SHORT SURVEY OF SOUTHERN MURRAY-DARLING BASIN IRRIGATORS' VIEWS ON THE REVIEW OF WATER CHARGE RULES

FINAL REPORT

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The University of Adelaide was engaged to conduct a survey of irrigators in the southern Murray-Darling Basin (MDB) to collect their views with respect to various water charge rules. A short telephone survey was designed, with questions formulated by ACCC and University of Adelaide staff. The telephone survey was conducted between March 22nd and April 14th 2016, and 657 valid responses were achieved resulting in a response rate of 97%.

Of the 657 survey responses, 248 (38%) were from NSW, 264 (40%) were from VIC and 145 (22%) were from SA. 430 (65%) are irrigation infrastructure network users and 227 (35%) are private diverters. The river systems were: NSW Murray system, Murrumbidgee system, Victorian Goulburn and Murray system and SA Murray system. The main irrigation infrastructure operators (IIOs) were there were enough sample sizes to report irrigators views included: Murray Irrigation Limited; Murrumbidgee Irrigation Limited; and Goulburn Murray Water. Private diverters were located in all three states. NSW and Victorian private diverters were listed separately, while due to a small sample size SA private irrigators were not.

Main findings

- Irrigators from various river systems have significantly different views on: whether their operators' interests align with their own; the influence they can have over their operators' water charging decisions; whether water charges incurred by an operator on behalf of customers being passed directly on to that customer rather than being recovered from all customers; and whether there should be water charge differentials based on what the customer uses the water for.

- Irrigators' attitudes were generally not significantly different over the following water charging matters: whether bulk water charges should be separated from network access and water use charges; whether there should be identical charges for customers receiving the same infrastructure service(s); whether there should be water charge differentials based on customer water use amount or trade behaviour; and whether any charge variation or discount details where such differential charges are applied for by an IIO should be published.

- 98% of network irrigators own at least one water delivery right, as against 86% of private diverters. Around 16% of network irrigators have elected to terminate their water delivery right, compared with 28% of private diverters. 36% of network irrigators have traded water delivery rights while around 44% of private diverters have engaged in trading water delivery rights.

- On average 5% of irrigators' water delivery rights are half of their water entitlement and 46% of irrigators' water delivery rights are more than half but equal to or less than their water entitlement. The remaining 49% of irrigators' water delivery rights are more than their water entitlements, including a quarter

of those irrigators owning a total water delivery right at least 1.5 times their water entitlement.

- More than half of irrigators either disagree or are unsure about whether operators should be able to include a multiple of "flat rate" charges when determining termination fees. Irrigators who have terminated or surrendered water delivery rights are less likely than other irrigators to agree that termination fees should include a multiple of "flat rate" charges. However, there was no significant relationship detected between whether an irrigation infrastructure operator has "flat rate" charges or not and irrigators' views on the use of "flat rate" charges in determining termination fees.

1. Background

In March 2016 the Australian Competition and Consumer Commission (ACCC) engaged researchers at the University of Adelaide to undertake a short survey of irrigators in the southern Murray-Darling Basin (MDB) to collect their views with respect to various water charge rules. The ACCC has been tasked with reviewing the water charge rules under the *Water Act* (2007) in consultation with industry and Basin State governments.

Under the *Water Act* (2007) the ACCC plays a key role in developing and enforcing water charge and water market rules, and monitoring regulated water charges and transformation arrangements. Four sets of rules made under Part 4 of the *Water Act* are collectively referred to as the 'water charge rules'. These include: Water Charge (Termination Fees) Rules 2009; Water Charge (Infrastructure) Rules 2010; Water Charge (Planning and Management Information) Rules 2010; and Water Market Rules 2009.

In the first half of 2015 the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) added additional questions to their 2014-15 annual face to face survey of 270 sample farms in the MDB survey. Both northern and southern catchments were included in this process. The additional 2015 questions sought to collect irrigators' experiences of water trading and their views on any water charge rule impacts (e.g. the structure and level of water charges on water trade decisions; the value of schedules of water charges; any charge barriers to the termination of water delivery rights (WDR); and the significance of network planning signals).

This survey of 657 irrigators in the southern MDB provides the ACCC with further industry district views on select issues raised in their *Review of Water Charge Rules Issues Paper* (ACCC, 2015); specifically the relationship between infrastructure operators and their customers, delivery right decision-making and termination issues.

2. Survey Methodology

The University of Adelaide surveyed 1,000 farmers in southern Murray Darling Basin (New South Wales (NSW: n=419), Victoria (VIC: n=372) and South Australia (SA: n=209)) in November 2015 as part of three Australian Research Council projects exploring water security issues in the southern MDB. This survey was highly representative; it was randomly sampled with a response rate of 66%, and its' mean length survey time of 32 minutes enabled the researchers to collect extensive information on water trade, water use, mental health and farm/farmer health characteristics. Of those irrigators surveyed, 837 (~84%) indicated that they would be willing to be contacted again for further research, if warranted. Further investigation revealed that the 163 irrigators who opted out of future contact from this 2015 survey appeared to be random and hence there was no sample selection bias for the 837 irrigators remaining on the contact list.

In March 2016 the ACCC approached the University of Adelaide to undertake a new survey of irrigators with respect to their views on water charge rules. Given the previous survey was conducted only four months prior, and a need to undertake the new survey and analysis by May 2016, it was decided the best approach would be to conduct a very short (no more than seven minute duration) telephone survey of those irrigators that had indicated their willingness to be included in future research (i.e. the 837 irrigators).

A short telephone survey was subsequently designed, with questions formulated by ACCC and University of Adelaide staff (Appendix A provides the survey). The questionnaire was given ethics approval by the University of Adelaide (approval number H-2015-226) and the survey was subcontracted to a market research company. The telephone survey was conducted between March 22nd and April 14th 2016. The average length of the survey was 6 minutes, and 657 valid responses were achieved in the available short timeframe with a response rate of 97%.

3. Survey Results

3.1 Sample information

Of the 657 survey responses in 2016, 248 (37.7%) were from NSW, 264 (40.2%) were from VIC and 145 (22.1%) were from SA. This was not significantly different from the state distribution of the 2015 University of Adelaide survey: 41.9% from NSW, 37.2% from VIC and 20.9% from SA. The ACCC survey sample is also representative of irrigators across the southern MDB states in terms of their key characteristics and Australian Bureau of Statistics' industry classification distributions. Further survey statistics can be found in previous studies of southern MDB irrigators' trade behaviour (e.g. Wheeler *et al.* 2009; Wheeler *et al.* 2014; Zuo et al. 2015). For a confidence level of 95%, the confidence intervals and relative standard errors (RSEs) for an estimated sample proportion of 0.50 in the three states are shown in Table 1. RSEs are usually referred as sampling errors that are most influenced by sample size and variability of farms in the population in simple and random samples. At the irrigation district level the sample size for some districts is relatively small; hence some population estimates (noted with a hash sign in Tables 2 and 12) have large RSEs; i.e. greater than 25%, and therefore should be used with caution.

