

Water extraction in NSW: Stakeholder views and experience of compliance and enforcement

A report of a survey of water users

February 2015

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Executive summary

Background

The NSW Office of Water (NOW) is responsible for the regulation of water extraction under the *Water Act 1912* (NSW) and the *Water Management Act 2000* (NSW). However, little is known about how water users have responded to regulation, including their knowledge, perceptions and experiences of the success or otherwise of these regulatory endeavours, and their own role in complying with legislative obligations. Nor is the role of communication and education in encouraging and facilitating voluntary compliance well understood.

With the commencement of the National Framework for Compliance and Enforcement Systems in Water Resource Management in 2011 (which aims to provide a nationally consistent approach to better compliance and enforcement capabilities), it is timely to gauge water users' views and experiences to better inform future policy developments. The research study outlined in this report explores four central themes concerning water users:

- Motivations for complying with legal obligations.
- Views and experiences with NOW's compliance and enforcement policies and practices.
- Sources of information and the perceived usefulness of information.
- Knowledge of water regulations and resources used to assist with compliance.

The purpose of the study is to identify opportunities for more efficient and effective regulation of water extraction in NSW.

Research approach

The study is based on a quantitative survey of approximately 4000 NSW water licence holders that was conducted between September 2012 and January 2013.

Findings

The research captures water users' views on compliance motivations, experiences with compliance and enforcement under NOW, water users' information sources, and their knowledge of water regulation, as summarised below.

Compliance motivations

A range of factors may cause illegal action, or otherwise motivate water users to comply with their obligations under NSW water laws:

- There is widespread support of the need for regulating water extraction.
- While close to half of respondents are unsure if water users in their region are complying with their licence conditions, the vast majority of the remainder are confident that their peers are complying.
- Fairness, social reputation of water users, peer reputation and morals rank highly as motivators to comply.

- Very few respondents see penalties and criminal records as strong drivers of compliance. However, acceptance of these increases where there is good knowledge of water laws/policies, and when compliance officers are seen to be regularly working in their region.
- A desire for economic advantage is the primary reported reason for illegal water extraction, more so for water users on smaller properties.

Compliance experiences, interactions and views

The experiences and interactions water users have with NOW can shape their views on compliance and enforcement, and can also influence future behaviours:

- Most respondents report being unsure or not being aware that NOW compliance officers work in their region.
- A large majority of respondents report not having had a NOW compliance officer on their property.
- A majority of respondents report not receiving, or being unsure if they have received, government assistance in meeting their licence obligations.
- Around a quarter of respondents report having had good interactions with NOW officers.
- Most survey respondents are unsure of their views of NOW across several criteria (e.g. equity, fairness, detection, targeting and judgment); however, the next largest group of respondents have favourable views.
- Most respondents support NOW taking tougher enforcement action and increasing prosecutions if water users break the rules.
- Very few respondents report being subject to compliance or enforcement action by NOW. Of those that do, most report the action taken against them was not appropriate.

Communication and education

Measures such as education/information can promote compliance with legislation and reduce the need for enforcement:

- Most respondents do not believe they are provided with enough information, or are not using it, and want more information on water management obligations and compliance and enforcement activities.
- Most respondents know where to get more information about legislation, licences, approvals and allocations, however most prefer not to find information about water legislation and their obligations themselves.
- Neighbours, family, bore drillers, NOW letters, industry peers and NOW flyers are the highest ranked in terms of sources used and usefulness of information.
- Respondents nominate letters, emails and news flyers as their preferred methods of receiving information from NOW.

Compliance knowledge, resources and technology

Motivations to comply with laws can be subservient to water users' knowledge, capacities and technology capabilities to manage and meet their water obligations:

- Most respondents report very little knowledge of water legislation, compliance policy, enforcement actions and penalties.
- Most respondents report good or very good knowledge of specific requirements impacting on their own operations (e.g. licence conditions, allocations, entitlements, bores).
- Respondents rely on industry sources more than government or other third parties to encourage water management efficiency.
- Most responded positively towards the value, benefits and need for maintaining meters to accurately measure water extraction. This support was greatest in regions with more meter experience. However, concerns with metering are also acknowledge (e.g. cost). The majority of meters had not been re-calibrated in the last three years.
- There is a fairly even split between those who support, oppose or are unsure about the use of satellite images to monitor water extraction/storage.

Conclusion

Several key themes emerge from the research findings:

- There is widespread support of the need for regulating water extraction.
- Respondents are motivated to comply mostly by a combination of social pressure and personal values.
- Very few respondents believe that water users in their region are not complying with their licence conditions.
- There are limited face-to-face interactions between compliance officers and water users, and few are aware of officers working in their region. Around a quarter of survey respondents have good interactions with NOW officers.
- A greater awareness of NOW's compliance activities, and knowledge of laws and policies, enhance the deterrence effect of enforcement actions and penalties.
- There is widespread support for tougher enforcement action against those who break the rules. However avoiding penalties for minor 'technical' breaches may be aposite.
- Of those very few respondents that had been subject to enforcement action, most do not view the experience favourably.
- There is a desire for more information on compliance and enforcement issues, as well as water management more generally.
- Respondents have a preference for traditional forms of communication, namely letters and flyers, as well as emails, and trust their family and peers as sources of information.
- Respondents' knowledge of regulatory issues may be shaped by the relevance of particular issues to their day-to-day on-property operations.
- While there is support for metering, this rises with more direct experience. However, there are concerns about the costs and practicalities of implementation.
- There are substantial differences in views on, and experiences with, compliance and enforcement issues between different regions.

1 Introduction

1.1 Background

The NSW Office of Water (NOW) and its predecessor departments have been responsible for the regulation of water extraction under the *Water Act 1912* and the *Water Management Act 2000*. This has necessitated the establishment and implementation of a range of institutional structures and personnel, including compliance and licensing officers, legislators, prosecutors, planners, policy makers and database managers. It has also required the creation of overriding regulatory policies and guidelines.

However, little is known about how water users have responded to regulation. The knowledge, perceptions and experiences of water users of the success or otherwise of regulatory endeavours, and their own role in complying with legislative obligations, have not been canvassed to date. Nor is the role of education and communication in encouraging and facilitating voluntary compliance well understood. Furthermore, there has also been little examination of compliance, enforcement and education initiatives across the full range of water sources (e.g. unregulated, regulated and groundwater sources) or water entitlements and stock and domestic rights that are regulated by NOW.

These gaps in knowledge have the potential to undermine effective policy implementation, and may assume greater relevance with the commencement in 2011 of regulatory projects under the National Framework for Compliance and Enforcement Systems in Water Resource Management. This Framework aims to provide a nationally consistent approach to improving water resource legislation by strengthening compliance and enforcement capabilities.

This report seeks to examine water users' views on compliance and enforcement, information sources, knowledge of water regulation and resources, and through this, to identify opportunities for more efficient and effective regulation of water extraction in New South Wales (NSW). By doing so, the report complements similar studies being completed in other states under the National Framework for Compliance and Enforcement Systems for Water Resource Management.¹

In particular, this report provides an evidentiary base to allow for a more informed discussion on future water management issues by providing data on water users':

- Attitudes towards regulation and motivations for complying with legal obligations.
- Views and experiences with NOW's compliance and enforcement policies and practices.
- Sources of information and the perceived usefulness of information.
- Knowledge of water regulations and the resources used to assist with compliance.

¹ F. McCartney and J. Durante, *Understanding drivers of non-compliance with water resource legislation in Queensland* (Department of Environment and Resource Management, Queensland Government, 2013).

1.2 Research method

In order to address these issues, a survey was conducted with water users in NSW between September 2012 and July 2013. This report presents the results of the survey, including key respondent views and experiences.

1.2.1 Survey

The stated purpose of the survey was to:

- Fill a knowledge gap in understanding water users' perceptions and attitudes towards regulation, compliance and enforcement of water extraction in NSW.
- Enable NOW to better assist water users comply with their obligations under NSW water management legislation by identifying:
 - The current and/or preferred methods of water users for receiving information.
 - The types of information that best meet water users' needs.
- To provide policy advice to NOW to help them enhance their services.
- To inform industry associations and water extractors about water users' views and needs.

1.3 Structure of the report

Section 2 outlines the research methods and analysis in more detail. Section 3 outlines the social, property and water use characteristics of respondents from the survey. Sections 4-7 then outline the findings from the survey on the major themes presented in the survey. Water users' motivations for compliance motivations are discussed in Section 4. Section 5 examines compliance experience, interactions and views on NOW. Section 6 outlines findings on information sources and their usefulness and Section 7 examines knowledge of water regulations and the resources used to assist with compliance. Each of these sections contains the following five parts: a background on the issue being examined, survey findings and key conclusions. Section 8 concludes by summing up the report's findings.

2 Survey approach

Our approach to examining water users' views on compliance and enforcement, information sources, and knowledge of water regulation and resources was to utilise a quantitative survey. This formed part of broader and ongoing qualitative and quantitative study funded by the Australian Research Council into the compliance and enforcement of non-urban water extraction in NSW.

2.1 Rationale

There are a large number of water users in NSW.² These water users draw on a diversity of water sources (unregulated surface water, regulated surface water and groundwater) for a variety of purposes (e.g. stock and domestic and irrigation). Furthermore, water users themselves vary greatly in terms of property size, land use (e.g. grazing, horticulture), and other characteristics (e.g. membership of irrigation schemes, industry associations, water user groups). Given this diversity, it was decided that a quantitative survey was the best approach to try and capture relevant data.

2.2 Survey

2.2.1 Survey content

The survey contained over 100 questions that were grouped under the following themes:

- **Views on water regulation and legislation** (includes topics on the need and effectiveness of water regulation).
- **Views and experiences on monitoring and management** (includes topics on water efficiency and metering).
- **Views and experiences of NSW Office of Water** (includes topics on NOW's role as regulator and water users' experiences with compliance actions).
- **Views on water compliance and enforcement** (includes topics on perceived levels of compliance, motivations for compliance, and drivers of non-compliance).
- **Knowledge of legislation, compliance and enforcement** (includes topics on knowledge of legislation and policy).
- **Information sources and usefulness** (includes topics on information sources, their relative usefulness and effectiveness of NOW's information provision).
- **Background information** (includes details of respondents and their property and water sources).

A complete list of the survey questions is shown in Appendix 1.

Survey respondents were asked to score their level of agreement with a range of statements about NSW Office of Water (NOW), water regulation, water legislation,

² As of June 2011, there were over 7000 surface water licences and 71 000 groundwater (bore) licences managed under the *Water Act 1912* (NSW) and over 24 000 surface and groundwater licences under the *Water Management Act 2000* (NSW). At 30 June 2011, 58 per cent of *Water Act 1912* (NSW) licences had been converted to tradable Water Access Licences under the *Water Management Act 2000* (NSW). NSW Trade and Investment, Regional Infrastructure and Services, *Annual Report 2010–2011* (NSW Government, 2011) 33.

water compliance, water management and water enforcement. Most of the questions asked respondents to score their level of agreement with a statement using a 5 point scale. The score ranged from 'Strongly Disagree' to 'Strongly Agree' (with a 'Not Applicable' option also available). A few questions used a different 5 point scale (ranging from 'No knowledge' to 'Very good knowledge' with a 'Not Applicable option' also available) or asked respondents to select from the options 'yes', 'no' or 'unsure'.

2.2.2 Survey testing

NOW worked with the researchers to develop and test the research questions with relevant NOW divisions (e.g. monitoring, regulation, education). Members of the NSW Irrigators' Council and other industry associations (e.g. NSW Farmers) were also consulted in the development of the survey questions.

2.2.3 Areas surveyed

The survey was conducted in three catchments/regions:

- Macquarie-Bogan in the Central West (CW).
- Murrumbidgee/Murray Riverina in the Murray and Murrumbidgee (MM).
- Richmond in the North Coast (NC).

These regions were selected to represent a diversity of:

- Water sources (regulated rivers, unregulated rivers and groundwater).
- Locations (MM and CW are both inland, while NC is coastal).
- Authorisations (e.g. licences, approvals and stock and domestic).
- 'At risk' water sources as defined for the National Framework for Compliance and Enforcement Systems for Water Resource Management.³

Broadly speaking, many irrigators in the southern NSW area of MM are organised into corporation/cooperative irrigation schemes that hold bulk access licences. The CW area contains some irrigation schemes, but also includes farms (e.g. cotton) that pump directly from rivers and use large on-farm storages. Finally, in the NC, farms are rarely part of irrigation schemes, and instead irrigate from rivers and groundwater. However, in contrast to the other regions, NC farms (e.g. crops and stock) are less dependent on irrigation and much less likely to require their full allocations, as there is often sufficient rain to obviate the need for water extraction for irrigation purposes.⁴

Across all three regions smaller stock and domestic water users were also included. Taking water under a basic landholder right has historically been subject to little oversight by regulatory agencies. For example, water taken for stock and domestic use is not required to be metered. While such uses have a minimal impact individually on overall water consumption, they may cumulatively have a much more significant impact (with 100,000s of stock and domestic water users across the state).

