricultural buyers into the market and raises the opportunity costs of land. As a result, irrigated holdings are being influenced by amenity value, urban proximity and development potential, rather than purely agricultural return per hectare.

Peel Valley irrigators are not necessarily constrained by agronomic potential alone, but by a combination of water reliability, scale economies, location, infrastructure availability, climate suitability and market access. These structural factors limit rapid commodity switching and reduce the likelihood that higher water charges alone would drive a shift toward substantially higher-value commodities in the region. The opposite is true. Higher prices will lead to less regional output as traditional irrigators exit their properties to land buyers with no desire to farm for agricultural purpose or income generation.

4.2.2. Capital availability

Capital availability is a key constraint on structural adjustment. Transitioning to higher-value commodities requires substantial upfront investment in irrigation infrastructure, permanent plantings, machinery and new capabilities. Farmers with limited access to finance - or those already carrying significant debt - may be unable or unwilling to undertake such transitions in response to higher water charges.

Bank lending standards place strong emphasis on demonstrated profitability and repayment capacity. Lenders assess a farm's ability to generate sufficient and sustainable cashflow to meet operating costs and service both interest and principal repayments, consistent with their prudential risk management obligations. Detailed cashflow analysis - including realistic production and price assumptions and stress testing - form part of the standard underwriting approach undertaken. While finance may still be available to farms without current positive cashflow, this will depend on credible evidence of future improvement, strong equity positions or adequate collateral and the overall risk profile of the enterprise.

Box 4 - Why is everyone not transitioning their smaller farming enterprises into citrus and almond orchards?

Citrus and almond enterprises in Australia are currently performing relatively strongly due to a combination of global demand dynamics, structural competitiveness, scale efficiencies and exchange rate conditions, although performance varies by season and market.

Compared to broadacre irrigated commodities, citrus and almonds generate much higher revenues per megalitre of water, enabling them to absorb higher water charges much more readily. This has ensured that both industries have remained amongst the highest return irrigated enterprises in Australia. This explains why these commodities are expanding while lower-value irrigated commodities face tighter margins and traditional producers are choosing to exit their farming enterprises.

Almonds have been benefiting from strong sustained global demand for plant-based proteins, snack foods and health products, particularly in India, China and the Middle East. Citrus (especially oranges and mandarins) has strong demand in Asian markets, supported by counter-seasonal supply relative to the Northern Hemisphere. Florida and Brazil producers have been heavily impacted by disease - Huanglongbing (HLB), also known as citrus greening - reducing their yields and raising their production costs.

But it is not easy to transition into these higher value commodities. There are substantial barriers to entry that extend well beyond agronomic suitability. They include high upfront capital costs, prolonged negative cashflow periods, specialised skills, labour access, and demographic constraints. These factors restrict the most smaller farming enterprises from transitioning.

- Permanent plantings require water security – high reliability, long-term entitlement security and a low tolerance for allocation volatility. Valleys with moderate reliability (e.g. Peel Valley) face significant risks.
- The capital cost of establishing modern high-density citrus and almond farms (excluding land and water) is approximately $25,000 per hectare. If the land and water needs to be purchased, the cost increases significantly to between $50,000 and $100,000 per hectare (depending on location) for citrus and almonds.
- Both commodities involve multi-year establishment costs before commercial returns return positive cashflow (almonds have minimal revenue before year 3, experience increased returns until year 6 and full production is reached after this. Citrus is slightly shorter than this. This creates heavy debt servicing needs and exposure to market forces (costs and demand / revenues).
- Both commodities benefit strongly from economies for scale. Efficient harvesting requires large contiguous areas, whist packing, sorting and export logistics favour scale. Smaller orchards struggle to compete on a cost per tonne basis.
- Permanent horticulture requires a different set of skills – these include - advanced irrigation scheduling, pest and disease management, pruning regimes, nutrient and canopy management and export compliance and quality grading.
- Transitioning from broadacre cropping or livestock to permanent horticulture also requires new technical capability, ongoing agronomic advisory support, sophisticated financial management. There is a significant structural shift required in the business model.
- Labour availability is also a major concern – citrus is labour intensive (picking and pruning) but almond farms are becoming increasingly mechanised. But labour risk still presents as one of the largest operational uncertainties.
- Demographics and succession play a major role in reducing interest in the transition to higher value commodities even though it may make economic sense. Older farmers may be reluctant to undertake 5–7-year payback investments and face capital recovery risk late in their working life. They also often prefer flexible annual systems, especially when succession uncertainty reduces a family farming enterprises appetite for long-term orchard investment.
- Market access and contract risk also heavily influence the decision-making process. Export markets are competitive - almond prices are globally influenced (California dominates supply) and citrus markets are sensitive to disease, tariffs and freight costs. Without established offtake arrangements, revenue volatility risk increases.

