Economic Impact of Improved Irrigation Pricing on the Queensland Sugar Manufacturing Industry

Prepared for the Australian Sugar Milling Council

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INTRODUCTION

Lawrence Consulting was commissioned by the Australian Sugar Milling Council (ASMC) to undertake an economic impact assessment of improved irrigation pricing on the Queensland sugar manufacturing industry. ASMC is proposing a 15-25% reduction in the Queensland Competition Authority (QCA) proposed water tariffs for all six Water Supply Schemes (WSS) – namely, Mareeba-Dimbulah, Burdekin-Haughton, Pioneer River, Eton, Bundaberg and Lower Mary River – between 2020/21 – 2023/24. Accordingly, Lawrence Consulting completed economic modelling under two scenarios:

1) A 15% reduction in the QCA proposed prices between 2020/21 – 2023/24 in the six WSSs; and
2) A 25% reduction in QCA proposed prices between 2020/21 – 2023/24 in the six WSSs.

A number of assumptions underpinning these scenarios were provided by the proponent, ASMC, specifically:

- It is assumed that irrigation water makes up 15% of total irrigated cane farm costs. Hence when water prices decrease by 15% for example, cane farm earnings increase 2.25%.

- It is also assumed that the price elasticity of (cane) supply is inelastic and -0.5. This means that for every one percentage point increase in revenues, cane production increases by 0.5%. Hence, if cane revenues/cane costs increase/decrease by 2.25%, cane production will increase 1.125%.

- For every additional tonne of cane that is grown, an additional 0.1 ML (100,000 tonnes) of water is consumed.

- For every additional tonne of cane that is grown it is assumed that 140 kgs of raw sugar is manufactured and for every tonne of sugar manufactured 220 kgs of molasses is made and 230 MW/hrs of electricity is generated.

For this study, the impact of improved irrigation pricing on the Queensland sugar manufacturing industry – in particular, the local, regional and state economies of Queensland impacted by these changes – has been measured using **LocalImpact™** regional economic models based on input-output (I-O) tables developed by Lawrence Consulting specifically for these areas to estimate the sum of direct, indirect and consumption-induced effects. I-O techniques provide a solid approach for taking account of the inter-relationships between the various sectors of the economy in the short-term and hence are an appropriate tool for determining the direct, indirect and induced economic impact of economic stimuli.

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ECONOMIC IMPACT

15% reduction in water prices

Under the scenario where irrigation prices between 2020/21 and 2023/24 are 15% lower than those proposed by the QCA, the subsequent increased water consumption and cane production will generate approximately $13.3 million per annum in sugar, molasses and energy production. The cumulative net annual economic impacts – i.e. direct, indirect and consumption-induced – associated with the increased production on the Queensland economy include (refer Table 1 below):

- An estimated direct output of $13.3 million and additional flow on increases in output of $12.0 million through other industries, for a total industry or supply chain impact of $25.2 million. A further $7.8 million in output can be associated with consumption-induced effects;

- Estimated direct annual income (wages and salaries) of $1.8 million, with $2.5 million in additional income generated through flow on effects in other industries and a further $2.0 million from household spending;

- Approximately 19.2 direct full-time equivalent (FTE) employment positions, with an estimated additional 64.8 employment positions supported indirectly through other industries and household consumption for a total employment impact of 84.0 FTEs; and

- An estimated contribution to gross regional/state product (GRP) of $3.2 million from direct effects, with a further flow on impact of $5.7 million through other industries for a total industry value added of $8.9 million. An additional $4.3 million in GRP can be attributed to consumption-induced effects.

Table 1: Annual Economic Impact of 15% Reduction in Water Prices

Mill region	North	Burdekin	South (Bundaberg)	South (Maryborough)	Central (Farleigh)	Central (Plane Creek)	Queensland (total)
Water supply scheme	**Mareeba-Dimbulah**	**Burdekin-Haughton**	**Bundaberg**	**Lower Mary**	**Pioneer River**	**Eton**	
Output ($ million)							
Direct	0.4	6.3	1.6	0.4	2.3	2.3	13.3
Indirect	0.4	5.7	1.4	0.4	2.1	2.1	12.0
Consumption	0.2	3.7	0.9	0.3	1.3	1.3	7.8
Total	**1.0**	**15.7**	**4.0**	**1.1**	**5.6**	**5.6**	**33.0**
Income ($ million)							
Direct	0.1	0.8	0.2	0.1	0.3	0.3	1.8
Indirect	0.1	1.2	0.3	0.1	0.4	0.4	2.5
Consumption	0.1	1.0	0.2	0.1	0.3	0.3	2.0
Total	**0.2**	**3.0**	**0.8**	**0.2**	**1.1**	**1.1**	**6.3**
Employment (fte persons)							
Direct	0.6	9.1	2.3	0.6	3.3	3.3	19.2
Indirect	1.0	16.8	4.3	1.2	6.1	6.1	35.4
Consumption	0.9	13.9	3.6	1.0	5.0	5.0	29.4
Total	**2.5**	**39.8**	**10.2**	**2.8**	**14.4**	**14.4**	**84.0**
Value added ($ million)							
Direct	0.1	1.6	0.4	0.1	0.5	0.5	3.2
Indirect	0.2	2.7	0.7	0.2	1.0	1.0	5.7
Consumption	0.1	2.0	0.5	0.1	0.7	0.7	4.3
Total	**0.4**	**6.3**	**1.6**	**0.4**	**2.3**	**2.3**	**13.2**