³ Australian Government Department of Sustainability, Environment, Water, Population and Communities, *National Framework for Compliance and Enforcement Systems for Water Resource Management* (2012).

⁴ Cameron Holley and Darren Sinclair, 'Non-Urban Water Metering Policy: Water Users' Views On Metering And Metering Upgrades In NSW' (2013) 16(2) *Australasian Journal of Natural Resources Law and Policy* 101-131.

Taking into consideration resource and practical constraints, the survey of water users (encompassing a variety of sources and water for a variety of purposes) was conducted across two to six local government areas in each region (NC, MM and CW). These local government areas were Wellington and Narromine (CW), Jerilderie, Conargo, Deniliquin, Murray, Urana and Berrigan (MM) and Kyogle and Richmond Valley (NC). These local government areas were selected so as to capture approximately 1500 water users and a diversity of water sources (regulated rivers, unregulated rivers and groundwater) within each region.

2.2.4 Survey process

The survey (see Appendix 1) was mailed to approximately 4000 respondents. A postal survey was used as this was a method used successfully by the report authors in the past and it accounted for respondents who may not have had easy access to the internet.

The survey design and the mail-out process employed a modified Dillman approach.⁵ The survey was presented as a distinctive booklet and mailed with a postage-paid return envelope and a cover letter inviting recipients to participate in the survey. Two reminder notices and subsequently a new mail package were posted to non-respondents to encourage participation. Thank you notices were posted to respondents.

Taking into consideration resource and practical constraints, the survey began with a raw list of 4500 licence and approval holders (approximately 1500 from each of the three regions, including a full range of water users from large entitlement holders extracting water for commercial use to people extracting water solely for stock and domestic purposes). This list was refined to create a more targeted mailing list, including ensuring multiple works/licence holders would only receive one survey and removal of any repeat or incomplete addresses, as well as entries pertaining to local/state governments and commercial companies outside of NSW (who were unlikely to have the desired knowledge and experience with on property water use). A final survey list was sent to 1381 CW, 1258 MM and 1339 NC properties (totalling 3,978). The numerical results are summarised in Table 2.1.

The survey achieved an overall response rate of 22%, which was close to the 25% target deemed to be an acceptable response rate by the research team for a survey that: (i) focuses on the relatively controversial topic of compliance and enforcement; and (ii) involved water users who were likely to be suffering survey fatigue in the face of an increasing number of surveys by government and non-government sources.

⁵ Don A. Dillman, *Mail and Internet surveys: The tailored design method* (John Wiley & Sons, 2nd ed, 2007).

Table 2.1: Survey numbers and response rate

	Regional Area			Total
	CW	MM	NC	
Total licence/approval holders in sampled LGAs	1597	2119	1978	5694
Initial survey mail-out	1381	1258	1339	3978
<i>Removed</i>				
<i>Deceased</i>	20	6	22	48
<i>Blank</i>	26	18	27	71
<i>Excuse</i>	60	52	66	178
<i>Return To Sender</i>	303	71	247	621
Total removed	409	147	362	918
Useable surveys returned	214	214	245	673
Response rate	22%	19%	25%	22%

In terms of the data gathered being representative, there may be differences between respondents and non-respondents to mail surveys.⁶ Statistical comparisons of the property and social background data could not be made because the area covered by ABS statistics does not match the surveyed areas and sourced population.⁷ While a lower response increases the likelihood that non-respondents to the survey are significantly different to respondents, response rates by themselves are not good indicators of non-respondent bias,⁸ and it is impossible to completely correct for all non-respondent bias.⁹

2.3 Data analysis

Statistical analysis carried out on the survey data primarily applied Spearman's test to pairs of survey questions, using the standard implementation in Best and Roberts (1975)¹⁰ and Hollander and Wolfe (1973)¹¹. Spearman's test relies on two key assumptions. First, the data is assumed to be ordinal, interval or ratio. The majority of survey questions were presented in ordinal fashion; however, reordering was necessary in some circumstances to produce a logical order (for example Question 6 lists the response "Do not use as a source of information" as value 4 when it would more logically be of ordinal position 0). Questions that could not be logically ordered were excluded from the statistical analysis.

⁶ Emily Anne Sharp and Allen Curtis, *Groundwater management in the Namoi: a social perspective* (Institute for Land, Water and Society, Charles Sturt University, Albury, 2012) 13.

⁷ Ibid.

⁸ Barry Schouten, Fannie Cobben and Jelke Bethlehem, 'Indicators for the Representativeness of Survey Response' (2009) 35(1) *Survey Methodology* 101.

⁹ Elaine Barclay and Robyn Bartel, *Order with and without the law: Understanding perceptions and attitudes towards formal and informal controls of natural resources* (Institute for Rural Futures, Commonwealth Environment Research Facilities, UNE, 2011) 26.

¹⁰ D J Best and D E Roberts, 'Algorithm AS 89: The Upper Tail Probabilities of Spearman's rho' (1975) 24(3) *Journal of the Royal Statistical Society. Series C (Applied Statistics)* 377.

¹¹ Myles Hollander and Douglas A. Wolfe, *Nonparametric Statistical Methods* (New York: John Wiley & Sons, 1973) 185–194.

Second, the relationship between the two variables is assumed to be monotonic. This is a fairly weak assumption given the low number of ordinal classes in the survey data, and results were not found to violate the assumption. Each test produced a p-value that tested whether no correlation existed between the two variables. A p value of 0.05 was used as general criterion, but in a very small number of cases where the p value was on the threshold, expert knowledge and experience were drawn on to come to a judgement and/or clarify the situation.¹²

A validation process was also carried out on the differences in views between high volume and low volume water users. To compare these groups, three separate analyses were carried out with respondents split based on the following criteria:

- Less/greater than 30ML combined entitlements across all water access licences.¹³
- No/some extractions in the past financial year.
- No/some extractions in the past 3 financial years.

Pearson's chi-squared¹⁴ tests were carried out to test for statistically significant differences between the responses of those in the high volume and low volume water use groups. A p-value of 0.05 was used as the cut-off for statistical significance.

For reasons of succinctness, we have not included the full range of results of each of these tests.¹⁵ Rather we only discuss results in the text where statistical significance was identified.

The report also does not include answers to every question of the survey. There are a number of reasons for this, including conciseness, time and resource constraints, as well as excluding questions where we lacked confidence that the data was statistically significant or valid.

¹² We note that there were some variations in the specific scoring of survey questions; however, at an aggregate level (e.g. agree versus disagree) these differences were typically small <15%.

¹³ 30ML was chosen as the cut-off point for this analysis as, based on previous research, it was sufficient to capture smaller, but viable farms in the lesser category, not just stock and domestic users, whilst allowing for a reasonable split in the number of survey responses between the two categories.

¹⁴ Robin L Plackett, 'Karl Pearson and the chi-squared test' (1983) 51(1) *International Statistical Review* 59.

¹⁵ Unless otherwise specified, our analysis of questions excluded responses of not-applicable/unknown.

3 Social, property and water use characteristics

This section begins our discussion of the findings from the survey by providing background information on our respondents. Section 3.1 provides an analysis of the social, property size, water use and meter type data. Section 3.2 summarises the findings.

3.1 Data on survey respondents

3.1.1 Social data

The majority of respondents are male (84%, n646) and the large majority report completing either secondary or tertiary education (94%). The majority of respondents are aged between 40 and 79 years of age (90%). See Figures 3.1 and 3.2.

Figure 3.1: Age (n579)

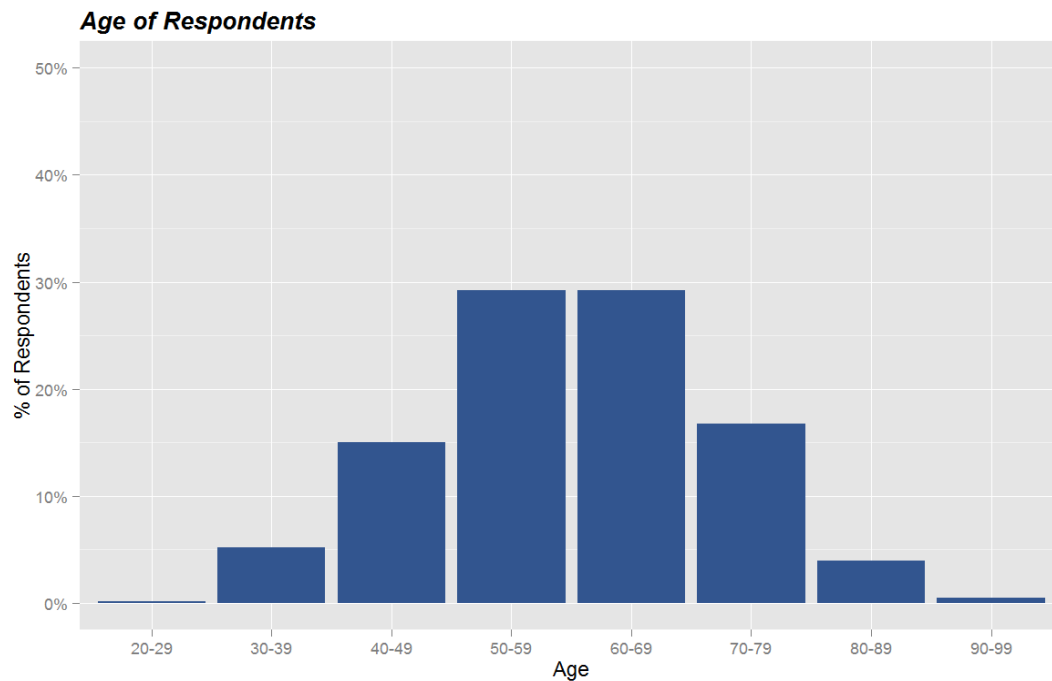
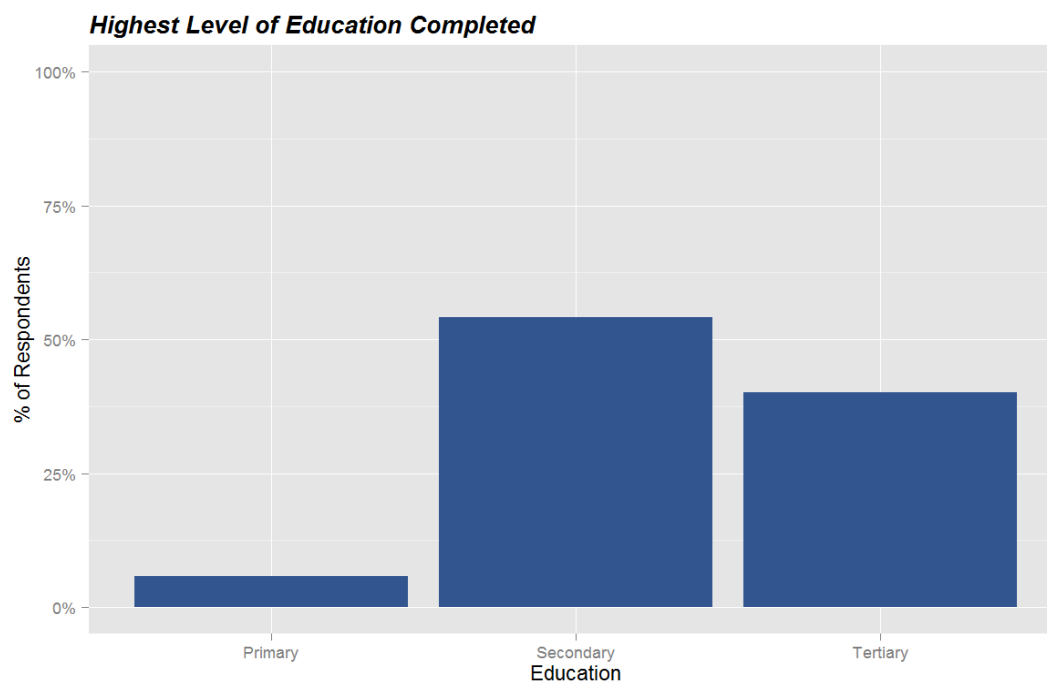
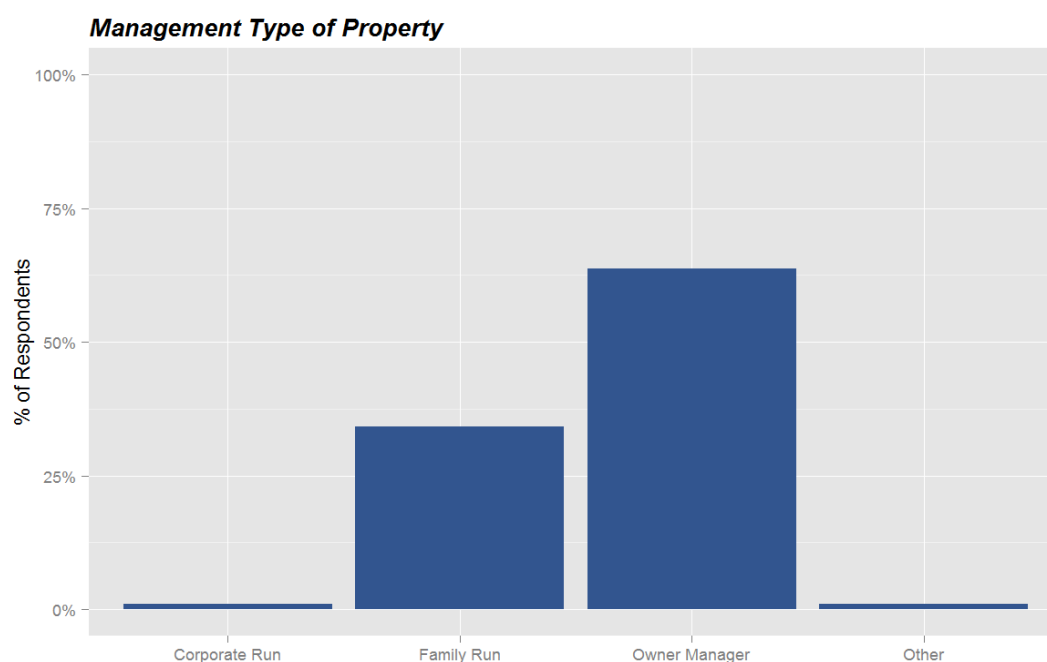


Figure 3.2: Highest level of education (n595)

Most respondents identify themselves as farmers (79%) who own and manage (64%) or family manage (34%) their business (see Table 3.1 and Figure 3.3).