These structural barriers mean that commodity switching in response to water price increases is unlikely to occur rapidly, particularly in smaller irrigation valleys or among ageing farm populations.

4.2.3. Risk considerations

Risk considerations play a central role in commodity selection and investment decisions. Higher-value commodities often involve greater exposure to output price volatility, exchange rate movements, labour availability and cost pressures, biosecurity threats and export market access risks. Many horticultural and intensive production systems are also more sensitive to seasonal variability and require higher fixed costs and water reliability, increasing financial exposure if yields or prices fall short of expectations.

As a result, farmers assess crop choices through a whole-of-business risk lens rather than focusing solely on expected returns per megalitre of water. They consider income stability, capital at risk, debt servicing capacity, diversification benefits, and the potential downside under adverse Scenarios such as drought, pest outbreaks or market disruptions. A lower-value but more stable and flexible enterprise may therefore be preferred over a theoretically higher-return option, if it offers reduced volatility, lower capital lock-in and greater capacity to manage climatic and market shocks.

4.2.4. Demographics and succession factors

Demographics and succession factors also materially influence structural adjustment. An ageing farming population, particularly those nearing retirement without a clear succession pathway, will be less willing to undertake significant capital-intensive transitions that require long payback periods and increased financial risk. Converting to higher-value or more intensive production systems often involves multi-year establishment phases, new debt exposure and operational complexity, which may not align with the time horizons or risk appetite of older operators.

Succession uncertainty can further delay investment decisions, as families may defer major structural changes until intergenerational transfer arrangements are resolved. In addition, many higher-value commodities - particularly horticulture - are labour-intensive and rely on access to seasonal or skilled workers. Regions experiencing population decline, housing shortages or limited access to migrant labour may struggle to sustain these enterprises, regardless of water price signals or theoretical profitability. As a result, demographic structure and labour market conditions can significantly constrain the extent to which water reallocates toward higher-value commodities.

4.2.5. Supply chains

Supply chain factors are a critical determinant of commodity choice and structural adjustment. Higher-value commodities often require specialised processing facilities, cold storage, packing sheds, freight logistics, export certification, and established buyer relationships. These enabling systems are averagely region-specific and developed over long periods. In regions where processing plants, abattoirs, dairies or horticultural packing facilities are absent or operating at capacity, farmers face significant barriers to switching production, regardless of water price signals.

Supply chains also involve contractual arrangements, quality standards, traceability requirements and biosecurity compliance, that creates entry barriers for new producers. Without secure offtake agreements or reliable access to markets, the risk associated with transitioning to a higher-value crop increases substantially. In some cases, scale thresholds are required to participate efficiently in certain supply chains, further favouring established producers. As a result, water price increases alone may not trigger commodity shifts if the surrounding supply chain infrastructure and market access conditions are not already in place.

4.3. Potential interface between higher WaterNSW charges and farm amalgamation trends

Given the potential impacts of higher WaterNSW prices on smaller farms, IPART asked us to consider how higher prices could affect the existing, observed trend of farm aggregation in Australia.

4.3.1. Farm amalgamation trends

There has been a trend of farm amalgamation in regional NSW (and across Australia).[25] This trend has seen a general movement from smaller family orientated farms towards commercially scaled, professionally managed agricultural enterprises, that operate across multiple properties and regions, often under corporate, institutional or family investment structures. These larger scaled farms are generally characterised by:

- **Significant landholdings and production scale** - often spanning thousands of hectares or multiple aggregated farms
- **Professional management structures** - with dedicated operational, financial and compliance teams rather than sole-operator management
- **Access to institutional or corporate capital** - enabling investment in advanced machinery, irrigation infrastructure, precision agriculture, data analytics and risk management systems
- **Portfolio diversification** - either across commodities (e.g. mixed cropping, livestock, horticulture) or geographically to manage climate and market risk
- **Formal governance and reporting frameworks -** particularly when they are backed by institutional investors, superannuation funds or agribusiness corporations
- **Integrated supply chain relationships** - including forward contracts, export arrangements, processing ownership or long-term retailer agreements.