Table 1: Confidence intervals and survey sample sizes

	***Population*[1]**	***Sample size***	***Confidence interval***	***Relative standard error***
NSW	6,590	248	0.06	6.12
VIC	17,295	264	0.08	8.00
SA	1,972	145	0.06	6.24

Note: [1] Irrigator population numbers are for 2012-13 by state (ACCC 2015a, pp58-59) and private diverters are not included. It is expected that the irrigator population numbers in 2015-16 would be smaller than those in 2012-13. Nonetheless, confidence intervals and relative standard errors are not sensitive to sample sizes when population is more than 2000.

Of the 657 responses, 430 (65%) are irrigation infrastructure network users and 227 (35%) are private diverters who do not use irrigation channels. Private diverters in Victoria are customers of irrigation infrastructure operators (IIOs), such as Lower Murray Water and Goulburn Murray water. Private diverters in NSW are customers of NSW Water and private diverters in SA are not customers of any organization. This report uses IIOs and operators interchangeably. Appendix B provides key information for private diverters and network irrigators by river systems and main IIOs (where there were large enough sample sizes to report IIOs). The river systems are: NSW Murray system (sample size n=97), Murrumbidgee system (n=49), Victorian Goulburn and Murray system (n=175) and SA Murray system (n=109). The main IIOs reported are Murray Irrigation Limited (MIL) (n=84); Murrumbidgee Irrigation Limited (MI) (n=42); and Goulburn Murray Water (GMW) (n=154). Private diverters were located in all three states. NSW (n=83) and Victorian (n=107) private diverters are listed separately, while due to small sample size SA private irrigators are not.

Irrigators were classified into four groups based on their water entitlement holdings. The size of irrigators who have a total water entitlement (namely sum of high security and general security) smaller than or equal to 50 ML was relatively small (n=125). Medium (n=187) sized irrigators have a total water entitlement greater than 50 ML, but smaller than or equal to 250 ML. Large (n=231) sized irrigators' total water entitlement was greater than 250 ML, but smaller or equal to 1000 ML. Any irrigators having more than 1000 ML water entitlement were in the very large (n=114) size group.

Table 2: Irrigators' views on water charging matters (%)

River system	NSW Murray system (n=97)		Murrumbidgee system (n=49)		Victorian system (n=175)		SA Murray System	Private diverters (n=227)			Southern
IIO		*MIL (n=84)*		*MI (n=42)*		*GMW (n=154)*	(n=109)		*NSW private (n=83)*	*VIC private (n=107)*	MDB
Q1 In water charging matters, how often do you think your operator's interests align with your own? (chi2=93.7***)											
Always	10 (3)#	8 (3)#	10 (4)#	7 (4)#	4 (1)	3 (1)#	28 (4)	6 (2) #	7 (3)#	5 (0)#	10 (1)
Most of the time	41 (5)	43 (5)	33 (7)	33 (7)	21 (3)	21 (3)	47 (5)	27 (3)	36 (5)	21 (4)	32 (2)
Some of the time	32 (5)	33 (5)	39 (7)	43 (8)	50 (4)	50 (4)	15 (3)	42 (4)	34 (5)	49 (5)	38 (2)
Never	16 (4)	15 (4)#	18 (6)#	17 (6)#	25 (3)	26 (4)	11 (3)#	24 (3)	23 (5)	26 (4)	21 (2)
Q2 How much influence do you think customers like yourself can have over your operator's charging decisions? (chi2=107.2***)											
A lot of influence	4 (2)#	5 (2)#	8 (4)#	10 (5)#	2 (1)#	1 (1)#	25 (4)	3 (1)#	1 (1)#	4 (2)#	7 (1)
Some influence	47 (5)	46 (5)	29 (6)	24 (7)#	31 (3)	31 (4)	47 (5)	27 (3)	28 (5)	26 (4)	35 (2)
No influence	48 (5)	49 (5)	63 (7)	67 (7)	67 (4)	68 (4)	28 (4)	68 (3)	69 (5)	69 (4)	57 (2)
Don't know	0	0	0	0	0	0	1 (1)#	2 (1)#	2 (2)#	1 (1)#	1 (0.3)#
Q3 How important is it that operators separate out bulk water charges from charges for access and use of their own network? (chi2=8.8)											
Not important	7 (3)#	8 (3)#	8 (4)#	10 (5)#	8 (2)	8 (2)	9 (3)#	5 (2)#	8 (3)#	3 (2)#	7 (1)
Somewhat important	28 (5)	27 (5)	24 (6)	26 (7)#	30 (3)#	32 (4)	32 (4)	28 (3)	23 (5)	31 (4)	29 (2)
Very important	65 (5)	64 (5)	61 (7)	60 (8)	59 (4)	57 (4)	56 (5)	64 (3)	64 (5)	65 (5)	61 (2)
Don't know	0	0	6 (3)#	5 (3)#	3 (1)#	3 (1)#	3 (2)#	3 (1)#	5 (2)#	1 (1)#	3 (1)#
Q4 How important is it that water charges incurred by an operator on behalf of one of its customers are passed on directly to that customer, rather than recovered from all customers? (chi2=27.2***)											
Not important	15 (4)#	17 (4)	22 (6)#	21 (6)#	16 (3)	16 (3)	5 (2)#	15 (2)	19 (4)	15 (3)	14 (1)
Somewhat important	28 (5)	29 (5)	35 (7)	38 (8)	36 (4)	36 (4)	28 (4)	30 (3)	34 (5)	29 (4)	31 (2)
Very important	45 (5)	42 (5)	39 (7)	36 (7)	41 (4)	41 (4)	64 (5)	48 (3)	42 (5)	50 (5)	48 (2)
Don't know	11 (3)#	13 (4)#	4 (3)#	5 (3)#	7 (2)#	7 (2)#	4 (2)#	6 (2)#	5 (2)#	6 (2)#	7 (1)
Q5 In principle, do you think customers receiving the same infrastructure service from an operator should pay the same water infrastructure charges? (chi2=2.3)											
Yes	86 (4)	86 (4)	80 (6)	76 (7)	81 (3)	79 (3)	84 (3)	83 (3)	86 (4)	86 (3)	83 (1)
No	10 (3)	11 (3)#	12 (5)#	14 (5)#	14 (3)	15 (3)	10 (3)#	11 (2)	10 (3)#	11 (3)#	12 (1)
Unsure	4 (2)#	4 (2)#	8 (4)#	10 (5)#	6 (2)#	6 (2)#	6 (2)#	6 (2)#	5 (2)#	3 (2)#	6 (1)
Q6 Should an operator vary the amount of a water infrastructure charge based on whether the customer is small or large? (chi2=13.6)											
Yes	42 (5)	43 (5)	47 (7)	48 (8)	33 (4)	34 (4)	35 (5)	39 (3)	43 (5)	40 (5)	38 (2)
No	55 (5)	54 (5)	45 (7)	45 (8)	62 (4)	60 (4)	64 (5)	59 (3)	57 (5)	57 (5)	59 (2)
Unsure	3 (2)#	4 (2)#	8 (4)#	7 (4)#	5 (2)#	6 (2)#	1 (1)#	2 (1)#	0	3 (2)#	3 (1)#
Q7 Should an operator vary the amount of a water infrastructure charge based on: what the customer uses the water for? (chi2=18.0**)											
Yes	20 (4)	15 (4)#	37 (7)	38 (8)	21 (3)	21 (3)	31 (4)	23 (3)	18 (4)	29 (4)	24 (2)
No	79 (4)	83 (4)	61 (7)	60 (8)	74 (3)	74 (4)	69 (4)	75 (3)	80 (4)	70 (4)	73 (2)
Unsure	1 (1)#	1 (1)#	2 (2)#	2 (2)#	5 (2)#	5 (2)#	0	2 (1)#	2 (2)#	1 (1)#	2 (1)#
Q8 Should an operator vary the amount of a water infrastructure charge based on: whether the customer has traded water? (chi2=6.9)											
Yes	31 (5)	31 (5)	24 (6)	29 (7)	21 (3)	20 (03)	20 (4)	24	17 (4)	33 (5)	24 (2)
No	63 (5)	64 (5)	71 (6)	67 (7)	73 (3)	75 (04)	73 (4)	72	81 (4)	64 (5)	71 (2)
Unsure	6 (2)#	5 (2)#	4 (3)#	5 (3)#	6 (2)#	5 (02)#	6 (2)#	04	2 (2)#	3 (2)#	5 (1)
Q9 If an operator offers discounted charges for certain customers but not others, should the operator publish details of who is receiving the discount and why? (chi2=8.8)											
Disagree	10 (3)#	11 (3)#	8 (4)#	7 (4)#	6 (2)#	6 (2)#	7 (2)#	8 (2)	11 (3)#	5 (2)#	8 (1)
Neutral	2 (1)#	2 (2)#	4 (3)#	2 (2)#	3 (1)#	2 (1)#	0	2 (1)#	5 (2)#	0	2 (1)#
Agree	88 (3)	87 (4)	86 (5)	90 (5)	90 (2)	91 (2)	91 (3)	89 (2)	83 (4)	95 (2)	89 (1)
Don't know	0	0	2 (2)#	0	1 (1)#	1 (1)#	2 (1)#	0	1 (1)#	0	1 (0.4)#