Table 3.1: Industry type (n643)

Topic: Social Data	n	%
Farming	533	78.5
Forestry	1	0.1
Mining	2	0.3
Manufacturing	3	0.4
School	2	0.3
Water Utility	16	2.4
Other	86	12.7
Unknown	36	5.3

Figure 3.3: Management types (n639)

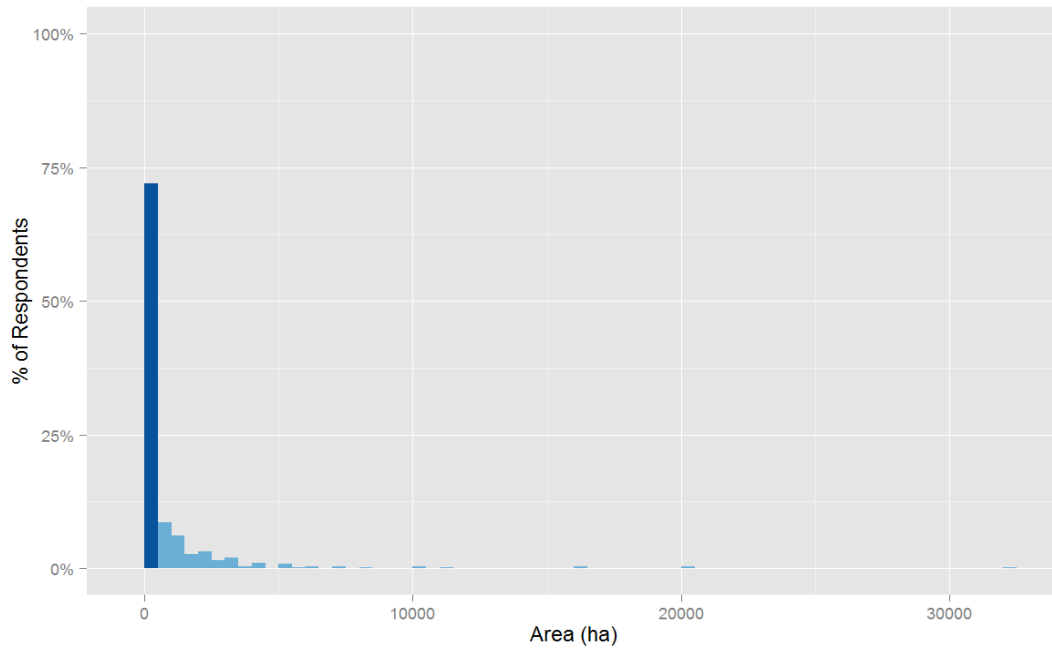
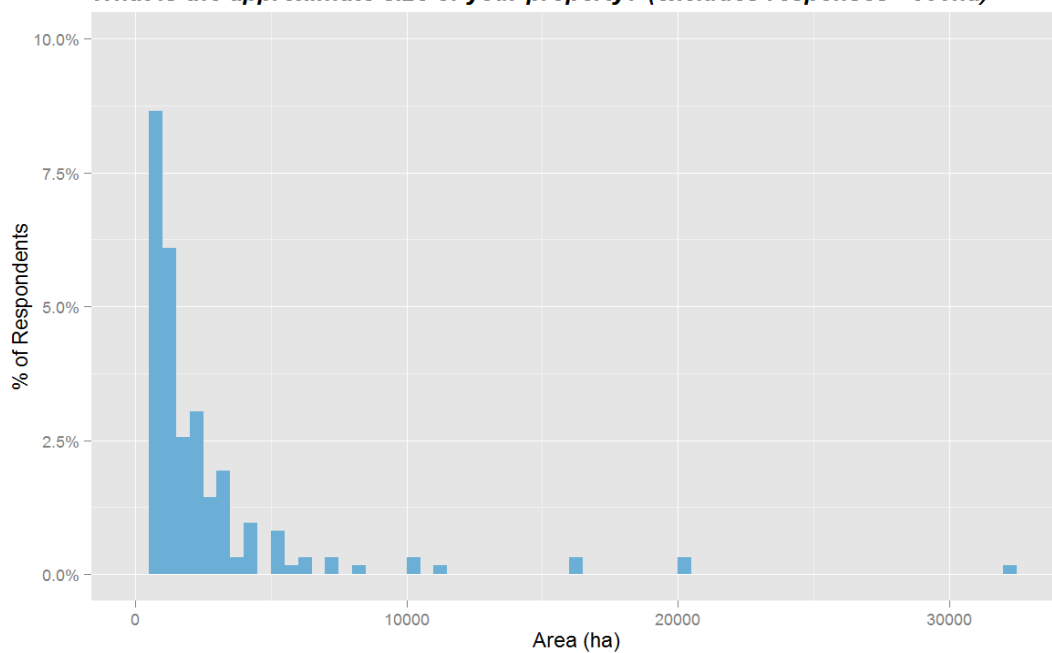
Almost half of the respondents (44%) obtain their main source of income from working on their property. Many respondents have been members of an industry group (39%) in the last 5 years, but only a small number have been members of a local Landcare or Rivercare group (18%). These results are summarised in Table 3.2.

Table 3.2: Data on income and group membership

Topic: Social data	n	Yes	No	Unknown
Is your main source of income from working on your property?	640	44%	50%	6%
In the past 5 years, have you been a member of a local Landcare or Rivercare group?	654	18%	78%	4%
In the past 5 years, have you been a member of an industry group?	653	39%	58%	4%

3.1.2 Property size

72% of properties were less than 500 hectares in size (see Figure 3.4a), with 97% less than 5000 hectares (see Figure 3.4b). The median property size was 118 hectares.

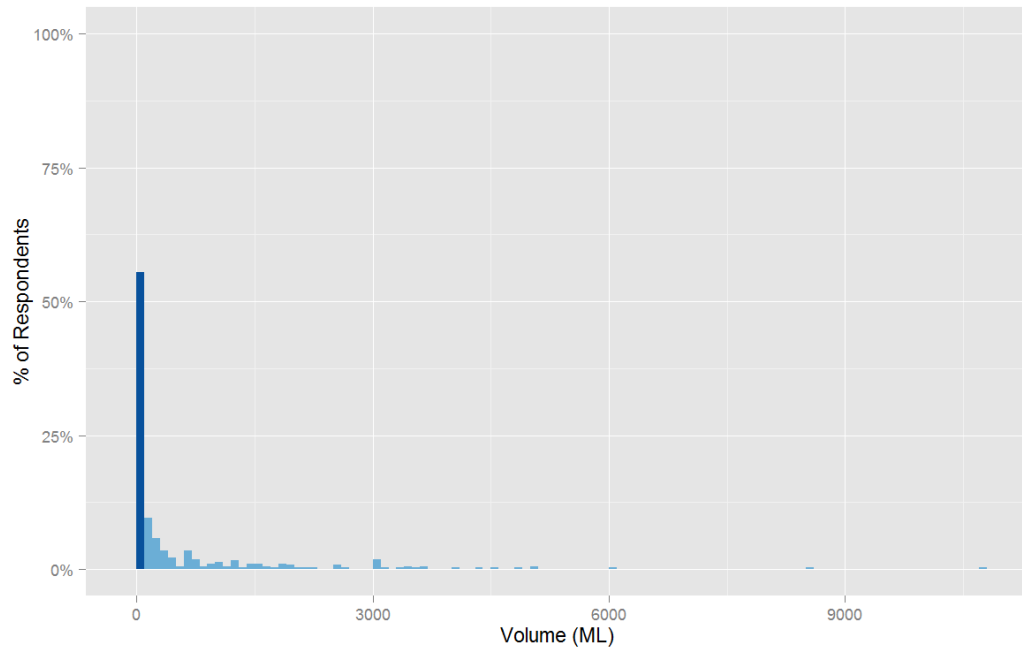
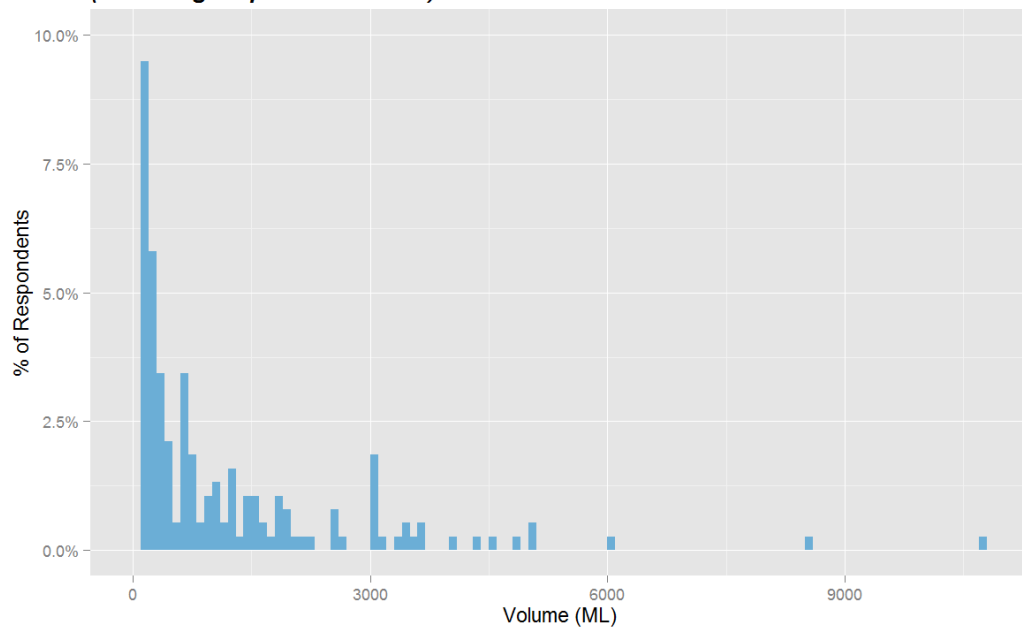
Figures 3.4a and 3.4b: Property size (n624)**3.4a What is the approximate size of your property?****3.4b What is the approximate size of your property? (excludes responses <500ha)****3.1.3 Water use**

The survey asked respondents to identify their volumes of extraction over the last year and three years, as well as their combined entitlement from all water access licences. However, only around half of all total respondents to the survey answered these questions (i.e. combined entitlement and volumes of water extracted). For example, 379 of 673 respondents reported their combined water entitlements (in contrast to 624 of 673 reporting their property size).