In economic terms, the general trend of farm amalgamation underpinned annual productivity increases of approximately 2 per cent throughout the 1980's and 1990's.[26] Large corporate farms tend to be more capital-intensive, risk-managed and scale-efficient, with a stronger capacity to absorb commodity price volatility, input cost increases, climate variability and regulatory change, compared to smaller, family-operated enterprises.

4.3.2. Farm amalgamation drivers

The key drivers contributing to the reduction in smaller farms in rural and regional NSW and the growth in larger farms include:

- **Economies of scale and cost pressures** - rising input costs (water, fuel, fertiliser, labour, machinery) have favoured larger operations that can spread fixed costs over greater production volumes and access bulk purchasing advantages
- **Technological advancement and capital intensity** - modern agriculture increasingly relies on high-value machinery, precision agriculture, data systems and irrigation infrastructure, which require significant capital investment and are more economically viable at larger scales

[25] See for example, ABARES (2025) Snapshot of Australian Agriculture. (last accessed 17 February 2026).
[26] ABARES (2025) Snapshot of Australian Agriculture, page 9. (last accessed 17 February 2026).

- **Market consolidation and supply chain dynamics** - supermarket concentration, processor consolidation and export market requirements have increased pressure for consistent volume, quality and compliance, favouring larger, vertically integrated enterprises
- **Access to finance and risk management capacity** - larger farms generally have stronger balance sheets and better access to finance, enabling them to manage volatility in commodity prices, input costs, climate variability, interest rates and capital for expansion.
- **Intergenerational transition challenges** - ageing farmer demographics, succession difficulties and lifestyle preferences have resulted in farm aggregation, with neighbouring larger enterprises purchasing smaller holdings
- **Climate variability and risk exposure** - increased frequency and severity of droughts and extreme weather events have placed financial strain on smaller operators, accelerating consolidation
- **Policy and structural reform impacts** – water reform (e.g. buybacks), biosecurity compliance, environmental regulation and workplace obligations have increased administrative and compliance burdens, which larger farms can absorb more efficiently
- **Land values and investment trends** – agricultural land has increasingly attracted corporate and institutional investment, contributing to consolidation and scale expansion.

Higher WaterNSW charges are likely to contribute to this trend of farm amalgamation. The socio-economic impacts of farm amalgamation are complex, vary by region and commodity and beyond the scope of this report to assess in detail.

4.4. Potential for higher water charges to incentivise greater water use efficiency

The scope for further water efficiency gains amongst irrigators across regional and rural NSW is increasingly constrained by the significant improvements already achieved over recent decades. Since the 1990s, irrigators have invested in water efficiency improvements including conversion from flood to pressurised irrigation systems (e.g. drip and centre pivot), laser levelling, soil moisture monitoring, tailwater recycling, automation and improved scheduling. In many valleys, irrigation application efficiency is already high by international standards. As a result, the "low-cost" efficiency gains have largely been captured.

Future efficiency improvements are technically possible, but they are more marginal, capital-intensive and management intensive. The next phase of gains will require:

- Conversion to more automated irrigated systems
- Advanced telemetry, soil moisture probes and data analytics
- Variable rate irrigation and precision agriculture technologies
- Upgrades to pumps, pipelines and on-farm storage
- Whole-of-system redesign rather than incremental adjustment.

These investments will most probably require substantial upfront capital expenditure per hectare, with long payback periods. In some cases, infrastructure upgrades will only be viable at scale. For smaller or

highly leveraged farms, balance sheet capacity will limit their ability to fund further efficiency improvements.

While further water efficiency gains are possible in NSW irrigation, they are unlikely to be material, rapid or costless. They will require significant capital, technical capability and risk tolerance and may deliver diminishing returns, compared to the earlier phases of efficiency reform that were undertaken. This limits the extent to which irrigators can offset higher water charges purely through additional on-farm efficiency improvements.

4.5. Sensitivity of the modelled results to water usage assumptions

The modelling assumes that all water required for agricultural production is sourced from regulated surface water entitlements and allocations supplied by WaterNSW. It does not incorporate supplementary water sources such as rainfall, groundwater, on-farm storages, opportunistic floodplain harvesting, or water held outside the regulated system. In effect, the model treats regulated water as the sole marginal source of supply.