Notes: The numbers are percentages and standard error estimates are in parentheses.
This estimate has a relative standard error (standard error divided by the value estimate) greater than 25%, and should be used with caution.
MIL: Murray Irrigation Limited. MI: Murrumbidgee Irrigation. GMW: Goulburn Murray Water
***, ** Pearson chi2 statistic is significant at the 0.01 and 0.05 significance level, respectively.

3.2 Irrigators' views on water charging matters

Irrigators' attitudes towards a range of water charging matters were collected, including general customers' perceived influence on specific water charging issues such as: charge variations or discounts, improved understanding of irrigators' WDR and any pricing issues with termination fees. Table 2 presents the results for private diverters and network users by river system and main IIOs. The columns in Tables 2 and 12 are presented first by river system (which includes all irrigators surveyed in that system) and then by main IIO (which includes only irrigators in that IIO).

A chi^2 test was used to test the difference between attitudes of irrigators in various river systems (including private diverters). A significant chi^2 statistic indicates that there is statistically significant difference among various river systems (i.e. private diverters or network users in different river systems) and irrigators' attitudes towards the water charging question. In summary, irrigators from various river systems have very (i.e. chi^2 statistic significant at the 0.05 significance level) different views on: whether their operators' interests align with their own (Q1); the influence they can have over their operators' charging decisions (Q2); whether water charges incurred by an operator on behalf of customers should be passed directly on to that customer rather than recovered from all customers (Q4); and whether there should be water charge differentials based on what the customer uses the water for (Q7). On the other hand, irrigators' attitudes were generally not significantly different over the following water charging matters: whether bulk water charges should be separated from network access and water use charges (Q3); whether there should be identical charges for customers receiving the same infrastructure service(s) (Q5); whether there should be water charge differentials based on customer water use amount (Q6) or trade behaviour (Q8); and whether any charge variation or discount details where such differential charges are applied for by an IIO should be published (Q9). Each of these matters are elaborated on below.

Q1: In water charging matters, how often do you think your operator's interests align with your own?

Three quarters (the highest percentage among all river systems) of irrigators in the SA Murray and around half irrigators in NSW Murray and Murrumbidgee think that their operators' interests always or most of the time align with their own interests, while only on quarter (the lowest percentage among all river systems) of irrigators in the Victorian Murray and Goulburn consider this is the case. Given that most IIOs in SA and NSW remain member-owned operations (Loch *et al.* 2012; Wheeler *et al.* 2014), this finding appear plausible. Regarding private diverters (private diverters in SA did not answer this question, nor did they answer questions 2 and 3), only 32% of them indicate that their operators' interests always or most of the time align with their own. But, the difference in results between SA and NSW cannot be explained by whether the IIOs are member-owned or not. It may be explained by the fact that IIOs in NSW generally have much more customers than in SA and irrigators in NSW are more heterogeneous, in terms of their industry distribution and water ownership size.

One quarter of irrigators in Victoria Murray and Goulburn and 24% of private irrigators who are also customers of IIOs never believe their operators' interests align with their own.

Further investigation would be warranted to estimate exactly what factors drive irrigators' perceptions of operator's interests using more sophisticated forms of analysis. Given the short timeframe, this report provides a number of cross-tabs to highlight any particular

relationships that may exist with key irrigator characteristics. For example, Table 3 depicts the cross-tab of operators' interests against irrigator water size, with the results suggesting that there was no significant difference in irrigators' views on how their operators' interests align with their own across the four size groups.

Table 3: Interests alignment by size of irrigators' water entitlements (%)

	Size category			
Interest alignment	Small (n=125)	Medium (n=187)	Large (n=231)	Very Large (n=114)
Always	10	13	08	10
Most of the time	31	31	30	37
Some of the time	31	38	43	35
Never	28	18	20	18
Total	100	100	100	100
	Pearson Chi^2=11.53			

Q2: How much influence do you think customers like yourself can have over your operator's charging decisions?

Table 2 shows that the aligned interests in SA Murray was reflected by the result that one quarter of irrigators believe they can have a lot of influence over their operators' charging decisions, while almost half of them (47%) believe they can have some influence. As many charge decisions will be made in consultation with members under the SA IIO arrangements, the finding makes sense. However, in the Victorian Murray and Goulburn districts only 2% of irrigators believe they can have a lot of influence, 31% believe they can have some influence; while 67% believe they cannot have any influence over the operators' water charging decisions. Similarly, 68% of private diverters who are also customers of IIOs believe they have no influence over water charge decision making.

Table 4 displays the two-way association between Q1 and Q2. For example, 42% of irrigators who think they can have a lot of influence over their IIOs' charging decisions also think their IIOs' interests align with their own. The significant association between Q1 and Q2 indicates that the more influence irrigators can have over their IIOs' charging decisions, the more likely they believe their IIOs' interests align with their own.