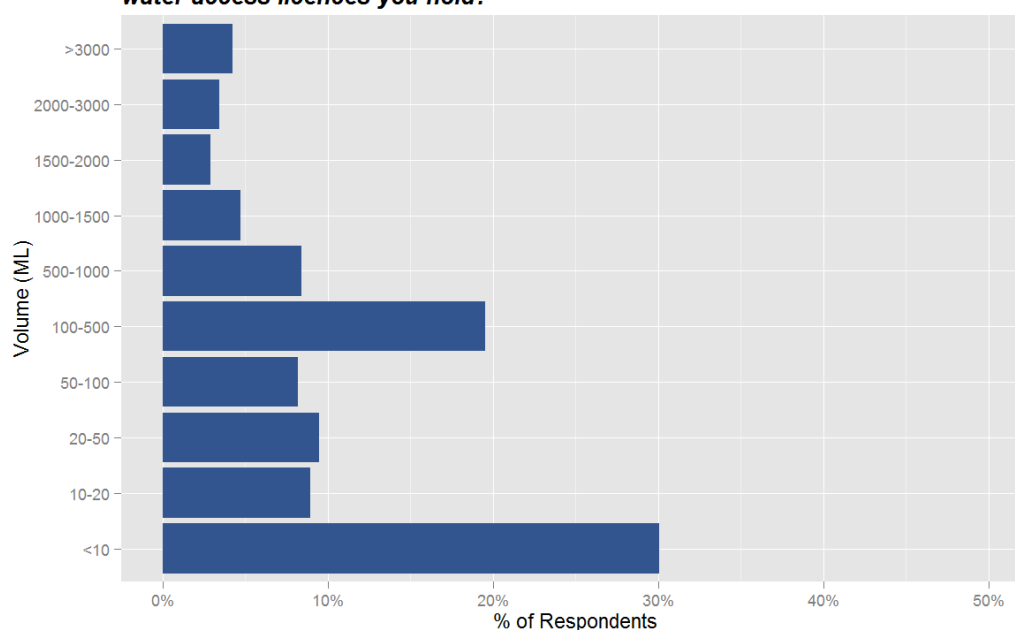
There are several possible reasons for this low response rate. For example, people may have chosen not to answer these questions because of privacy concerns (e.g. not wanting to identify their entitlements or water extraction). People may have also thought the questions did not apply to them (e.g. they may have only had a basic landholder right). These questions may have also been too time-consuming to answer, as it required people to consider use and dealings with water over a number of years. It is also possible that some people did not understand the terms/language of the question posed.

The median reported combined water entitlement was 60ML. Just over half of respondents (55%) held combined entitlements for less than 100 ML of water (see Figure 3.5a), with 94% holding entitlements for less than 3000 ML (see Figure 3.5b). When presenting combined water entitlements as ranges of volume (see Figure 3.5c), the most commonly reported combined entitlements were <10ML (30%), 10-100ML (27%) and 100-500ML (approximately 20%). Other responses included 500-1000ML (8%), 1000-2000ML (8%), 2000-3000ML (3%) and >3000ML (4%).

Given that only half of all survey respondents answered the combined entitlement question (as discussed above), it is difficult to draw conclusions regarding the spread of reported combined entitlements. One possible reason for the higher proportion of smaller entitlements is that there were a large number of smaller water users within the regions surveyed. The survey was sent to people who either had a water access licence or an approval. It was not known, however, whether these same people were exercising basic landholder rights as a licence or approval is not required for basic landholder rights unless they have a bore for stock and domestic use (in which case an approval is required for construction and use of the bore under the *Water Management Act 2000* (NSW)).

Figures 3.5a to 3.5c: Combined entitlement of water access licences (n = 379)**3.5a** *What is the approximate combined entitlement of all water access licences you hold?***3.5b** *What is the approximate combined entitlement of all water access licences you hold? (excluding responses <100ML)*

3.5c What is the approximate combined entitlement of all water access licences you hold?



The median reported total volume of water extraction for the last financial year (n390) was 1 ML with 45% reporting zero water extraction. Just over three-quarters of respondents (77%) extracted less than 200ML of water, with 95% extracting less than 2000 ML.

Regulated surface water accounted for most of extracted water volume (87%), with only 11% and 2% of extracted volume coming from groundwater and unregulated water, respectively (see Figure 3.6a-3.6b).

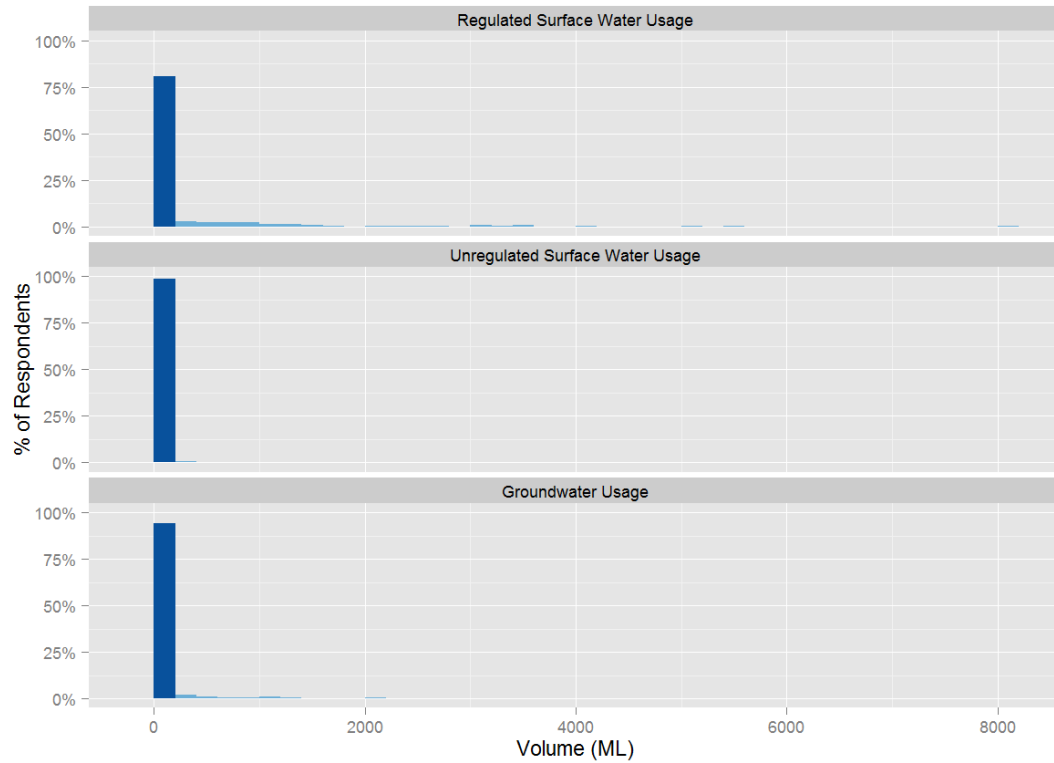
A similar trend is evident relating to total water extraction over the last three financial years. The median reported total water extraction for the last three financial years (n386) was 1.5 with 47% reporting zero water extraction. 80% of respondents extracted less than 500ML of water, with 97% extracting less than 5000 ML.

There are a number of possible reasons for the high proportion of respondents reporting no to minimal extraction. One possible explanation suggested by the data is that almost half of those who reported zero water extraction (47% last financial year; and 44% last three financial years) came from the North Coast area. It is possible that heavier rainfall in the North Coast over the past few years may explain the high proportion of respondents not extracting any water. It is also possible the results reflect the much greater proportion of water users holding only basic landholder rights in NSW (who are likely to extract no to minimal amounts) compared to water entitlement holders (who are more likely to extract water).

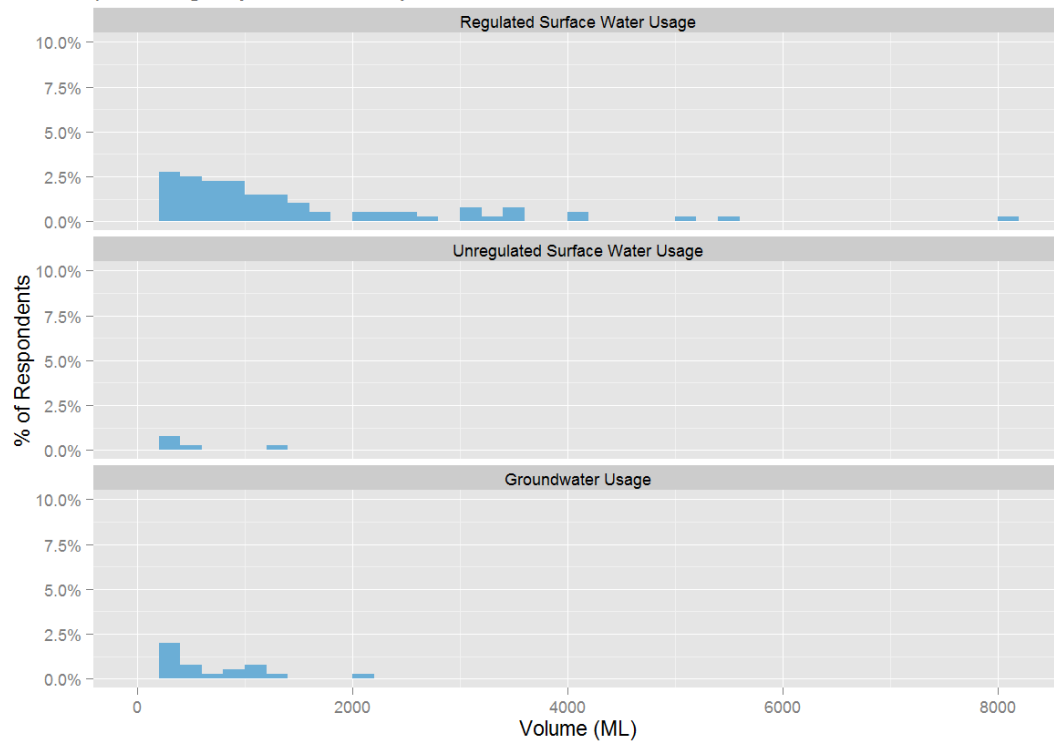
Across three financial years, 80% of respondents used regulated surface water, with only 17% and 3% extracting groundwater and unregulated water, respectively (see Figures 3.7a-3.7d).

Figures 3.6a and 3.6b: Total volume of surface, unregulated and groundwater extracted in the last financial year (n390)

3.6a What total volume of water (by type) did you extract in the last financial year?

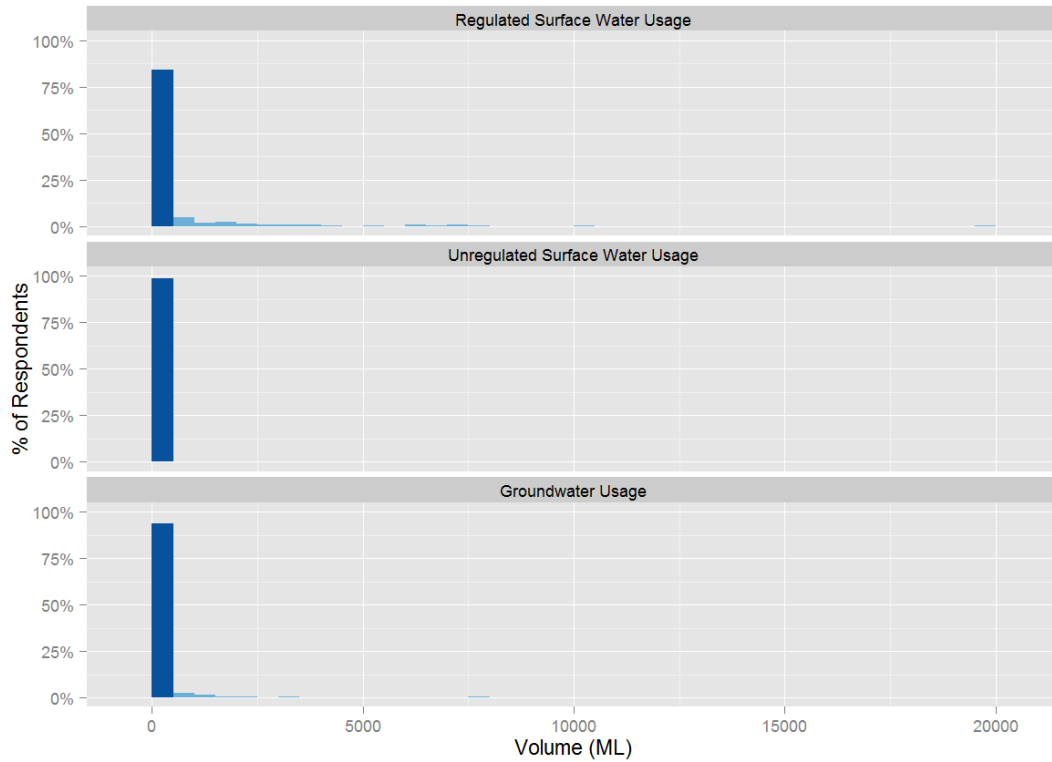


3.6b What total volume of water (by type) did you extract in the last financial year? (excluding responses <200ML)