In practice, this simplifying assumption does not reflect the full range of water sources available to some irrigators, particularly in the Northern region, where many enterprises have access to multiple water sources. Irrigators typically allocate water use based on the marginal cost of extraction at the time, inclusive of allocation prices (where relevant), usage charges, pumping costs and access charges. Where alternative sources are available at a lower marginal cost than regulated water, irrigators are likely to substitute toward those sources and reduce regulated water use.

Accordingly, the modelling results are sensitive to the cost differential between WaterNSW's regulated water supply and the alternative sources available to the farming enterprise. The net financial impact of a WaterNSW price increase will depend on the volume of water that can feasibly be substituted from other sources and the difference in marginal extraction costs between the regulated and alternative supplies.

In reality though, this moderating effect is constrained by physical, regulatory, climate and reliability limits. Alternative sources may be capped, seasonal or subject to declining water tables (impacting both quantities and quality) and higher pumping costs over time. While substitution can reduce the short-term operational impact of higher regulated water usage prices, it does not eliminate the exposure to fixed entitlement holding charges, which remain payable regardless of the volume used.

The modelling results should therefore be interpreted as representing the upper-bound impact in the modelled year in circumstances where regulated water is the sole source of supply. In regions or enterprises with diversified water portfolios, the realised impact may be lower to the extent that substitution is technically and economically feasible. However, the modelling also assumes 100% water allocation and therefore does not capture water reliability variation and the cash flow implications of multiple failed seasons.

4.6. Irrigation corporation businesses and stranded asset risk

NSW has numerous irrigation corporations operating under broadly similar governance, cost-recovery, and service delivery models. Increases in WaterNSW charges have the potential to materially affect their financial sustainability if irrigators exit the sector.

Exit fees, typically equivalent to around ten years of fixed network access charges provide irrigation corporations with medium-term revenue protection when customers leave. However, irrigation schemes are characterised by high fixed and sunk infrastructure costs. Delivery networks cannot be readily downsized in line with incremental customer exits.

As participation declines, the same cost base must be recovered from fewer irrigators. This places upward pressure on fixed charges, increasing the financial strain on the remaining customers and raising the risk of further exits. While exit fees delay this effect, they do not prevent longer-term cost concentration risks and the risk of stranded assets.

Irrigation networks are spatially integrated systems. When individual farms withdraw in a fragmented manner, infrastructure must (most of the time) remain operational to service the remaining users. This reduces the irrigations corporation's customer base but does not deliver a commensurate reduction in costs. Over time, these under-utilised assets, rising unit charges per customer and declining participation will materially weaken the schemes financial sustainability. If sustained, this dynamic poses a direct risk to scheme viability, potentially accelerating structural contraction within impacted irrigation districts, undermining the long-term sustainability of these delivery entities.

4.7. WaterNSW business model implications

WaterNSW's business is capital intensive, and its revenue requirement is materially driven by the level of investments it has historically made in long-lived assets such as dams, weirs and regulators (i.e. 'sunk investments'). These assets typically have high fixed operating costs associated with managing and maintaining headworks as well as high revenue requirements driven by the return of and on previous capital investments (where these are attributed to customers). The corollary is that once these sunk investments have been made, the marginal cost of utilising the existing system to provide an additional Megalitre (ML) of water to an existing customer is typically very low. In these instances, economic efficiency is enhanced with pricing and revenue shortfall solutions that least distort future consumption and/or investment decisions.

As discussed in detail in Aither's 2016 report for IPART, prices can only be transitioned to a maximum of customer willingness to pay levels before customers discontinue the service resulting in reductions in overall cost recovery and potentially inefficient underutilisation of the asset (assuming that customers are able to readily terminate service provision).

If sustained increases in WaterNSW charges contributes to a contraction within the irrigated agriculture sector (whether through farm exit, entitlement surrender, consolidation, or reduced productive use), the effective revenue base that these fixed costs need to be recovered from will narrow. If the customer base continues to consolidate into fewer, larger entitlement holders, revenue risk will become more concentrated. This will further increase WaterNSW's exposure to commodity cycles, climatic variability and the agricultural sectors financial stress.

In these circumstances, mechanistically pursuing full cost recovery to the point that it exceeds customers' capacity to pay introduces a structural risk dynamic, where higher prices contribute to reduced sector participation. This reduced participation will concentrate the cost burden and then this cost concentration will require further price increases. Over time, this can create conditions analogous to a regulated utility "death spiral," where the declining demand or customer numbers progressively undermines WaterNSW's financial sustainability.