Table 4: Customer Influence over charging & their belief about operators' interests (%)

		How much influence do you think customers like yourself can have over your operator's charging decisions?		
		A lot (n=43)	Some (n=218)	None (n=358)
In water charging matters, how often do you think your operator's interests align with your own?	Always	42	11	6
	Most of the time	51	43	22
	Some of the time	5	36	43
	Never	2	10	29
	Total	100	100	100
		Pearson Chi^2=119.03***		

***, ** Pearson chi2 statistic is significant at the 0.01 and 0.05 significance level, respectively.

Irrigators' water holding entitlement size does not appear to be significantly associated with their views on the amount of influence they can have over their IIOs' charging decisions (Table 5).

Table 5: Customer Influence by water holding size (%)

How much influence do you think customers like yourself can have over your operator's charging decisions?	***Size category*** Small (n=125)	Medium (n=187)	Large (n=231)	Very Large (n=114)
A lot	3	10	7	5
Some	37	31	37	36
None	60	59	55	59
Don't know	0	0	1	0
Total	100	100	100	100
	Pearson Chi^2=8.56			

In general, horticultural irrigators believe they can have more influence over their IIOs' charging decisions than irrigators in other industries (Table 6). Irrigators in the dairy and livestock industries appear to believe they have the least influence. This result is most likely driven by the predominance of horticulture in SA Murray and dairy in Victoria.

Table 6: Customer influence by industry (%)

		Industry Horticulture (n=208)	Broadacre (n=171)	Dairy (n=139)	Livestock (n=139)
How much influence do you think customers like yourself can have over your operator's charging decisions?	A lot	15	5	3	2
	Some	43	34	31	29
	None	42	61	66	68
	Total	100	100	100	100
		Pearson Chi^2=43.44***			

***, ** Pearson chi2 statistic is significant at the 0.01 and 0.05 significance level, respectively.

Q3: How important is it that operators separate out bulk water charges from charges for access and use of their own network?

More than half of the surveyed network irrigators (e.g. 65% in the NSW Murray and 56% in the SA Murray) stated that they felt that it was very important for authorities to separate bulk water charges from charges for network access and use, while less than 10% (e.g. 7% in the NSW Murray and 9% in the SA Murray) viewed it as not important.

Q4: How important is it that water charges incurred by an operator on behalf of one of its customers are passed on directly to that customer, rather than recovered from all customers?

92% of network irrigators in the SA Murray view it as somewhat (28%) to very important (64%) that individual water charges incurred by an operator on behalf of a customer are directly passed on to that customer, rather than being recovered from all customers. While irrigators in other districts and private diverters view this matter as important in general, the percentage naming it as 'very important' is much smaller than that found in the SA Murray; i.e. only 41% in the Victorian Murray and Goulburn; 45% in the NSW Murray; 39% in Murrumbidgee; while 48% of private diverters named this as very important.

Table 7 suggests that there is no significant relationship between irrigators' views on an operator passing charges incurred by a customer directly on to that customer and their view on how often they think their operators' interests align with their own.

Table 7: Operator Influence by views on water charge recovery (%)

		How important is it that water charges incurred by an operator on behalf of one of its customers are passed on directly to that customer, rather than recovered from all customers?			
		Not important (n=94)	Somewhat important (n=206)	Very important (n=314)	Don't know (n=43)
In water charging matters, how often do you think your operator's interests align with your own?	Always	8	9	11	15
	Most of the time	25	35	32	23
	Some of the time	40	38	37	40
	Never	27	18	20	22
	Total	100	100	100	100
		Pearson Chi^2=7.82			

Q5: In principle, do you think customers receiving the same infrastructure service from an operator should pay the same water infrastructure charges?

The majority of network and private diversion irrigators across IIOs (an average of 83%) agreed that customers receiving the same infrastructure service from an IIO should pay the same water infrastructure charges.

Q6: Should an operator vary the amount of a water infrastructure charge based on whether the customer is small or large?

On average 59% of network and private diversion irrigators generally do not support the idea that an operator should vary the amount of water infrastructure charge based on whether the customer is small or large, while 38% were in support of this notion. The strongest support for size charge differentials came from irrigators in the Murrumbidgee system (47%) and the NSW Murray system (42%).

Further analysis suggests that whether irrigators support size charge differentials is not associated with the size of their water entitlements (Table 8); this is the case both for irrigators in districts with network operators with, and without, a tiered tariff structure.

Table 8: Views on water infrastructure charges by customer size (in tiered tariff operators versus others) (%)

		Tiered tariff operators (n=126)				**Others (n=531)**			
		Size category				***Size category***			
		Small (n=20)	***Medium (n=12)***	***Large (n=38)***	***Very Large (n=56)***	***Small (n=105)***	***Medium (n=175)***	***Large (n=193)***	***Very Large (n=58)***
Q6 Should an operator vary the amount of a water infrastructure charge based on whether the customer is small or large?	**Yes**	45	50	34	50	41	39	31	36
	No	50	42	58	48	57	59	64	60
	Unsure	5	8	8	2	2	2	5	3
	Total	100	100	100	100	100	100	100	100
		Pearson Chi^2=4.17				Pearson Chi^2=6.45			

Q7: Should an operator vary the amount of a water infrastructure charge based on what the customer uses the water for?

In general, irrigators do not agree that an operator should be able to vary the amount of a water infrastructure charge based on what the customer uses the water for: 79% disagreed in the NSW Murray; 75% of private irrigators disagreed, and 74% in the Victorian Murray and Goulburn system disagreed. However, 37% of irrigators in the Murrumbidgee system and 31% of network irrigators in the SA Murray agreed that water charges should vary based on what the water is used for.

Conversely, irrigators from different industries appear to hold significantly different views on whether an operator should vary the amount of water infrastructure charge based on what the customer uses the water for (Table 9)—although the majority still prefer that charges do not vary. The difference mostly comes from irrigators in the broadacre industry, where 84% do not support variable charges based on the purposes of water use. Horticultural irrigators are more likely to agree than other irrigators (which may be reflective of the higher value use of water in the horticultural industry – for example, as shown in Wheeler et al. 2014 and Zuo et al. 2015).

Table 9: Views on water infrastructure charges by water use by industry (%)

		Industry			
		Horticulture (n=208)	Broadacre (n=171)	Dairy (n=139)	Livestock (n=139)
Q7 Should an operator vary the amount of a water infrastructure charge based on: what the customer uses the water for?	Yes	29	16	27	25
	No	69	84	71	70
	Unsure	2	1	3	5
	Total	100	100	100	100
		Pearson Chi^2=17.18***			

***, ** Pearson chi2 statistic is significant at the 0.01 and 0.05 significance level, respectively.

Q8: Should an operator vary the amount of a water infrastructure charge based on: whether the customer has traded water?

In general over 70% of network and private diversion irrigators in the southern MDB did not support the idea that an IIO should be able to vary the amount of water infrastructure charge based on whether the customer has traded water or not.

Table 10 suggests that 71% of irrigators did not support variable charges based on water trading, both for groups who have ever traded water entitlements in the last five years and groups who have not.