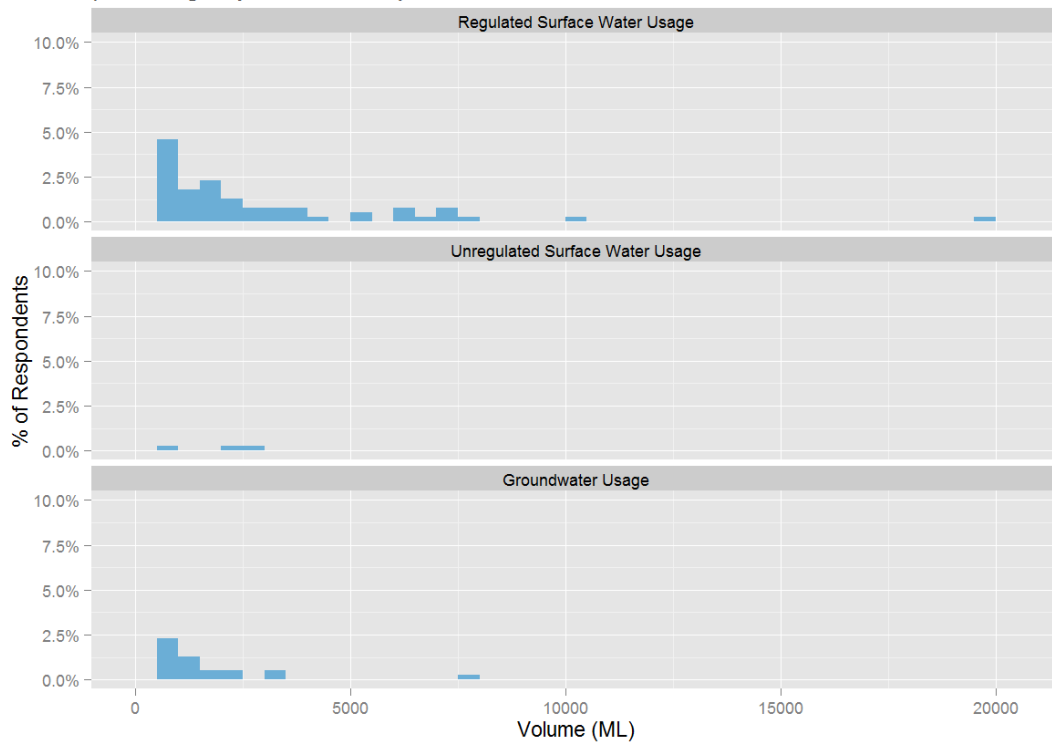


Figures 3.7a and 3.7b: Total volume of surface, unregulated and groundwater extracted in the last 3 financial years (n386)

3.7a *What total volume of water (by type) did you extract in the last 3 financial years?*



3.7b *What total volume of water (by type) did you extract in the last 3 financial years? (excluding responses <500ML)*



3.1.4 Meter type

The survey asked respondents to identify what type of water meter they had. Slightly over two-thirds of respondents (68%) reported not having a meter. As noted in 7.2.3.1 the survey includes respondents who may not be required to have meters such as those who only use stock and domestic water. Of those that did have a meter, the majority had a mechanical meter (15%) or an electromechanical meter (9%) (see Table 3.3).

There was large variation between the three regions regarding the type of meters. The majority of MM respondents report having a meter (64%). In contrast, much smaller proportions of respondents have meters in CW (25%) or the NC (8%) (see Figure 3.8).

Figure 3.8: What types of water meter(s) do you have? (n634: 202 (CW), 202 (MM), 230 (NC))

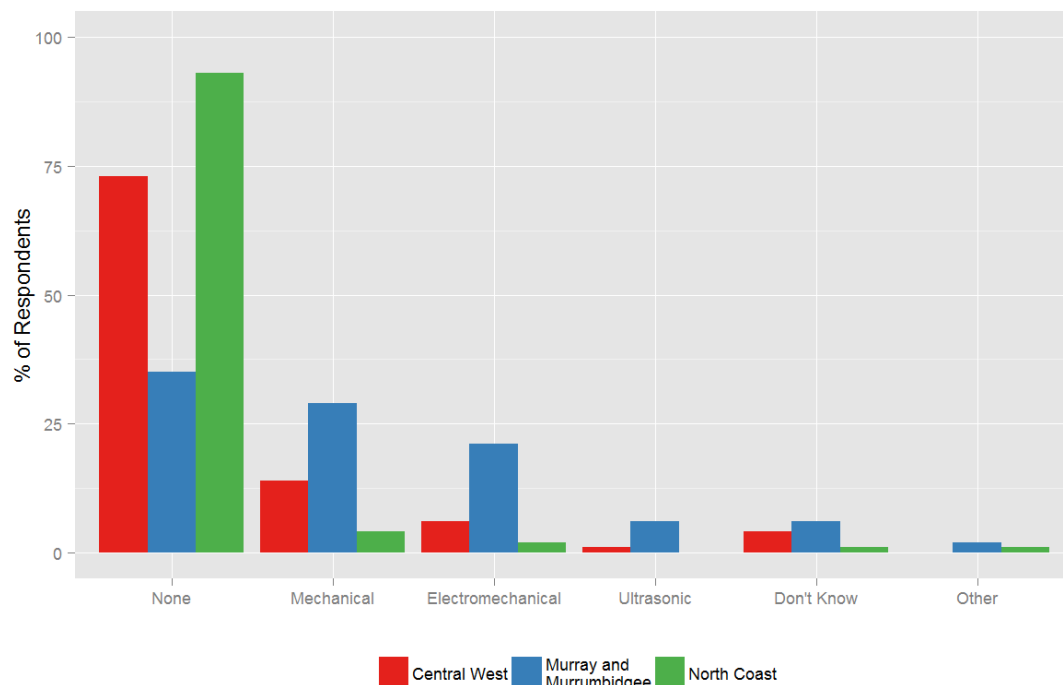


Table 3.3: What types of water meter(s) do you have?

Topic: Type of meter	Total
None	68%
Don't Know	4%
Mechanical	15%
Electromechanical	9%
Ultrasonic	3%
Other	1%
n	634

3.2 Survey summary

The respondents are predominately males aged over 40 years of age who are well-educated farmers that manage the property themselves or with their family. The properties are less than 500 hectares approximately. Around half of respondents conducted little to no extraction over the last three years, with around half of respondents holding entitlements less than 10ML and between 100-500ML. Almost two-thirds of respondents do not have a meter, however this varies between regions, with fewer NC (8%) and CW (25%) respondents having meters, while more MM respondents (65%) report having meters. Of those that do have meters, mechanical are the most common, followed by electronic meters.

4 Compliance motivations

4.1 Introduction

Under NSW water laws, water users may be subject to a range of obligations,¹⁶ including: (i) having a licence for taking water;¹⁷ (ii) meeting the terms and conditions of a licence;¹⁸ (iii) constructing or using works with approval (for example, constructing a bore);¹⁹ (iv) keeping proper meter records;²⁰ and/or (v) only interfering with an aquifer with the relevant approval.²¹ Despite these obligations, some water users may act illegally, such as accessing water without a licence or breaching their licence conditions.²²

A range of factors may cause illegal action, or otherwise motivate water users to comply with their obligations under NSW water laws. For example, people may act illegally because they lack knowledge of the rules. In contrast, people and companies have been shown to comply with legal obligations because of the threat of legal punishment,²³ economic costs, a belief in the legitimacy of regulation,²⁴ perceived shame or morality,²⁵ informal sanctions inflicted by local communities and non-government actors,²⁶ and/or individual or perceived societal norms.²⁷

In exploring what motivates users to comply, it is also important to understand their general perceptions of levels of compliance. People who are regulated are less likely to comply with rules where norms of non-compliance are widespread in practice.

Very few of the above factors have been studied in the context of non-urban water use.²⁸ There is still much work to be done to understand whether and how these various factors and motivations operate in the context of non-urban water use. The present study accordingly asked key questions to investigate water users' motivations to comply:

- What motivates water users to comply with NSW water laws?
- Do water users view certain circumstances (e.g. drought, economic hardship) as justifying illegal activity?
- Do views on compliance differ with the characteristics of water users?

To answer these questions, the survey sought to obtain respondents' views about water compliance and enforcement in NSW. Section 4.2 contains the survey results, and explores compliance motivations (4.2.1) and justification of non-compliance

¹⁶ For example, *Water Management Act 2000* (NSW) s 60B.

¹⁷ *Water Management Act 2000* (NSW) s 60A.

¹⁸ *Ibid* s 60B.

¹⁹ *Ibid* ss 91A–91F, 346.

²⁰ *Ibid* ss 91H–91K.

²¹ *Ibid* ss 91F, 345.

²² Sharp & Curtis, above n 6.

²³ Valerie Braithwaite, *Defiance in Taxation and Governance: Resisting and Dismissing Authority in a Democracy* (Edward Elgar, 2009).

²⁴ T R Tyler, *Readings in Procedural Justice* (Ashgate Press, 2005).

²⁵ Eliza Ahmed and John Braithwaite, 'Forgiveness, Shaming, Shame and Bullying' (2005) 38(3) *The Australian and New Zealand Journal of Criminology* 298.

²⁶ Neil Gunningham, Robert A. Kagan and Dorothy Thornton, *Shades of Green: Business, Regulation and Environment* (Stanford University Press, 2003).

²⁷ Jean-Robert Tyran and Lars P Feld, 'Achieving Compliance when Legal Sanctions are Non-deterrent' (2006) 108 *Scandinavian Journal of Economics* 135.

²⁸ Barclay and Bartel, above n 9; McCartney and Durante, above n 1.

(4.2.2) before discussing whether different water user characteristics affect motivations for compliance or non-compliance (4.2.3). Section 4.3 concludes with a summary of the key findings.

4.2 Results

4.2.1 Compliance motivations

Motivations to comply with laws are likely to vary among individual water users, and different motivations may operate simultaneously or at different times in different contexts. Even so, the survey data did show some common factors regarding motivations to comply with water rules. The motivations most commonly agreed with include fairness, social reputation of water users, peer reputation and morals (what is the 'right' thing to do). Respondents also appear more likely to comply because they share a strong belief in the need/legitimacy of the regulation.

The data suggested that far fewer respondents saw criminal records and penalties as strong drivers of compliance.

4.2.1.1 Most common motivators of compliance

Compliance with laws can be impacted by factors such as social and peer reputation, legal penalties or broader social norms/morals (e.g. 'fairness'). The survey tested a range of these factors (see Table 4.1) and all attracted agreement from an overwhelming majority of respondents. This included agreement that complying with their licence conditions is important because breaking the rules is unfair to other water users (93%), reflects badly on all water users (84%) and reflects badly on peer reputation (81%). There is also overwhelming agreement from respondents that complying with water laws is the right thing to do (95%).²⁹

Table 4.1: Views on compliance

Topic: Views on reasons for compliance	n	Strongly disagree	Disagree	Unsure	Agree	Strongly agree
Complying with water laws is the right thing to do	617	1%	0%	4%	60%	35%
Complying with my licence conditions is important because breaking the rules is unfair to other water users	582	1%	2%	4%	60%	33%
Complying with my licence conditions is important because breaking the rules reflects badly on all water users	585	1%	5%	9%	55%	29%
Complying with my licence conditions is important because breaking the rules reflects badly on my reputation with my peers	570	1%	6%	12%	52%	29%

²⁹ Interestingly, respondents who agree that water laws and regulations are too complex or agree that they find it difficult to understand their licence or approval conditions are statistically significantly likely to disagree that complying is important along these variables (is the right thing to do, unfair to other water users, reflects badly on all water users and reflects badly on reputation with my peers).

The perceived legitimacy of laws and trust in the legal system can also be key drivers for compliance. Legitimacy and trust in the laws can be undermined where regulated actors disagree with legislative aims and content.³⁰ The survey accordingly asked respondents to score a range of commonly identified aims and content of NSW water regulation (e.g. protecting the environment) (see Table 4.2).³¹ Again there is an overwhelming agreement amongst respondents that water regulation is needed to: sustainably manage water resources (90%), protect the rights of water users (89%), protect the long-term viability of communities (86%) and protect the environment (72%).

These responses suggest respondents are likely to comply with existing laws because they agree with the need for water regulation.

Table 4.2: Views on the need for water regulation

Topic: Views on water regulation	n	Strongly disagree	Disagree	Unsure	Agree	Strongly agree
Water regulation is needed to sustainably manage water resources	656	3%	3%	5%	59%	31%
Water regulation is needed to protect the rights of water users	657	3%	4%	5%	55%	34%
Water regulation is needed to protect the environment	656	5%	10%	13%	48%	24%
Water regulation is needed to protect the long-term viability of communities	657	3%	5%	6%	47%	39%

4.2.1.2 Less common motivators of compliance

The threat of legal punishment (in the form of criminal or administrative sanctions) is often identified as a major driver of compliance.³² However, in contrast to the responses regarding the above social, moral, peer and legitimacy compliance motivations (where agreement tended to be greater than 80%), comparatively fewer (although still substantial) numbers of respondents agree that criminal records (62%) are a strong deterrent for illegal water extraction, and fewer again agree that penalties (35%) are a deterrent for illegal water extraction (see Table 4.3).