While full cost recovery is designed to ensure WaterNSW remains financially viable, sustained contraction in the irrigated agricultural sector will undermine the. Pricing decisions should consider not only short-term revenue adequacy but also the longer-term stability of the customer base that underpins WaterNSW's cost recovery business model.

Consistent with Aither's recommendations in the 2016 report for IPART, WaterNSW pricing approaches that least distort future consumption and/or investment decisions should be adopted, rather than imposing a solution or solutions that mechanistically require that the cost of sunk investments be recovered from current customers to the point that it exceeds WaterNSW customers' capacity to pay.

4.8. Comparing the margin analysis with NSW Gross Value of Production data

IPART requested that we consider the NSW Department of Primary Industries' (DPI) Executive Summary report on the 2024/25 Gross Value of Production (GVP) in the context of the proposed WaterNSW price increases and the margin analysis presented in this report.

In summary, the NSW DPI report noted that the NSW primary industries sector reached a new record high in 2024-25 as the (GVP) reached a historic level of an estimated $25.5 billion, an increase of 22% year-on-year, which is 16% higher than the 5-year average.[27]

GVP is a useful indicator of sector size and regional economic contribution; however, it is not a reliable measure of farm profitability or financial resilience. In interpreting GVP data, several important considerations apply:

- GVP is a measure of total output value, not financial performance. It captures the gross revenue generated by agriculture production - essentially price multiplied by quantity – it does not deduct production costs. As a result, it provides no direct insight into profitability, margins, or cash flow. A rise in GVP may simply reflect higher commodity prices or increased output, even if input costs - such as water, energy, fertiliser, labour, and finance - have increased by more. Farming enterprises can experience rising GVP, but their net returns are declining.
- Irrigated farming enterprises are highly input-intensive and capital-intensive. Water purchases (temporary allocations), fixed water charges, pumping energy, and irrigation infrastructure maintenance represent substantial costs. In periods of high allocation prices or elevated electricity prices, total production value may remain strong but operating margins are compressed. Because GVP does not account for these costs, it cannot indicate whether enterprises are generating sufficient returns to cover operating expenses, service debt, or maintain infrastructure. Financial performance depends on net income and returns on capital, not on gross turnover.
- GVP is also heavily influenced by commodity price cycles and inflation. During price booms, sector-wide production values can surge, creating the appearance of financial strength. However, such increases may not translate into improved financial resilience, if they are accompanied by rising input prices, greater volatility, or higher risk exposure. Similarly, nominal increases in GVP during inflationary periods do not necessarily represent real gains in profitability. Without

[27] https://www.dpi.nsw.gov.au/about-us/publications/pdi/2025/executive-summary (last accessed 20 February 2026).

adjusting for cost structures and real returns, GVP can overstate improvements in farm performance.

- GVP aggregates across farming enterprises and valleys, masking the distributional differences. High total production value at the state level may conceal the wide variation between farming enterprises within one valley or one commodity. Some farming enterprises maybe very profitable whilst others struggle with low margins or high debt burdens. Financial wellbeing depends on metrics such as net farm income, operating surplus, return on assets, equity ratios, and cash flow after debt servicing. These measures capture sustainability and resilience in a way that GVP cannot.

For assessing how irrigated farming enterprises are actually performing financially, particularly in the context of utility price changes such as water pricing, empirical net margin analysis provides a far more accurate picture than GVP.

Appendix A - Farm budgets for commodity type across each region

Tables 26 through 30 present the representative farm budgets and key inputs for each commodity and valley modelled. Water costs include all costs that a farming enterprise will face, based on their location (e.g. WaterNSW, Murray Irrigation, WMAC, etc). See Section 2.7.3.

Table 26 Representative farm budget - cotton

Cotton							
	Unit	Border	Gwydir	Namoi	Macquarie	Lachlan	Murrumbidgee
Revenue	$/ha	7,105	7,105	7,105	7,105	7,105	7,105
Overheads	$/ha	1,351	1,351	1,351	1,351	1,351	1,351
Variable Costs	$/ha	5,238	5,238	5,238	5,238	5,238	5,238
Water Costs	$/ha	156	218	400	258	338	262
Gross Margin	$/ha	1,711	1,649	1,467	1,609	1,528	1,605
Net Margin	$/ha	361	298	116	258	178	255
Price	$/bale	573	573	573	573	573	573
Gross Margin	$/ML	244	236	210	230	218	229
Net Margin	$/ML	52	43	17	37	25	36
Application rate	ML	7	7	7	7	7	7