But, it seems that irrigators' temporary water allocation trade history in the last five years has a significant relationship with these views (Table 11). This is consistent with previous studies of southern MDB irrigators' allocation trade behaviour (Wheeler *et al.* 2009; Wheeler *et al.* 2014). The difference is mainly from the percentage of irrigators who support variable charges based on water trading. One third (32%) of irrigators who have not traded water allocations in the last five years support varying the amount based on water trade, while just over a fifth (22%) of irrigators who have traded water allocations in the last five years do support variable charges based on who has traded water. Further investigation on future plans and frequency and volume of trades may also provide insights here.

Table 10: Views on water infrastructure charges by water trade against entitlement and allocation trade history (%)

		Water Entitlement trade	
		Yes – traded (n=293)	**No trade (n=364)**
Should an operator vary the amount of a water infrastructure charge based on: whether the customer has traded water?	Yes	23	24
	No	71	71
	Unsure	6	4
	Total	100	100
		Pearson Chi^2=1.08	
		Water Allocation trade	
		Yes – traded (n=540)	**No trade (n=117)**
	Yes	22	32
	No	72	67
	Unsure	6	2
	Total	100	100
		Pearson Chi^2=7.61**	

***, ** Pearson chi2 statistic is significant at the 0.01 and 0.05 significance level, respectively.

Q9: If an operator offers discounted charges for certain customers but not others, should the operator publish details of who is receiving the discount and why?

Finally, on average around 90% of network and private diversion irrigators in the southern MDB agreed that the operator should be required to publish details of who is receiving a variation or discounted water charge rate, if any discounted charges are offered to certain customers.

A 'fairness' index score was created from questions Q5, Q7, Q8 and Q9 to represent the extent that irrigators believe IIOs should treat customers equally in various circumstances. We would like to stress that this should not be viewed as anything but a very crude attempt at a fairness index, and it is based on irrigator perception only with no other input. There is a wide academic literature on fairness, with many varied psychological questionnaires that seek to evaluate this. Our measure should be viewed as a very simple attempt at looking at irrigators' responses to various questions.

If an irrigator's answers are 'Yes' to Q5, 'No' to Q7, 'No' to Q8, and 'Agree' to Q9, the fairness index will be 4 (i.e. a score of one per fairness answer); if the answers are three out of the four above, the fairness index will be 3. Likewise, the fairness index can be 2, 1, or 0 and hence, a higher index indicates irrigators have a stronger belief that customers should be treated equally in various circumstances. Overall, 291 (44%) irrigators had a score of 4 and 214 (33%) irrigators had a score of 3. Only 3 (0.5%) irrigators in the whole survey had a score of 0. In addition, half (the highest among the river systems) of the irrigators in SA Murray had a score of 4 while 31% (the lowest among the river systems) of irrigators in the Murrumbidgee system had a score of 4.

Another way to explore how irrigators perceive fairness consistently is from Table 11 that displays the fairness matrix for Q5, Q7, Q8 and Q9. For irrigators who answered 'Yes' to Q5, 74% of them answered 'No' to Q7, 72% answered 'No' to Q8, and 90% answered 'Agree' to Q9. For irrigators answered 'No' to Q7, 84%, 81% and 89% of them answered 'Yes', 'No', and 'Agree' to Q5, Q8 and Q9, respectively. Similarly, the percentages for Q8 and Q9 can be interpreted in the same way. This suggests that irrigators may believe that

they should be subject to fairness from their IIOs more consistently for some issues than in others.

Table 11: Fairness matrix

	Q5 In principle, do you think customers receiving the same infrastructure service from an operator should pay the same water infrastructure charges? (Yes)	*Q7 Should an operator vary the amount of a water infrastructure charge based on: what the customer uses the water for? (No)*	*Q8 Should an operator vary the amount of a water infrastructure charge based on: whether the customer has traded water? (No)*	*Q9 If an operator offers discounted charges for certain customers but not others, should the operator publish details of who is receiving the discount and why? (Agree)*
Q5 (Yes), n=543	—	74%	72%	90%
Q7 (No), n=482	84%	—	81%	89%
Q8 (No), n=468	83%	84%	—	88%
Q9 (Agree), n=586	83%	73%	70%	—

3.3 Irrigators' water delivery rights (WDR)

Q10: Currently hold, or have ever held, a water delivery right

Table 12 presents information on irrigators' WDRs. For network users, at least 97% of them currently hold or have ever held a WDR. For private diverters the percentage that hold or have held a delivery right is 86%. The difference across river systems is significant at the 0.01 significance level, mostly due to the above difference between network users and private diverters.

Q11: Water delivery rights owned, ML/annum

The average delivery right owned by irrigators in the NSW Murray is the largest at 1,464 ML/annum, while irrigators in the SA Murray have the smallest amount at 281 ML/annum. Private diverters' WDR is on average 917 ML/annum.

A new variable was created to compare irrigators' water entitlement (WE) ownership and WDR ownership. The new variable takes the value of 1 if the ratio of WDR/WE is smaller than or equal to 0.5 (n=32, or 5.3%); 2 if the ratio is greater than 0.5 but smaller than or equal to 1 (277, 45.8%); 3 if the ratio is greater than 1 but smaller than or equal to 1.5 (143, or 23.6%); and 4 if the ratio is greater than 1.5 (n=153, or 25.3%, including when WDR is not zero but WE is zero).

Table 13 displays the distribution of this variable by river system and main IIOs. Irrigators in SA Murray appear to have the lowest WDR/WE ratio while irrigators from Victorian Goulburn and Murray System, particularly GMW, have the highest WDR/WE ratio.

Table 12: Irrigators' water delivery rights (WDR)