This suggests that while traditional legal punishment is an important motivator for compliance, the respondents perceive softer sanctions (e.g. social and peer reputation) and morals (fairness) as more effective in driving compliance than administrative or criminal sanctions.³³

However, it is important to note that the impact of penalties and criminal records as a motivator of compliance depend on water users believing people illegally taking water will be caught and prosecuted. Just over one-third of respondents agree they would be caught or prosecuted (33% and 35% respectively).³⁴ Further, only 26% of

³⁰ Barclay and Bartel, above n 9, pp 125-126.

³¹ Some of these needs directly relate to the objects of the *Water Management Act 2000* (e.g. s 3(b)) while others correspond to more general community views or publicly stated norms.

³² Robert Allen Kagan, *Adversarial Legalism: The American Way of Law* (Harvard University Press, 2001).

³³ While there is no doubt a complex interaction between social norms and broader legal norms (in terms of defining what is socially acceptable), this was not tested.

³⁴ There were also significant relationships between the knowledge variables and responses to

respondents agree that compliance officers (who enforce the laws and hand out penalties) regularly work in their region (see Table 4.3). Given these findings, it is possible that the lower levels of support for legal punishment as a motivator of compliance is attributable to penalties/criminal record remaining more of a 'theoretical threat' than a reality in NSW because respondents do not think those people illegally taking water are going to be caught.

This proposition appears to be supported by a statistically significant relationship found between the few respondents who agree NOW compliance officers regularly work in their region (26%) and responses to statements about the likelihood of being caught and prosecuted. Those who agree that compliance officers are active in their region are more likely to agree that people will be caught and prosecuted, and that penalties for water extraction are a strong deterrent. These trends are particularly evidenced when comparing different responses on water use (discussed below).

In summary, where legal punishment is seen to be more likely (due to the presence of compliance officers), legal punishment is often more likely to be a motivator of compliance.

Table 4.3: Views on compliance and enforcement

Topic: Views on compliance and enforcement	n	Strongly disagree	Disagree	Unsure	Agree	Strongly agree
The penalties for illegal water extraction are a strong deterrent	601	4%	7%	54%	29%	6%
Getting a criminal record for carrying out illegal water activities is a strong deterrent	607	4%	7%	27%	45%	17%
People illegally taking water will be caught	611	5%	11%	51%	29%	4%
People illegally taking water will be prosecuted	609	4%	7%	54%	30%	5%
Compliance officers from the Office of Water regularly work in my region	533	8%	12%	55%	21%	5%

4.2.2 Justifications of non-compliance

While water users are willing to comply with the law for a variety of reasons, they may equally have multiple reasons for non-compliance. The survey asked whether respondents agree with a range of factors that may drive the illegal taking of water (e.g. lack of knowledge about the rules, a lack of water availability due to drought, increased water availability due to flooding) (Table 4.4). Close to half agree that illegal water extraction occurs because of desire for economic advantage (49%). However, between two-thirds and three-quarters of respondents disagree that tough economic conditions (71%), high water costs (69%) and changes in water availability due to drought (73%) and flooding (66%) justified the illegal taking of water.

questions about whether people illegally taking water would be caught and prosecuted. Those who reported good knowledge of the compliance policy, penalties, *Water Management Act 2000* (NSW), *Water Act 1912* (NSW) and enforcement actions under the *Water Management Act 2000* (NSW) were likely to agree that people illegally taking water will be caught and will be prosecuted. Those with better knowledge of water law rules and process appear more confident that these rules are being applied in a manner that will catch people and lead to prosecution.

The survey also asked respondents about whether illegal water extraction occurs because of lack of awareness of the rules, and because the risk of detection is low. In both cases, the data offers few clear pictures, with no majority view on agreement or disagreement emerging and high levels of uncertainty (35% for lack of awareness and 46% for low risk of detection as a cause of illegal extraction).³⁵

Table 4.4: Views on non-compliance and enforcement

Topic: Views on non-compliance	n	Strongly disagree	Disagree	Unsure	Agree	Strongly agree
Tough economic conditions can justify the illegal taking of water	596	30%	41%	16%	10%	3%
High water costs can justify the illegal taking of water	599	29%	40%	16%	12%	3%
The decreased availability of water due to drought can justify the illegal taking of water	604	31%	42%	14%	9%	3%
The increased availability of water due to flooding can justify the illegal taking of water	595	25%	41%	19%	11%	4%
Illegal water extraction occurs because of a desire for economic advantage	596	5%	12%	35%	36%	13%
Illegal water extraction occurs because of a lack of awareness of the rules	598	10%	31%	35%	22%	2%
Illegal water extraction occurs because the risk of detection is low	601	5%	19%	46%	25%	5%

Beyond the above justifications, norms of non-compliance can also motivate further illegal activity from actors. That is, regulated actors are less likely to comply with rules where others are also breaking the rules.

To test this motivator of non-compliance, the survey asked respondents to score statements about: (i) compliance with licence conditions in their region; and (ii) illegal water extraction (see Table 4.5). Approximately half of the respondents (49%) agree they were confident water users in their region complied with their licence conditions. However, 45% of respondents are unsure whether they are confident about such compliance in their region. Further, 60% are also unsure whether illegal water extraction is a big problem in their region, and 67% as to whether illegal water extraction had increased over the past ten years. However, in both cases the next largest grouping of responses disagree that illegal water extraction is a problem (34%) or that it had increased over the last 10 years (27%).

³⁵ We note that there was some variation on these two questions between regions. In particular, MM respondents were less likely to agree that a lack of awareness of the rules was a cause of illegal activity (13%) compared to CW (24%) and NC (33%). Similarly, respondents from MM were less likely to agree that low risks of detection were a cause of illegal activity (22%), compared to CW (28%) and NC (39%).

Table 4.5: Views on levels of compliance

Topic: Levels of compliance	n	Strongly disagree	Disagree	Unsure	Agree	Strongly agree
I am confident water users in my region comply with their licence conditions	604	3%	3%	45%	39%	10%
Illegal water extraction is a big problem in my region	583	10%	24%	60%	4%	2%
Illegal water extraction has increased over the past ten years	587	9%	18%	67%	4%	2%

4.2.3 Discussion – do motivators of compliance and non-compliance vary with characteristics of water users?

As we have seen above, respondents are comparatively more likely to agree that compliance is motivated by norms of fairness, social reputation of water users, peer reputation, morals and a belief in the need/legitimacy of the regulation (than criminal records and penalties). Further, economic advantage (rather than tough economic conditions, high water costs and changes in water availability due to drought and flooding) is more likely to be seen as a reason for the illegal taking of water.

While these general findings are important, it is also important to explore whether responses and opinions on compliance and non-compliance change with different types and characteristics of water users. This section highlights some of these key variations, namely, the impact of knowledge and understanding of law and regulation, levels of education, property size, combined entitlement and extraction activity, and role of compliance officers.

4.2.3.1 Knowledge and understanding of laws

Water users' understanding and knowledge of laws and regulation has a significant impact on motivations for compliance and non-compliance.

Indeed, respondents who agree that water laws and regulations are too complex (47%) or agree that they find it difficult to understand their licence or approval conditions (27%) (Table 4.6) are more likely to agree that tough economic conditions, high water costs, drought and flooding and a lack of awareness of the rules justify the illegal taking of water. This suggests those who see water laws as difficult may be more willing to accept reasons for breaking these regulations.

Similarly, respondents who agree that water laws and regulations are too complex or agree that they found it difficult to understand their licence or approval conditions are more likely to disagree that water regulation is needed to sustainably manage water resources, protect rights of water users, or protect the environment. It may be that those who see water laws as too complex/difficult to understand find it more difficult to identify value in the aims and content of regulation. In such cases, non-compliance may be more likely.

Table 4.6: Views on regulation and licence conditions

Topic: Views on regulation complexity and understanding	n	Strongly disagree	Disagree	Unsure	Agree	Strongly agree
Water laws and regulations are too complex	589	2%	19%	32%	34%	13%
I find it difficult to understand my licence or approval conditions	544	6%	46%	21%	21%	6%

There is also a positive statistical relationship between knowledge variables and agreement that illegal water extraction occurs because of a lack of awareness of the rules. The majority of respondents who report very little knowledge of the compliance policy, penalties, *Water Management Act 2000*, *Water Act 1912* and enforcement actions under the *Water Management Act 2000* (see section 6) are more likely to agree that illegal water extraction occurs because of a lack of awareness of the rules.

It is possible those without knowledge of the rules, or those who find them complex and difficult to understand, think it more likely that people are accidentally/unwillingly breaking 'unknown' rules.

There were also statistically significant relationships between knowledge variables and views on penalties and criminal records as motivators of compliance. The respondents who report good knowledge of NOW's compliance policy, penalties for illegal water extraction, the *Water Management Act 2000*, *Water Act 1912* or different enforcement actions under the *Water Management Act 2000* (see section 7 below) are more likely to agree that penalties and a criminal record for illegal water extraction are a strong deterrent. Similarly those with little or no knowledge of these sources are more likely to disagree that penalties and a criminal record are strong deterrents.

Based on this, the reported lack of 'deterrence' identified in penalties and criminal record may reflect a lack of knowledge of what, when and how penalties and criminal records apply to illegal activities.

4.2.3.2 Education

Those with higher levels of education (see Figure 3.2 above) are more likely to disagree that flooding, high water costs, tough economic conditions and drought justify the illegal taking of water.

Respondents reporting higher education levels are also more likely to see current regulation as needed/legitimate, agreeing that water regulation is needed to sustainably manage water resources, protect the long-term viability of communities and protect the environment.

4.2.3.3 Property size

There is also a significant relationship evident between property size and justifications for illegally taking water. Those on smaller properties are more likely to agree that high water costs, tough economic conditions, and drought can justify illegal taking of water, while those on larger properties are more likely to disagree.

4.2.3.4 Combined entitlement and extraction activity

Those respondents with allocations greater than 30ML per annum express significantly different views to those with allocations less than 30ML regarding whether flooding can justify illegal water takes. For example, respondents with larger entitlements are more likely to disagree with this statement – suggesting larger entitlement holders may be more attuned to the importance of floodwater than users with smaller water entitlements.

Furthermore, those with larger entitlements appear more likely to agree that NOW compliance officers work regularly in their region and/or people illegally taking water will be caught.

Similarly, those that had been extracting water in the last financial year and last three financial years exhibited significantly different views to those that had not extracted over the same time periods. For example, they were significantly more likely to agree that compliance officers work in their region and more likely to agree that penalties are a strong deterrent.

This suggests the possibility that those with larger allocations/active extractors are more aware of NOW compliance officers. Accordingly the deterrent effect of penalties and being caught for illegal activity appears higher for these groups than those with smaller entitlements/non-extractors.

4.2.3.5 Compliance officers

Those who agree NOW compliance officers regularly work in their region (Table 4.3) are more likely to disagree that tough economic conditions can justify illegal activity, and that drought justifies illegal water extraction. In contrast, those who disagree that compliance officers regularly work in the region are more likely to agree with these statements. It is possible that the belief that compliance officers are monitoring activities limits water users' justifications for breaking the rules.

4.2.4 Conclusion

In summary, a range of issues appear to have a significant impact on motivations for compliance:

- Those that agree water laws and regulations are too complex or find it difficult to understand their licence or approval conditions are more likely to agree with a range of justifications for illegally taking water. They are also less likely to identify with various aims and content of the laws (and therefore may be more inclined to break them).
- Those with good knowledge of a range of water laws and policies are more likely to agree that penalties and a criminal record for illegal water extraction are a strong deterrent.
- Those who agree NOW compliance officers regularly work in their region are less likely to agree with reasons for breaking laws and more likely to agree people will be caught and prosecuted, and that penalties are a strong deterrent to illegal extraction.
- Respondents with higher levels of education are more likely to agree with many of the aims and content of the water laws and disagree with many of the justifications for illegal activity.

- Those on smaller properties are more likely than those on larger properties to agree that high costs, tough economic conditions and drought can justify illegal taking of water.
- Those with allocations greater than 30ML and active extractors have different views to those with allocations less than 30ML and who are not active extractors (e.g. the former are more aware of NOW compliance officers in their region, and appear more likely to agree that there is a likelihood of being caught for illegal activity and that penalties have a deterrent effect).

4.3 Summary of key findings

The survey data evidences a range of factors regarding motivations to comply and not comply with water rules.

Approximately half of survey respondents are confident that water users in their regions comply with their licence conditions. This suggests that, collectively, water users view being in compliance with water laws as the social norm.