Note: Ginning costs and levies are included in variable costs

Farm budget developed by Ricardo by adapting data sourced from: CottonInfo, 2025. *Gross Margin Budget: Furrow Irrigated Cotton 2025-26; and* Boyce, 2023. *Australian Cotton Comparative Analysis - 2023 Crop*

Table 27 Representative farm budget - lucerne

Lucerne				
	Unit	Lachlan	Peel	Murray
Revenue	$/ha	4,750	4,750	4,750
Overheads	$/ha	2,294	2,763	2,314
Variable Costs	$/ha	1,541	1,541	1,541
Water Costs	$/ha	484	482	152
Gross Margin	$/ha	2,725	2,727	3,057
Net Margin	$/ha	432	-36	743

Lucerne				
Price	$/t	475	475	475
Gross Margin	$/ML	273	273	306
Net Margin	$/ML	43	-4	74
Application rate	ML	10	10	10

Farm budget developed by Ricardo by adapting data sourced from various NSW DPI reports and updated by Ricardo on other projects undertaken in NSW.

Table 28 Representative farm budget - rice

Rice			
	Unit	Murrumbidgee	Murray
Revenue	$/ha	4,557	4,557
Overheads	$/ha	1,160	1,160
Variable Costs	$/ha	1,483	1,483
Water Costs	$/ha	523	660
Gross Margin	$/ha	2,551	2,415
Net Margin	$/ha	1,391	1,255
Price	$/t	406	406
Gross Margin	$/ML	182	172
Net Margin	$/ML	99	90
Application rate	ML	14	14

Farm budget developed by Ricardo by adapting data sourced from: NSW DPI, 2025. *Cropping Rice;* NSW DPI, 2021. *Rice growing guide; and* Booth Associates, 2018. *Independent southern NSW Irrigated Crop Options Analysis*. Adapted by Ricardo, 2026

Table 29 Representative farm budget - wine grapes

Wine grapes		
	Unit	Hunter
Revenue	$/ha	8,510
Overheads	$/ha	1,998
Variable Costs	$/ha	5,705
Water Costs	$/ha	84
Gross Margin	$/ha	2,720
Net Margin	$/ha	722

Wine grapes		
Price	$/t	1,702
Gross Margin	$/ML	1,814
Net Margin	$/ML	482
Application rate	ML	1.50

Farm budget developed by Ricardo by adapting data sourced from: Wine Australia, 2025. *Hunter Valley Semillon, vintage year 2025;* NSW DPI, 2022. *Wine grapes and* Macquarie University, 2017, Economic Contribution of the Hunter Valley Wine Sector to the Hunter Valley Economy.

Table 30 Representative farm budget - dairy

Dairy			
	Unit	North Coast	South Coast
Revenue	$/ha	7,835	9,493
Overheads	$/ha	2,999	2,884
Variable Costs	$/ha	3,974	4,605
Water Costs	$/ha	128	147
Gross Margin	$/ha	3,734	4,742
Net Margin	$/ha	734	1,858
Price	$/kg MS	13.49	11.74
Gross Margin	$/ML	1,393	1,769
Net Margin	$/ML	274	693
Application rate	ML	2.68	2.68

Farm budget developed by Ricardo by adapting data sourced from Dairy Australia, 2025. *Dairy Farm Monitor Project – NSW.*

Appendix B - Input costs justification for each commodity type across each region

The following sections outline our approach to modelling variable costs in this analysis.

Cotton

Input costs for irrigated cotton production are broadly similar across the Border Rivers, Gwydir, Namoi, Macquarie and Lachlan regions because cotton is produced using a highly standardised production system. Core agronomic practices, including seed technology, fertiliser programs, chemical regimes, and pest management, are largely uniform across regions, driven by industry-wide research, extension, and compliance requirements. As a result, per-hectare requirements for key variable inputs differ little between valleys.

This similarity is reinforced by integrated input supply chains and mechanised production systems. Cotton inputs are sourced through national suppliers operating consistent pricing structures, with regional freight differences representing a relatively small component of total on-farm production costs. Cotton production relies on comparable machinery, labour, and operational processes including land preparation, planting, irrigation management, defoliation, and harvesting. While farm scale varies, the per-hectare intensity of these inputs remains largely consistent across all valleys.