River system	NSW Murray system		Murrumbidgee system		Victorian system		SA Murray System	Private diverters			Southern
IIOs		*MIL*		*MI*		*GMW*			*NSW private*	*VIC private*	MDB
Q10 Currently hold, or have ever held, a water delivery right, %. (chi2=33.0***)											
Yes	98 (1)	98 (2)	96 (3)	95 (3)	98 (1)	99 (1)	97 (2)	86 (2)	86 (4)	95 (2)	94 (1)
*Q11 Water delivery right owned, ML/annum^*											
ML/annum	1464 (182)	1638 (203)	2092 (326)	1904 (354)	759 (73)	829 (81)	281 (88)$^{\#}$	917 (132)	1510 (336)	522 (53)	940 (65)
Q12 Have terminated or surrendered some or all water delivery right, %. (chi2=13.8***)											
Yes	22 (4)	22 (5)	13 (5)$^{\#}$	13 (5)$^{\#}$	13 (3)	13 (3)	18 (4)	28 (3)	27 (5)	25 (4)	20 (2)
Q13 Consider that you have the correct amount of water delivery right(s) for your needs, %. (chi2=44.5***)											
Yes	49 (5)	51 (6)	66 (7)	65 (8)	52 (4)	49 (4)	68 (5)	46 (4)	55 (6)	36 (5)	54 (2)
Too much	11 (3)$^{\#}$	12 (4)$^{\#}$	9 (4)$^{\#}$	10 (5)$^{\#}$	15 (3)	16 (3)	19 (4)	7 (2)$^{\#}$	6 (3)$^{\#}$	9 (3)$^{\#}$	12 (1)
Not enough	39 (5)	35 (5)	26 (6)	25 (7)$^{\#}$	31 (4)	34 (4)	13 (3)	44 (4)	37 (6)	54 (5)	33 (2)
Unsure	1 (1)$^{\#}$	1 (1)$^{\#}$	0	0	1 (1)$^{\#}$	1 (1)$^{\#}$	0	3 (1)$^{\#}$	3 (2)$^{\#}$	1 (1)$^{\#}$	1 (0.5)$^{\#}$
Q14 Your operator has a process in place to allow you to trade unwanted water delivery right(s) to other customers, %. (chi2=34.5***)											
Yes	97 (2)	96 (2)	68 (7)	65 (8)	76 (3)	75 (4)	79 (4)	88 (2)	89 (4)	89 (3)	83 (2)
No	1 (1)$^{\#}$	1 (1)$^{\#}$	26 (6)	27 (7)$^{\#}$	14 (3)	14 (3)	14 (3)	9 (2)	8 (3)$^{\#}$	8 (3)$^{\#}$	11 (1)
Unsure	2 (1)$^{\#}$	2 (2)$^{\#}$	6 (4)$^{\#}$	7 (4)$^{\#}$	10 (2)	11 (3)$^{\#}$	7 (2)$^{\#}$	4 (1)	3 (2)$^{\#}$	3 (2)$^{\#}$	6 (1)
Q15 Have traded some or all water delivery right(s) to another person, %. (chi2=9.3**)											
Yes	44 (5)	41 (5)	43 (7)	40 (8)	30 (4)	27 (4)	36 (5)	44 (4)	58 (6)	33 (5)	39 (2)
Q16 Agree that termination fees should include a multiple of "flat rate" charges, %. (chi2=5.3)											
Yes	44 (5)	46 (6)	40 (7)	35 (8)	43 (4)	45 (4)	43 (5)	43 (4)	38 (6)	47 (5)	43 (2)
No	34 (5)	33 (5)	38 (7)	43 (8)	35 (4)	34 (4)	35 (5)	42 (4)	48 (6)	41 (5)	38 (2)
Unsure	22 (4)	21 (4)	21 (6)$^{\#}$	23 (7)$^{\#}$	22 (3)	20 (3)	22 (4)	15 (3)	14 (4)$^{\#}$	12 (3)	19 (2)

Notes: Standard error estimates are in parentheses.

$^{\#}$ This estimate has a relative standard error (standard error divided by the value estimate) greater than 25%, and should be used with caution.

MIL: Murray Irrigation Limited. MI: Murrumbidgee Irrigation. GMW: Goulburn Murray Water

***, ** Pearson chi2 statistic is significant at the 0.01 and 0.05 significance level, respectively.

^ Converting ML/day to ML/annum uses the following calculation methods: Except for GMW and LMW customers, ML/day was converted into ML/annum by multiplying by 365. For LMW customers, ML/day was converted into ML/annum by multiplying by 365/14. For GMW customers, ML/day was converted into ML/annum by multiplying by 270 for gravity-fed districts (all districts except Woorinen, Nyah and Tresco) and by multiplying by 365 for piped districts (Woorinen, Nyah and Tresco).

Table 13: WDR/WE ratio by river system and main IIOs (%)

River system	**NSW Murray System**		**Murrumbidgee system**		**Victorian system**		**SA Murray System**	**Private diverters**		
IIO	*MIL*		*MI*		*GMW*			*NSW Private*	*VIC private*	
WDR/WE										
1: <=0.5	4	5	0	0	3	3	5	9	12	8
2: >0.5, <=1	40	36	60	57	43	39	53	44	43	47
3: >1, <=1.5	29	32	21	23	21	22	27	22	19	24
4: >1.5	27	27	19	20	33	36	15	25	26	22

Q12: Have terminated or surrendered some or all water delivery right

The percentage of irrigators who have ever terminated or surrendered any WDR ranges between 13% (Victorian Murray and Goulburn, Murrumbidgee system) to 22% (NSW Murray) for network users and rises to 28% for private diverters. The difference across river systems is significant at the 0.01 significance level. On average, the volume of delivery right that network users terminated or surrendered was 226 ML (standard error = 51 ML), while on average private diverters terminated or surrendered 431 ML (standard error = 135 ML).

Q13: Consider that you have the correct amount of water delivery right(s) for your needs

68% of irrigators in the SA Murray and 66% of irrigators in the Murrumbidgee system believe they have the correct amount of WDRs for their needs, while 49% of irrigators in the NSW Murray and 52% in the Victorian Murray and Goulburn believe this is the case. For private diverters, 46% believe they have the correct amount of WDRs, while 44% of them believe they do not have enough for their needs. Again, the difference across river systems is significant at the 0.01 significance level.

A comparison of Goulburn Murray Water (GMW) and Lower Murray Water (LMW) reveals that irrigators in LMW (80%, standard error=9%) are more likely to consider that they have the correct amount of WDR than irrigators in GMW (49%, standard error=4%). Meanwhile, 15% (standard error=8%) of irrigators in LMW consider they do not have enough WDR for their needs while 34% (standard error=4%) of irrigators in GMW stated they did not have enough.

Q14: Your operator has a process in place to allow you to trade unwanted water delivery right(s) to other customer

In general, at least three quarters (except for the Murrumbidgee system where 68%) of irrigators agree that their operators have a process in place to allow them to trade WDRs. Specifically, those in the NSW Murray agree the most, at 97%.

Q15: Have traded some or all water delivery right(s) to another person

Up to 43% of irrigators in the Murrumbidgee system and up to 44% in the NSW Murray system have traded WDR, which are the highest percentages among network users. 58% of NSW private diverters have traded WDR. The lowest percentage is 30% in the Victorian Murray and Goulburn. On average, the traded amount is 183 ML (standard error = 35 ML) for network users and198 ML (standard error = 33ML) for private diverters.

Q16: Agree that termination fees should include a multiple of "flat rate" charges

Currently, the maximum amount an operator can charge as a termination fee is 10 times the fixed charges paid on the WDR being terminated. The ACCC has observed through its monitoring of water charges that many operators apply "flat rate" charges, such as charges per account, per meter, per outlet, per landholding etc. These "flat rate" charges can be included in calculating termination fees. Irrigators' views on whether MDB irrigation district termination fees should include a multiple of "flat rate" charges (ACCC, 2009) are not significantly different between private diverters and network irrigators. Generally, around 40% agree with the notion of a multiple of "flat rate" charges included in the termination fee calculation basis (i.e. 40% in the Murrumbidgee system, 43% in the SA Murray and 43% for private diverters).

Conversely, around 35% of irrigators do not support a multiple of "flat rate" charges to be included in termination fees (i.e. 38% in the Murrumbidgee system answered 'no' to Q16, 35% in the SA Murray and 42% for private diverters). Approximately one fifth are unsure about what they think about this issue (i.e. 21% in the Murrumbidgee system, 22% in the SA Murray and 15% for private diverters). Further cross-tabulation analysis of irrigators' views on termination fees reveals that irrigators who have terminated or surrendered WDRs are less likely to agree with termination fees including a multiple of "flat rate" charges than other irrigators (37% versus 45%) (Table 14). The findings here are insightful because submissions or industry views on termination fees and charges have been difficult to elicit from stakeholders in the past (ACCC, 2015b).