The motivations to comply most commonly included fairness, social reputation of water users, peer reputation and morals (what is the 'right' thing to do). The overwhelming agreement by respondents for the need for water regulation suggests that the need/legitimacy of the regulation may also be a driver for compliance.

The data suggested that far fewer respondents see criminal records and penalties as strong drivers of compliance; however this appears to be attributable to the lack of a perceived/credible threat of these penalties being enforced. Further, the effectiveness of penalties and criminal record as a driver of compliance appears to improve where there is good knowledge of a range of water laws and policies.

A desire for economic advantage is the primary reported reason for illegal water extraction. Tough economic conditions, high water costs, and changes in availability of water due to drought and flooding are not widely seen to justify the illegal taking of water. However, those that have lower levels of education agree water laws and regulations are too complex or find it difficult to understand their licence or approval conditions are more likely to agree with key reasons for illegally taking water. They are also less likely to identify with the aims and content of the laws (and therefore may be more inclined to break them).

Those on smaller properties are more likely than those on larger properties to agree that high costs, tough economic conditions and drought can justify illegal taking of water.

Those who agree NOW compliance officers regularly work in their region are less likely to agree with reasons for breaking laws and more likely to agree people will be caught and prosecuted, and that penalties are a strong deterrent to illegal extraction.

Those with allocations greater than 30ML and active extractors have different views to those with allocations less than 30ML and who are not active extractors (e.g. the former are more aware of NOW compliance officers in their region, and appear more likely to agree that there is a likelihood of being caught for illegal activity and that penalties have a deterrent effect).

5 Compliance experiences, interactions and views

5.1 Introduction

The experiences and interactions water users have with NOW compliance officers and other authorities, including State Water officials, can shape their views on government and its regulatory role and activities. They can also influence water users' future behaviours. This report examined such regulatory encounters and how they have impacted on water users' views. Survey questions addressed water users' confidence in NOW's ability to target and detect illegal extractions, investigate non-compliance and take appropriate enforcement actions. They also encompassed water users' personal interactions with NOW officials, in particular, their frequency, and whether officials were helpful, fair and equitable and displayed good judgment. Importantly, those water users that had been subject to enforcement actions were given the opportunity to reflect on these experiences in the survey.

The findings outlined in this section may assist to:

- Identify ways to improve compliance and enforcement operations.
- Identify where best to direct scarce regulatory resources, for example, raise the profile of compliance officers, emphasise the provision of information and assistance or prioritise prosecutions.
- Highlight distinctions between and the relative roles of related officials/agencies, for example, State Water.

5.2 Results

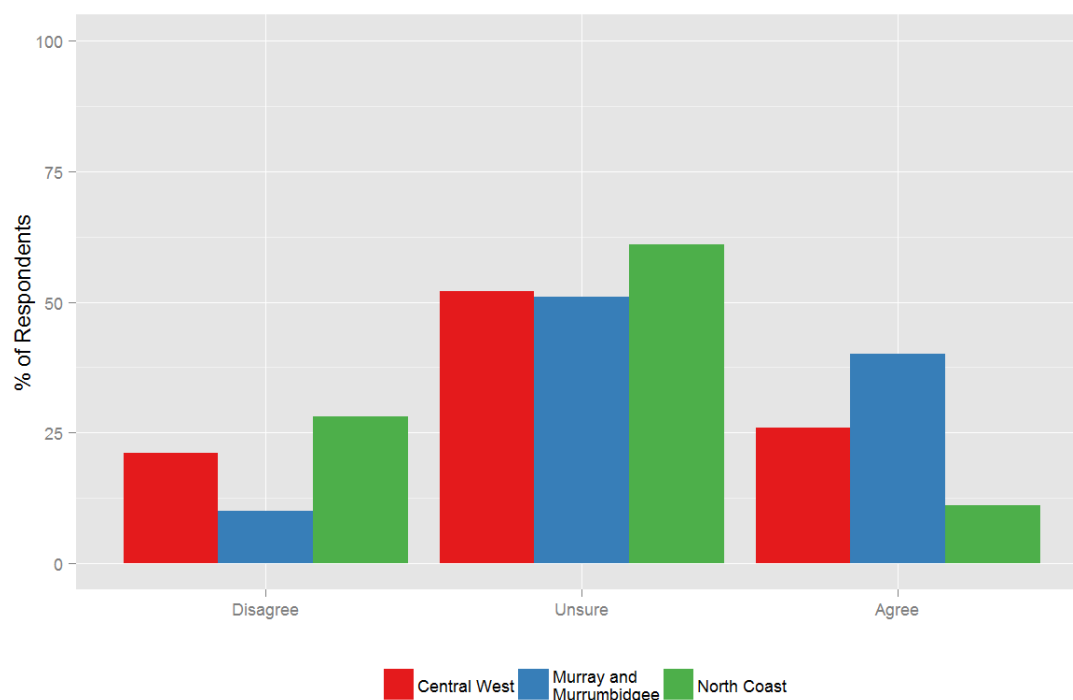
5.2.1 Experiences with NOW officials

The provision of a visible and active inspectoral presence is an important component of regulatory deterrence. Compliance officers can also build goodwill with the regulated community and, where appropriate, provide assistance in how to achieve compliance. At this time, there were 14 compliance officers and 8 monitoring officers working for NOW in NSW. Most survey respondents report limited knowledge of those NOW compliance officers. For example, around a quarter agree that compliance officers regularly work in their region (see Table 5.1). Agreement is least pronounced in NC (11%), and most in MM (40%). CW respondents fall between the two (26%) (see Figure 5.1). Overall, only 15% of respondents (n622) report that a NOW compliance officer conducted an inspection of their property..

Table 5.1: Experiences with compliance officers, licencing officers and meter readers

Topic: NOW officers and State Water meter readers	n	Strongly disagree	Disagree	Unsure	Agree	Strongly agree
Compliance officers from the Office of Water regularly work in my region	533	8%	12%	55%	21%	5%
Office of Water compliance or licensing officers have helped me to meet my licence obligations	430	14%	29%	22%	28%	7%
State Water meter readers have helped me to meet my licence obligations	314	14%	25%	25%	28%	8%

Figure 5.1: Views on whether compliance officers from the Office of Water regularly work in regions (n533: 152 (CW), 185 (MM), 196 (NC))



Just over a third of respondents agree that NOW compliance and licensing officers (Table 5.1 - 35%) and State Water officials (Table 5.1 - 36%) provide assistance to respondents in meeting their compliance obligations (considering that compliance and licensing officers were grouped in a single survey question, the provision of assistance by compliance officers alone is likely to be lower). In terms of regional variation, NC is again at the low end of this category, with 25% (Figure 5.2) and 16% (Figure 5.3) agreeing with the survey statements – this is consistent with a very low NOW compliance officer presence in this region.

There are also significant differences in responses from holders of larger (>30ML) and smaller (<30ML) combined water entitlements when it came to views on whether NOW and State Water officials had helped them meet their licence obligations. For instance, respondents with larger water entitlements (>30ML) are more likely to

agree that NOW and State Water officials had helped them meet their licence obligations.

Figure 5.2: Views on whether Office of Water compliance or licensing officers helped water users meet licence obligations (n430: 118 (CW), 154 (MM), 158 (NC))

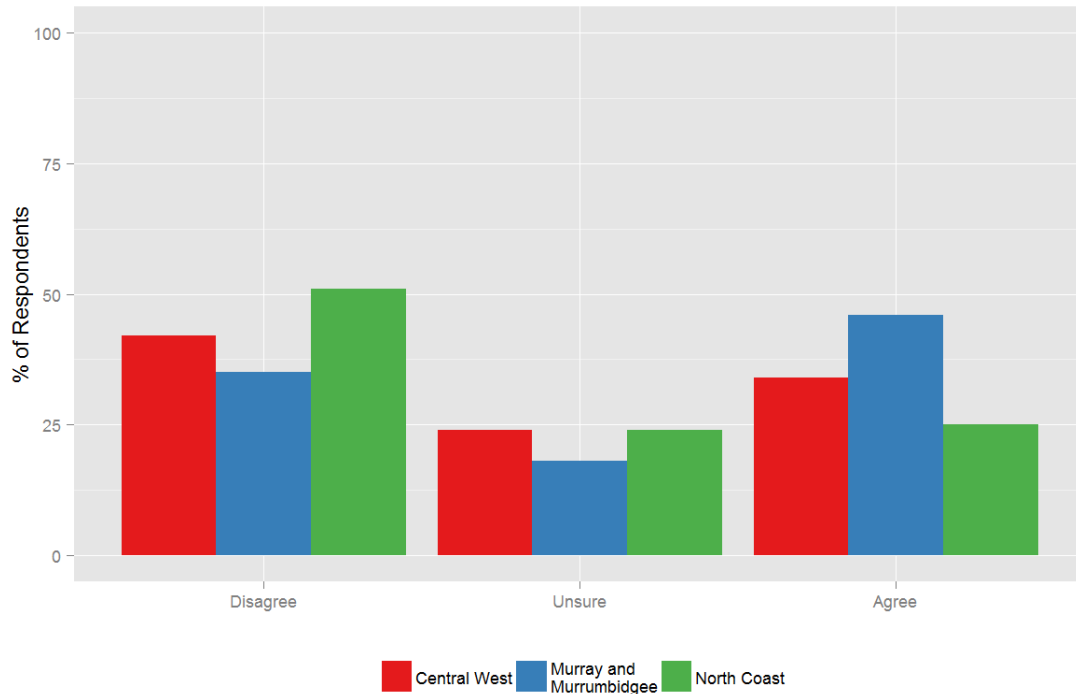
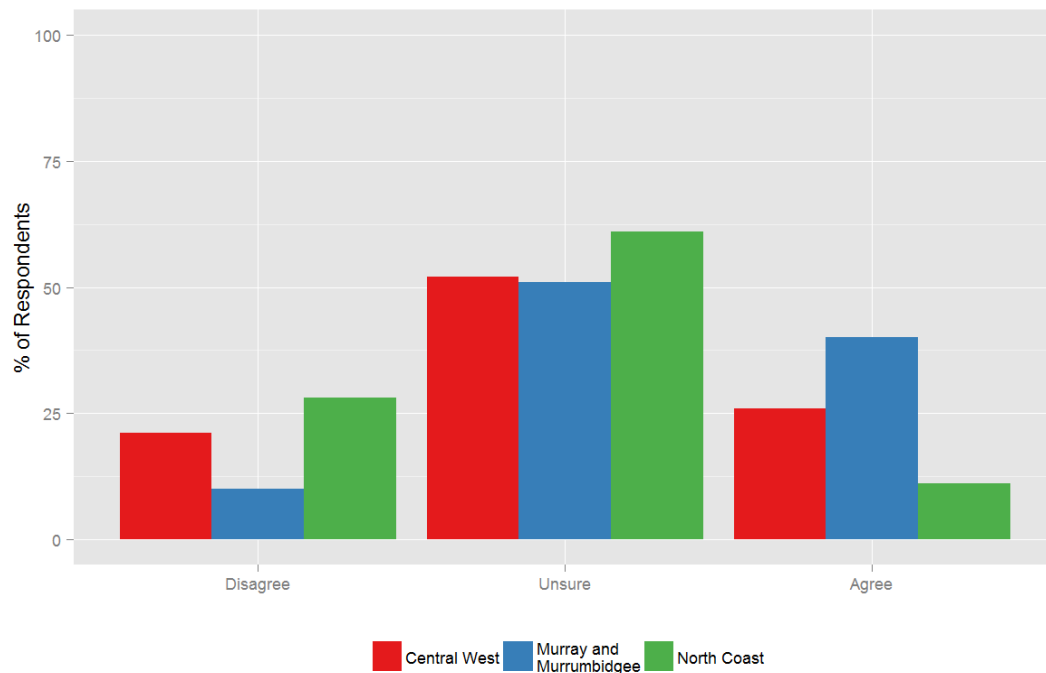


Figure 5.3: State Water meter readers have helped me to meet my licence obligations (n314: 87 (CW), 133 (MM), 94 (NC))



Even though their awareness of the activities of NOW compliance officers may be very limited, most respondents are either unsure about or favourably disposed towards them. In this regard, around a quarter of survey respondents hold that NOW compliance officers are fair and equitable in their dealings with licence holders *and* demonstrate good judgment, while over half are unsure (presumably due to no direct experience) and a minority disagree (see Table 5.2). This suggests a degree of underlying support for the role of compliance officers. This finding may have positive implications for NOW in raising the profile of compliance officers.

5.2.2 Enforcement action by NOW compliance officers

Enforcement represents the ‘pointy end’ of regulation, a necessary but ideally judicious application of state authority to maximise widespread compliance. As such, it inevitably generates strong emotions. Crucial to broad acceptance of enforcement is procedural fairness, including timeliness, consistency, proportionality, and opportunities to correct deficiencies.