Although water availability and irrigation reliability vary significantly between valleys, these differences primarily affect the area planted rather than the input cost per hectare. Consequently, observed differences in farm-level expenditure and profitability reflect scale, water availability, and seasonal conditions, rather than fundamental differences in input cost structures.

Lucerne

Input costs for irrigated lucerne production can differ markedly between the Peel, Lachlan and Murray valleys due to structural differences in scale, irrigation reliability, infrastructure efficiency, and market access, rather than agronomic requirements. Although production systems are broadly comparable, regional operating conditions can result in materially different per-hectare input and overhead costs.

Economies of scale are a key driver of cost variation. In the Murray Valley, lucerne is generally grown on larger, contiguous irrigation layouts, allowing operational cost efficiencies and overhead costs to be spread over a greater area. This results in lower unit costs for harvesting, fertiliser application, and irrigation operations. In contrast, Peel Valley lucerne enterprises are generally smaller, leading to lower machinery utilisation rates and higher costs per hectare. Lachlan Valley systems sit between these two, achieving partial scale efficiencies, but still facing higher unit costs than Murray operations.

Water reliability further differentiates input costs. Murray Valley producers operate within a highly developed irrigation district with an efficient delivery systems and more reliable water allocations compared to the Lachlan and Peel.

Regional differences in supply chains will also influence costs. Proximity to major fertiliser suppliers, hay processors and end markets in the Murray Valley reduces freight and handling costs. Producers in more geographically remote valleys, such as parts of the Peel Valley, are likely to face higher delivered

input prices due to longer transport distances from major supply centres. In contrast, producers in valleys located closer to established regional service hubs may face comparatively lower freight-related cost pressures.

Labour availability and organisation can also contribute to additional cost divergence. Smaller Peel and Lachlan operations will be more reliant on owner labour or casual and contract labour during peak periods, increasing marginal labour costs and operational risk during compressed harvest windows.

We have kept variable costs constant across the three valleys to isolate the impact of water pricing and allocation differences, rather than confounding results with minor regional input cost variation.

Rice

Input costs for irrigated rice production are broadly similar across the Murray and Murrumbidgee regions because rice is grown using a highly standardised production system in both valleys and rice farms tend to be diverse operations, with income sourced from a variety of cropping and livestock enterprises. The same rice varieties, establishment methods, fertiliser programs, and crop management practices are applied across regions, reflecting common industry research, extension, and compliance frameworks. As a result, per-hectare requirements for key variable inputs are largely consistent.

This similarity is reinforced by shared irrigation layouts, machinery systems, and supply chains. Rice in both regions is produced on laser-levelled bays using comparable water delivery and drainage systems, requiring similar land preparation, harvesting, and operational inputs. Fertiliser, seed, chemicals, fuel, and contracting services are sourced from the same regional and national suppliers, limiting regional variation in delivered input prices. While farm size and layout differ, the per-hectare intensity of machinery and labour inputs remains similar.

Although water availability and water charges differ between the Murray and Murrumbidgee, these factors primarily affect the decision to plant rice rather than the cost of inputs applied per hectare. When rice is planted, growers in both regions on average apply a full input package to maximise yield and quality, resulting in comparable per-hectare input costs. Consequently, differences in total expenditure and production outcomes are driven by seasonal conditions and planted area, not by underlying differences in input cost structures.

Wine grapes

Input costs for smaller white wine grape producers in the Hunter Valley are broadly similar because these vineyards operate within a highly standardised production system driven by varietal requirements and established regional practices. Common white varieties such as Semillon and Chardonnay require comparable vineyard management across the region, resulting in similar per-hectare input requirements for fertiliser, canopy management, pest and disease control, irrigation, and harvest operations.

This similarity is reinforced by shared input supply chains and widespread use of contract services. Smaller producers, on average, source fertilisers, chemicals, irrigation components, fuel, and viticulture services from the same regional suppliers and contractors, leading to limited variation in delivered input prices. Contract pruning, spraying, and harvesting are common, particularly among smaller vineyards, which further standardise per-hectare operating costs across producers.

Scale constraints also contribute to cost convergence. Smaller vineyards have limited scope to realise economies of scale and therefore rely on similar labour arrangements, shared machinery, and incur comparable compliance and overhead costs when expressed on a per-hectare basis. While seasonal conditions influence yields and grape quality, producers generally apply a full input package to maintain vine health and quality, meaning differences in profitability are driven more by output quality variability and prices than by underlying input cost structures.