Note: Annual impact

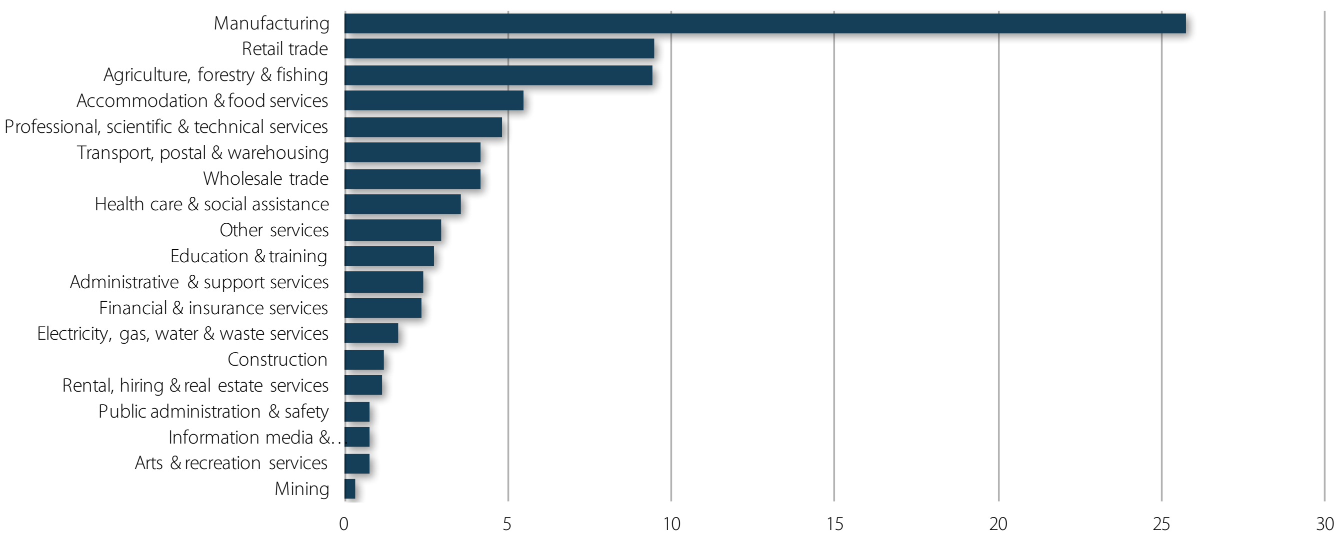
The flow-on impacts associated with the proposed 15% reduction in water prices for the Queensland sugar manufacturing industry to other industries across Queensland has been disaggregated in order to measure the contribution in other areas of the economy. The following table (Table 2) demonstrates that the Manufacturing industry benefits most in terms of total output ($15.5 million), followed by Agriculture Forestry & Fishing ($3.2 million), Rental, Hiring & Real Estate Services ($1.8 million), Transport, Postal & Warehousing ($1.5 million) and Wholesale Trade ($1.4 million).

Table 2: Estimated Disaggregated Annual Industry Impacts of 15% Reduction in Water Prices

Industry division	Industry output ($ million)	Direct employment (FTEs)
Agriculture, Forestry and Fishing	3.2	9.4
Mining	0.4	0.3
Manufacturing	15.5	25.7
Electricity, Gas, Water and Waste Services	1.7	1.6
Construction	0.5	1.2
Wholesale Trade	1.4	4.2
Retail Trade	1.1	9.5
Accommodation and Food Services	0.7	5.5
Transport, Postal and Warehousing	1.5	4.2
Information Media and Telecommunications	0.4	0.8
Financial and Insurance Services	1.3	2.4
Rental, Hiring and Real Estate Services	1.8	1.1
Professional, Scientific and Technical Services	1.3	4.8
Administrative and Support Services	0.6	2.4
Public Administration and Safety	0.1	0.8
Education and Training	0.3	2.7
Health Care and Social Assistance	0.4	3.6
Arts and Recreation Services	0.2	0.8
Other Services	0.4	3.0
Total	**33.0**	**84.0**

Note: Annual impact

Estimated Annual Employment (FTEs) Supported by 15% Reduction in Water Prices
Queensland