Table 14: Views on termination fees by irrigators having and having not terminated (%)

		Ever terminated or surrendered some or all water delivery right	
		Yes (n=123)	**No (n=493)**
Do you agree that termination fees should include a multiple of "flat rate" charges?	Yes	37	45
	No	48	35
	Unsure	15	20
	Total	100	100
		Pearson Chi^2=7.25**	

***, ** Pearson chi2 statistic is significant at the 0.01 and 0.05 significance level, respectively.

In addition, irrigators are grouped into three categories: a) irrigators from IIOs that have flat rate charges in termination fees (Murray Irrigation Limited, Murrumbidgee Irrigation, Coleambally Irrigation); b) irrigators from IIOs that impose flat rate charges but not included in termination fees; (GMW, LMW) and c) other irrigators. Table 15 displays the relationship between this classification and irrigators' views on termination fees. It appears that there is no significant association.

Table 15: Views on termination fees by types of IIOs (%)

		IIOs with flat rate charge in termination fees (n=133)	***IIOs with flat rate charges but not in termination fees (n=175)***	***IIOs without any flat rate charge and private diverters(n=349)***
Do you agree that termination fees should include a multiple of "flat rate" charges?	Yes	44	43	42
	No	35	35	40
	Unsure	21	22	18
	Total	100	100	100
			Pearson Chi^2=1.86	

4. Conclusion

This report provides a summary of a survey commissioned by the ACCC and conducted by the University of Adelaide of irrigators in the southern Murray-Darling Basin on their views with respect to various water charge issues. Given very short deadlines, a short telephone survey was designed and conducted between March and April 2016. This was conducted a few months after a much more comprehensive telephone survey by the university in late 2015. Irrigators who had indicated they were willing to be conducted for future research (84% of them had indicated they were willing to be included in future research) were included in the sample frame, and 657 valid responses were achieved in the available timeframe with a response rate of 97% for the current survey.

The river systems studied in the short survey were: NSW Murray system, Murrumbidgee system, Victorian Goulburn and Murray system and SA Murray system. The main IIOs that were able to be reported included Murray Irrigation Limited; Murrumbidgee Irrigation Limited; and Goulburn Murray Water. Private diverters were located in all three states. NSW and Victorian private diverters were listed separately, while due to a small sample size SA private irrigators were not.

Irrigators from various river systems have significantly different views on:

- whether their operators' interests align with their own;
- the influence they can have over their operators' water charging decisions;
- whether water charges incurred by an operator on behalf of customers should be passed directly on to that customer rather than recovered from all customers; and
- whether there should be water charge differentials based on what the customer uses the water for.

Irrigators' attitudes were generally not significantly different over the following water charging matters:

- whether bulk water charges should be separated from network access and water use charges;
- whether there should be identical charges for customers receiving the same infrastructure service(s);
- whether there should be water charge differentials based on customer water use amount or trade behaviour; and
- whether any charge variation or discount details where such differential charges are applied for by an IIO should be published.

The report also explored issues with WDRs; termination fees; fairness issues and analysed a series of cross-tabs looking at differentials between irrigators' attitudes and various irrigator or IIO characteristics. Further research employing more advanced analytical techniques may provide more insights into what drives irrigators' perceptions.

5. References

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Appendix A: 2016 ACCC Irrigator Farm Survey for southern MDB

Int: Good morning/afternoon/evening. My name is _____. I am calling from Q and A research on behalf of researchers from the University of Adelaide. **Ask to talk to the person who conducted the last survey.**

Int Continued: "You conducted a study with us last year on farm exit, farmer stress and water trade issues in the Murray-Darling Basin and indicated you were happy to be conducted for future research. The Australian Competition and Consumer Commission (ACCC) have asked us to undertake a brief survey (and are funding this research) to help inform their review of the Water Charge Rules under the *Water Act 2007*. The interview will take about 5-7 minutes, and we can work in with your schedule. Participation is voluntary; you can choose not to participate in this research at all if you so wish and you can terminate your involvement at any time without any consequence to you. All records remain confidential and only the researchers will see individual data: the ACCC will only see aggregate and tabulated results of irrigators' views by irrigation district or state. All data collected as part of the study will be retained for a period of ten years and will be stored in electronic or hard copy at Global Food Studies, University of Adelaide.

NOTE: Should any respondent raise concerns about the project or object to having been contacted in this way, please direct them to contact the project manager **Dr Sarah Wheeler** on (08) 8313 9130, **Dr Adam Loch** on (08) 8313 9131 or University of Adelaide **HREC (Ethics) Committee** on (08) 8313 6028. They can also be sent a participant information sheet. Further information on the ACCC's review is available at www.accc.gov.au/water-charge-rules-review/draft-advice.

"Do you have time to do the survey now?"

(If YES—thank person for their participation and continue with Q2)
(If NO—ask "When would be a more convenient time to speak with you?" Collect name and phone number and arrange a call back time).

Q1. Are you a private diverter or, if not, what irrigation district / area are you in?
[Note to interviewer: If a private diverter, select from the four options below.]

Private diverter – South Australia ☐ go to **Q6**
Private diverter – NSW (Water NSW customer) ☐ **go to Q3**
Private diverter – Victoria (Lower Murray Water customer) ☐ **go to Q3**
Private diverter – Victoria (Goulburn-Murray Water customer) ☐ **go to Q3**

*[Note to interviewer: If in an irrigation district / area, select from the operator and district / area from below, do NOT read out all districts, then go to **Q3**.]*

Goulburn-Murray Water ☐ (select from Shepparton, Central Goulburn, Rochester, Campaspe, Rochester-Campaspe, Loddon Valley, Murray Valley, Torrumbarry, Tyntynder, Woorinen, Nyah, Tresco)
Central Irrigation Trust ☐ (select from Berri, Chaffey (Ral Ral), Chaffey (Cooltong), Cobdogla, Kingston, Lyrup, Moorook, Waikerie, Cadell, Myponga, Loxton, Golden Heights, Sunlands).
Lower Murray Water ☐ (select from Sunraysia, Merbein, Red Cliffs, Robinvale, First Mildura Trust District, Carwarp, Yelta, Millewa (Rural), Millewa (Urban), Nangiloc Coligan, Bumbang, Tol Tol, Boundary Creek, FMID)
Murray Irrigation Limited ☐ (select from Berriquin, Wakool, Mulwala)
Murrumbidgee Irrigation ☐ (select from pricing group: Integrated Horticulture Supply, Small Area Supply, Large Area Supply non-Wah Wah, Large Area Supply Wah Wah, Stock and Domestic, Small Area Residential, Wah Wah and Stock and Domestic, Town and Major Industry, Cudgel Creek, Base Inactive Accounts)

Other ☐ (_____)

Int Read Out: The ACCC is interested in understanding the water charge relationships between water infrastructure operators and customers. We want to discuss how operators levy their water infrastructure charges. Note: water infrastructure charges include bulk water charges, access fees, usage or delivery fees and other operator charges per account, meter, outlet or landholding.