The modelling approach adopted assumes that wine grape growers predominantly use high security entitlements and price rises on these entitlements have therefore been modelled.

Wine grape producers generally require high security water rather than general security water because viticulture depends on reliable, well-timed irrigation to protect perennial vine health and fruit quality. Unlike annual commodities, grapevines cannot be fallowed in dry years without long-term impacts. A single season of inadequate water can reduce yields and quality for multiple years or permanently damage vines. High security water provides a much greater likelihood of allocation each year, which is critical for maintaining vineyard productivity.

Viticulture also requires water at specific growth stages, including budburst, flowering, and berry development. General security water allocations are highly variable and often reduced or delayed in dry years, making them unsuitable for meeting these critical irrigation windows. High security entitlements offer predictability, allowing growers to manage vine stress, optimise quality outcomes, and plan operations with confidence.

Given the high capital investment and long asset life of vineyards, a reliable water supply is a core risk-management requirement. The cost of holding high security water is outweighed by the economic risk of vine damage, lost production, and compromised market relationships. As a result, high security water underpins both the physical viability and financial stability of wine grape enterprises.

Dairy

Input costs for dairy production are different across the Northern and Southern Coastal regions of NSW, despite both systems being based on pasture-driven production models with comparable infrastructure and regulatory requirements. Core inputs such as pasture fertiliser, supplementary feed, animal health products, milking operations and irrigation (where used) are at similar rates per hectare or per cow, resulting in broadly consistent per-unit input requirements across both regions. Dairy output is measured in milk solids. The Northern Coast averages $6.86/kgMS in variable costs compared to the South ($5.69/kgMS). This is because milk production per cow is materially higher in the south by ~ 30%, resulting in much better outcomes for farmers.

Integrated supply chains and standardised industry arrangements are similar across both valleys, with feed, fertiliser, animal health products, fuel, and dairy consumables normally being sourced through national or regional suppliers, operating largely uniform pricing structures across NSW. Both regions also operate under the same milk quality, animal welfare, and food safety standards, which standardise compliance-related inputs and associated costs. While farm scale varies, labour, machinery, and infrastructure requirements per unit of production remain broadly comparable.

Higher overhead costs per unit in the North Coast (smaller herd sizes and lower milk solids output per cow) mean fixed costs are spread over fewer kilograms of milk solids. As a result, average profitability is materially lower in the North than in the South.

Although climatic conditions differ between the northern and southern regions, these differences primarily affect seasonal feed availability and production timing, rather than underlying input cost structures. Irrigation and supplementary feeding are used strategically in both regions to manage seasonal variability, but supplementary requirements have a significant impact on farm profitability in both regions. As a result, differences in farm-level expenditure and profitability are driven by not just seasonal conditions and milk prices but also the fundamental differences in their operations. South Coast dairy enterprises demonstrate stronger economies of scale and higher production intensity, while North Coast enterprises are smaller, more pasture-dependent and more exposed to seasonal volatility, particularly extreme rainfall events.

Document History

Revision:

Revision no.	Final Report
Author/s	Kevin Roche, Joshua Sims and, Rod Coulton, Chris Olszak
Checked	Rod Coulton and Chris Olszak
Approved	Rod Coulton

Distribution:

Issue date	11 March 2026
Issued to	Independent Pricing and Regulatory Tribunal (IPART)
Description	Final Report Impacts of potential WaterNSW price increases on irrigation farms in regional NSW

For information on this report:

Please contact	Kevin Roche
Mobile	0404 617 563
Email	Kevin.roche@ricardo.com

Citation:

Ricardo 2026, IPART: 2025-26 review of WaterNSW's prices, report prepared for Independent Pricing and Regulatory Tribunal (IPART)

© 2026 Aither Pty Ltd. All rights reserved.

This document has been prepared on the basis of information available to Aither Pty Ltd (trading as Ricardo) at the date of publication. Aither Pty Ltd makes no warranties, expressed or implied, in relation to any information contained in this document. This document does not purport to represent commercial, financial or legal advice, and should not be relied upon as such. Aither Pty Ltd does not accept responsibility or liability for any loss, damage, cost or expense incurred or arising by reason of any party using or relying on information provided in this document. Any party that uses information contained in this document for any purpose does so at its own risk.

RICARDO
Member of WSP