25% reduction in water prices

Under the scenario where irrigation prices between 2020/21 and 2023/24 are 25% lower than those proposed by the QCA, the subsequent increased water consumption and cane production will generate approximately $22.1 million per annum in sugar, molasses and energy production. The cumulative net annual economic impacts – i.e. direct, indirect and consumption-induced – associated with the increased production on the Queensland economy include (refer Table 3 below):

- An estimated direct output of $22.1 million and additional flow on increases in output of $20.0 million through other industries, for a total industry or supply chain impact of $42.1 million. A further $13.0 million in output can be associated with consumption-induced effects;
- Estimated direct annual income (wages and salaries) of $2.9 million, with $4.1 million in additional income generated through flow on effects in other industries and a further $3.3 million from household spending;
- Approximately 31.9 direct full-time equivalent (FTE) employment positions, with an estimated additional 108.0 employment positions supported indirectly through other industries and household consumption for a total employment impact of 140.0 FTEs; and
- An estimated contribution to gross regional/state product (GRP) of $5.4 million from direct effects, with a further flow on impact of $9.4 million through other industries for a total industry value added of $14.8 million. An additional $7.2 million in GRP can be attributed to consumption-induced effects.

Table 3: Annual Economic Impact of 25% Reduction in Water Prices

Mill region	**North**	**Burdekin**	**South (Bundaberg)**	**South (Maryborough)**	**Central (Farleigh)**	**Central (Plane Creek)**	**Queensland (total)**
Water supply scheme	**Mareeba-Dimbulah**	**Burdekin-Haughton**	**Bundaberg**	**Lower Mary**	**Pioneer River**	**Eton**	
Output ($ million)							
Direct	0.7	10.5	2.7	0.7	3.8	3.8	22.1
Indirect	0.6	9.5	2.4	0.7	3.4	3.4	20.0
Consumption	0.4	6.2	1.6	0.4	2.2	2.2	13.0
Total	**1.6**	**26.1**	**6.6**	**1.8**	**9.4**	**9.4**	**55.1**
Income ($ million)							
Direct	0.1	1.4	0.4	0.1	0.5	0.5	2.9
Indirect	0.1	2.0	0.5	0.1	0.7	0.7	4.1
Consumption	0.1	1.6	0.4	0.1	0.6	0.6	3.3
Total	**0.3**	**4.9**	**1.3**	**0.3**	**1.8**	**1.8**	**10.4**
Employment (fte persons)							
Direct	0.9	15.1	3.9	1.1	5.5	5.5	31.9
Indirect	1.7	27.9	7.1	2.0	10.1	10.1	59.0
Consumption	1.4	23.2	5.9	1.6	8.4	8.4	49.0
Total	**4.1**	**66.3**	**16.9**	**4.6**	**24.0**	**24.0**	**140.0**
Value added ($ million)							
Direct	0.2	2.6	0.6	0.2	0.9	0.9	5.4
Indirect	0.3	4.5	1.1	0.3	1.6	1.6	9.4
Consumption	0.2	3.4	0.9	0.2	1.2	1.2	7.2
Total	**0.7**	**10.5**	**2.7**	**0.7**	**3.8**	**3.8**	**22.0**

Note: Annual impact

The flow-on impacts associated with the proposed 25% reduction in water prices for the Queensland sugar manufacturing industry to other industries across Queensland has been disaggregated in order to measure the contribution in other areas of the economy. The following table (Table 4) demonstrates that the Manufacturing industry benefits most in terms of total output ($25.8 million), followed by Agriculture Forestry & Fishing ($5.4 million), Rental, Hiring & Real Estate Services ($3.1 million), Transport, Postal & Warehousing ($2.5 million) and Wholesale Trade ($2.4 million).

Table 4: Estimated Disaggregated Annual Industry Impacts of 25% Reduction in Water Prices

Industry division	Industry output ($ million)	Direct employment (FTEs)
Agriculture, Forestry and Fishing	5.4	15.7
Mining	0.7	0.6
Manufacturing	25.8	42.9
Electricity, Gas, Water and Waste Services	2.9	2.7
Construction	0.9	2.0
Wholesale Trade	2.4	6.9
Retail Trade	1.9	15.8
Accommodation and Food Services	1.1	9.2
Transport, Postal and Warehousing	2.5	7.0
Information Media and Telecommunications	0.7	1.3
Financial and Insurance Services	2.1	4.0
Rental, Hiring and Real Estate Services	3.1	1.9
Professional, Scientific and Technical Services	2.2	8.0
Administrative and Support Services	1.0	4.0
Public Administration and Safety	0.2	1.3
Education and Training	0.5	4.5
Health Care and Social Assistance	0.7	5.9
Arts and Recreation Services	0.3	1.3
Other Services	0.7	4.9
Total	**55.1**	**140.0**

Note: Annual impact

Estimated Annual Employment (FTEs) Supported by 25% Reduction in Water Prices

Queensland