[*Note to interviewer: Private diverters will be customers of a bulk water infrastructure operator if located in NSW (Water NSW) or Victoria (either Goulburn-Murray Water or Lower Murray Water.*]

Q2. In water charging matters, how often do you think your operator's interests align with your own?

- Always ☐
- Most of the time ☐
- Some of the time ☐
- Never ☐

Q3. How much influence do you think customers like yourself can have over your operator's charging decisions?

- A lot of influence ☐
- Some influence ☐
- No influence ☐
- Don't know ☐

Int Read Out: An operator servicing an irrigation district may also incur charges on behalf of its customers such as bulk water charges or water planning and management charges.

Q4. How important is it that operators separate out bulk water charges from charges for access and use of their own network?

- Not important ☐
- Somewhat important ☐
- Very important ☐
- Don't know ☐

Q5. How important is it that water charges incurred by an operator on behalf of one of its customers are passed on directly to that customer, rather than recovered from all customers?

- Not important ☐
- Somewhat important ☐
- Very important ☐
- Don't know ☐

Q6. In principle, do you think customers receiving the same infrastructure service from an operator should pay the same water infrastructure charges?

- Yes ☐
- No ☐
- Unsure ☐

Q7. Should an operator vary the amount of a water infrastructure charge based on:

a. whether the customer is small or large:

- Yes ☐
- No ☐
- Unsure ☐

[*Note to interviewer: 'small' vs. 'large' means a customer who holds or uses a relatively small amount of water compared to another customer who holds a large amount of water.*]

b. what the customer uses the water for:
   Yes ☐
   No ☐
   Unsure ☐

[*Note to interviewer: different water uses could be irrigating different crops (e.g. pasture, permanent plantings, rice, etc., and also non-irrigation uses such as environmental watering or industrial uses.*]

c. whether the customer has traded water:
   Yes ☐
   No ☐
   Unsure ☐

[*Note to interviewer: "traded" includes buying and selling water and transferring it into or out of an operator's area. Also, it includes both temporary and permanent trade.*]

Q9. If an operator offers discounted charges for certain customers but not others, should the operator publish details of who is receiving the discount and why?

Disagree ☐
Neither disagree nor agree ☐
Agree ☐
Don't know ☐

Int Read Out: The next questions relate to managing your right of access to your operator's network (often called a "water delivery right"), and your operator's ability to charge termination fees.

Q1 Do you currently hold, or have you ever held, a water delivery right?

Yes ☐ go to Q11
No ☐ finish survey

Q11. What amount of water delivery right(s) do you currently hold?

1. Amount _____ Units _____

[*Note to interviewer: confirm what units the water delivery right is denominated in, for example ML, ML per day, a share of available flow, etc.]*

Q12. Have you ever terminated or surrendered some or all of your water delivery right?

Yes ☐ If yes, how much _____ (ML) and what year: _____
No ☐

Q13. Do you consider that you have the correct amount of water delivery right(s) for your needs?

Yes ☐
No—too much ☐
No—not enough ☐
Unsure ☐

Q14. Does your operator have a process in place to allow you to trade unwanted water delivery right(s) to other customers?

[*Note to interviewer: 'water delivery right' may be referred to as a 'delivery entitlement' 'delivery share'.*]

Yes ☐
No ☐

Unsure ☐

Q15. Have you ever traded some or all of your water delivery right(s) to another person?

Yes ☐ If yes, how much _____ (ML) and what year: _____

No ☐

Int Read Out: Currently, the maximum amount an operator can charge as a termination fee is 10 times the fixed charges paid on the water delivery right being terminated. The ACCC has observed through its monitoring of water charges that many operators apply "flat rate charges", such as charges per account, per meter, per outlet, per landholding etc. These "flat rate charges" can be included in calculating termination fees.

Q16. Do you agree that termination fees should include a multiple of "flat rate" charges?

Yes ☐

No ☐

Unsure ☐

Thank you very much for your time, we really appreciate your feedback and participation.

End Survey

Appendix B: Key information of irrigators in the 2016 survey

River system	NSW Murray system		Murrumbidgee system		Victorian system		SA Murray System	Private diverters		
	IIO	*MIL*		*MI*		*GMW*			*NSW private*	*VIC private*
Mean high security entitlementˆ, ML	52 (21)#	42 (23)#	273 (73)#	294 (83)#	399 (31)	426 (34)	296 (108)#	326 (39)	209 (80)#	369 (36)
Mean general security entitlement, ML	1139 (172)	1274 (192)	1413 (289)	1271 (316)	—	—	—	312 (65)	828 (163)	—
Mean groundwater entitlement, ML	43 (16)#	50 (18)#	182 (126)#	155 (143)#	48 (12)	55 (14)#	0.28 (0.28) #	108 (29)#	208 (73)#	60 (21)#
Mean Irrigated land, Ha	422 (76)	475 (86)	417 (78)	403 (89)	186 (24)	207 (26)	35 (9)#	211 (24)	314 (57)	173 (22)
Mean dryland, Ha	893 (273)#	920 (305)#	302 (143)#	351 (166)#	158 (33)	175 (37)	29 (20)#	1235 (277)	2802 (718)#	271 (70)#
Mean Net farm income, $1,000	103 (9)	106 (10)	101 (12)	92 (13)	82 (6)	87 (7)	55 (7)	90 (6)	98 (10)	76 (8)
Mean Age, years	57 (1)	57 (1)	59 (2)	59 (2)	60 (1)	59 (1)	59 (1)	60 (1)	60 (1)	59 (1)
Has undertaken a water entitlement trade in past five years, %	49 (5)	48 (5)	53 (7)	50 (8)	36 (4)	37 (4)	55 (5)	42 (3)	39 (5)	39 (5)
Has undertaken a water allocation trade in past five years, %	91 (3)	92 (3)	88 (5)	90 (5)	87 (3)	89 (3)	72 (4)	78 (3)	76 (5)	81 (4)
Horticultural industry, %	14 (4)#	6 (3)#	31 (7)	33 (7)	16 (3)	6 (2)#	96 (2)	20 (3)	18 (4)	7 (3)#
Broadacre industry, %	55 (5)	60 (5)	55 (7)	50 (8)	18 (3)	19 (3)	3 (2)#	25 (3)	39 (5)	19 (4)
Dairy industry, %	11 (3)#	13 (4)#	-	-	41 (4)	46 (4)	-	25 (3)	4 (2)#	44 (5)
Livestock industry, %	20 (4)	21 (4)	14 (5)#	17 (6)#	26 (3)	29 (4)	1 (1)#	30 (3)	40 (5)	30 (4)

Notes: Standard error estimates are in parentheses.

This estimate has a relative standard error (standard error divided by the value estimate) greater than 25% and should be used with caution.

MIL: Murray Irrigation Limited. MI: Murrumbidgee Irrigation. GMW: Goulburn Murray Water

^ There are 67% of irrigators in NSW (both network and private irrigators) who do not own any high security water entitlement. The mean values presented in the table are based on all irrigators, which may not represent an average irrigator's high security water entitlement ownership in NSW.