Less than 5% of survey respondents report having experienced compliance or enforcement action by NOW (e.g. written warning, penalty infringement notice, direction, stop work order or prosecution) (Table 5.2). Close to two-thirds of these (65%) disagree with the proposition that action taken against them was appropriate. A further 50% and 48%, respectively, report not having experienced timely action, nor being kept informed. Although only 25% report being given the opportunity to change their practices *prior* to enforcement action, 42% claim to have changed their practices *subsequently*. Overall, only 25% report being treated fairly by NOW. Further, only 21% would seek NOW assistance in the future after having been subject to enforcement action. It’s perhaps not surprising that those subject to enforcement action often think they have been unfairly treated to some degree. Nevertheless, these findings suggest that there is room to improve the enforcement experience, for example, by improving timeliness and information to affected water users.

Table 5.2: Views on NOW enforcement action

Topic: Enforcement action	n	Strongly disagree	Disagree	Unsure	Agree	Strongly agree
Office of Water compliance officers are fair and equitable in their interactions with water users in my region	491	7%	6%	57%	24%	6%
Office of Water compliance officers demonstrate good judgment in their decisions regarding water users in my region	505	7%	8%	61%	19%	5%
The compliance action taken against me was appropriate	26	50%	15%	15%	12%	8%
The investigation was completed in a timely manner	26	35%	15%	27%	15%	8%
I was kept informed about the action taken by the Office of Water	27	26%	22%	19%	26%	7%
I was given the opportunity to change my water extraction practices before further compliance action was taken	24	33%	4%	38%	21%	4%

I have changed my water extraction practices since being subject to compliance action	19	26%	5%	26%	37%	5%
I am more likely to seek help from the Office of Water since being subject to compliance action	28	29%	14%	36%	14%	7%
I was treated fairly by the Office of Water	28	36%	11%	29%	21%	4%

5.2.3 Respondents' views of NOW's regulatory role and activities

As displayed in Table 5.3, the largest group of respondents' views on NOW's capacity to detect illegal water extractions is 'unsures' (43%), followed by total agrees (33%) and total disagrees (24%). Similarly, unsures dominate the response to whether NOW is effectively targeting its enforcement activities (48%). Unsures are also the largest response in relation to whether respondents can rely on NOW to ensure that water users are in compliance (42%) and to investigate reports of potential illegal activity (42%) – in these instances, total agrees are a close second (42% and 45%, respectively). The overall dominance of unsures in response to these questions suggests a generally low level of knowledge of compliance officer activities. Interestingly, there is a significant relationship between those who are unsure as to whether NOW compliance officers are working in the region and those who are unsure about the capacity of NOW to detect illegal extractions and/or that NOW is effectively targeting its enforcement activities to reduce non-compliant water extraction. This again suggests that the visibility of NOW compliance officers is related to perceptions about the risk of getting caught.

Table 5.3: Views on NOW's compliance capacity

Topic: NOW's compliance capacity	n	Strongly disagree	Disagree	Unsure	Agree	Strongly agree
I'm confident the Office of Water is able to detect illegal water extractions	618	7%	17%	43%	28%	5%
I'm confident the Office of Water is effectively targeting its enforcement activities to reduce non-compliant water extraction	613	5%	13%	48%	29%	5%
I can rely on the Office of Water to ensure that water users are in compliance with water licence and approval conditions	615	5%	11%	42%	37%	5%
I can rely on the Office of Water to investigate reports of potential illegal activity relating to water extraction	611	4%	8%	42%	39%	6%

In terms of NOW's enforcement role, just over two-thirds support stronger enforcement action (64%) and more prosecutions (56%) against those who break the rules (Table 5.4). These reveal recognition of the importance of effective enforcement, as well as low tolerance for those who take water illegally.

Table 5.4: Views on NOW's enforcement role and level of service

Topic: Views on NOW	n	Strongly Disagree	Disagree	Unsure	Agree	Strongly agree
I think the Office of Water should take stronger enforcement action against water users who break the rules	616	2%	7%	26%	45%	19%
I think the Office of Water should prosecute more water users who break the rules	615	2%	10%	32%	40%	16%
I am satisfied with the level of service provided by the Office of Water	576	10%	13%	35%	36%	5%
I am confident the Office of Water is an effective regulator	612	8%	11%	45%	31%	5%

Turning to how respondents view the level of service provided by NOW, the largest grouping is satisfied (41%), followed by unsures (35%). Finally, in assessing the overall effectiveness of NOW as a regulator, unsures (45%) and those confident (36%) are again the largest responses. As above, these suggest high levels of unfamiliarity about the role and practices of NOW, but with the positive views outweighing the negative views, a reasonable level of support for NOW's service and regulatory role is also evident.

5.2.4 Discussion

5.2.4.1 Regional variation

There are persistent differences in survey responses in the experiences with, and views of, NOW across the three regions. In particular, respondents from the MM region had more experience with NOW compliance officers, have more confidence in NOW's ability to identify illegal water extractions, and rely more on assistance from NOW officials to meet licence obligations (see Figures 5.1, 5.2 (above) and 5.5 (below)). NC respondents are consistently at the other end of the response spectrum to MM on these issues, with CW respondents in between. In some cases, the regional variation is stark. For example, in response to the survey question "compliance officers from the Office of Water regularly work in my region", 40% of MM respondents answer in the affirmative compared to just 11% of NC respondents (Figure 5.1). The exception to these differences where views on whether NOW should take stronger enforcement action (see Figure 5.4), where there is little variation between the regions.

In understanding the reasons behind this regional variation it may be a case that the old adage 'familiarity breeds contempt' could be rewritten as 'familiarity breeds respect' in relation to water extraction compliance and enforcement. The survey clearly indicated that NC respondents experience very little contact with NOW compliance officers, while MM is significantly higher, and CW respondents fall somewhere between these two extremes (Figure 5.1 above).

Figure 5.4: Views on whether the Office of Water should take stronger enforcement action against water users who break the rules (n616: 191 (CW), 203 (MM), 222 (NC))

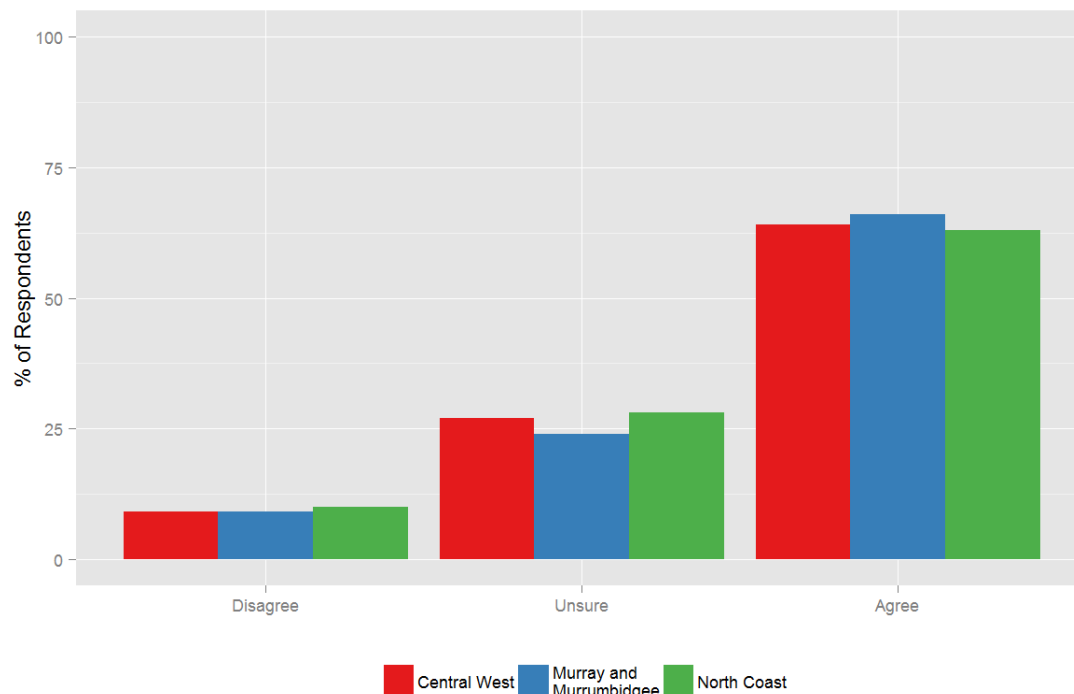
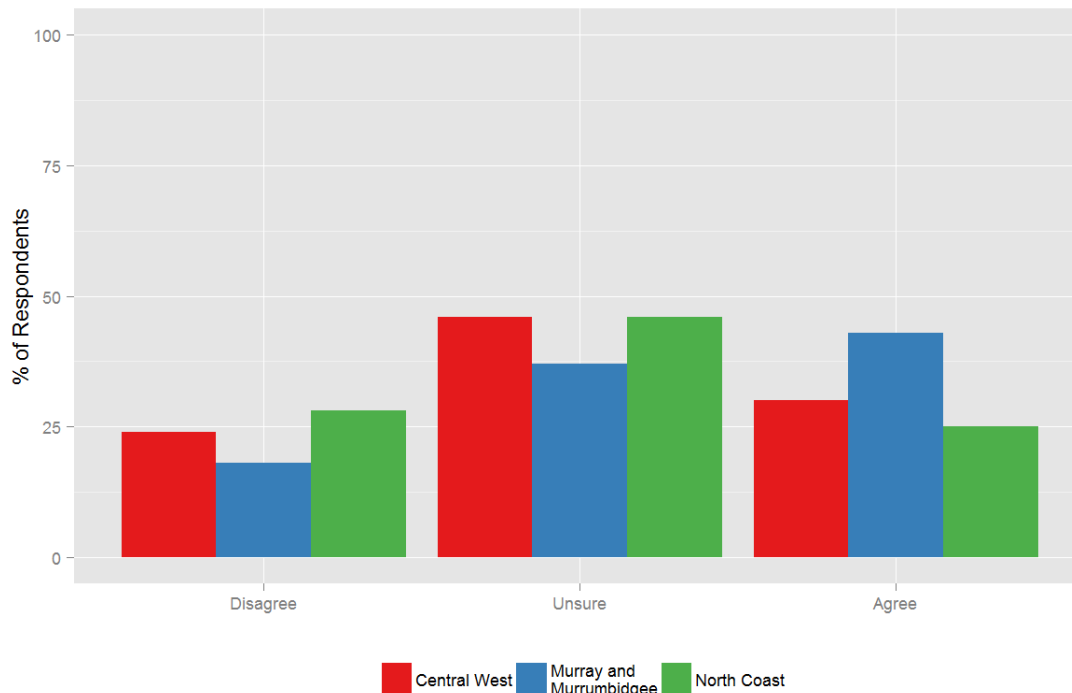


Figure 5.5: Views on whether the Office of Water is able to detect illegal water extractions (n618: 191 (CW), 203 (MM), 224 (NC))



5.2.4.2 Background factors

The level of water user education is relevant in some instances. For example, those with higher levels of education are less confident in NOW's ability to detect illegal extractions and that it is effectively targeting its enforcement activities, and, further, they support stronger enforcement action. These findings suggest that, to a degree, those with higher levels of education have higher expectations of compliance and enforcement.

5.2.5 Conclusion

The findings indicate that there is minimal knowledge of NOW's compliance officer activities by the vast majority of water users. Very few respondents claim to have direct interactions with, or received assistance from, regulatory officials. This suggests that there is considerable scope for NOW to better inform water users of its compliance and enforcement role.

Consistent with this the survey results show that, in most cases, close to or more than a half of respondents are unsure when assessing NOW's compliance and enforcement activities across a range of criteria. The next largest grouping of survey respondents, however, have favourable views of NOW's compliance and enforcement efforts, for example approximately a quarter to a third in the case of NOW being fair and equitable, having good judgment, being able to detect illegal extractions and targeting its enforcement activities. And in the cases of NOW ensuring compliance, investigating illegal activities and its level of service, the agrees are equal to or exceeded the unsures. In contrast, of those that had been subject to enforcement action, most think that the action taken against them was not appropriate and that they had not been treated fairly.

Looking beyond NOW's current activities, there is very strong support (nearly two-thirds of survey respondents) for NOW undertaking stronger enforcement action and more prosecutions against those who break the rules (e.g. serious breaches as opposed to minor/technical breaches). Interestingly, unlike many of the other survey responses, this support is consistent across the three regions.

Overall, these findings indicate that although there is a reserve of support that NOW can draw on in conducting and communicating its compliance and enforcement activities, there is room to improve the profile/actions of NOW officers and their profile amongst water..

5.3 Summary of key findings

Experiences with government officers

- Most respondents are either unsure or disagree that NOW compliance officers are working in their region. This is more pronounced in the NC, and least in the MM region.
- Nearly two-thirds of survey respondents report *not* having received assistance from NOW and State Water officials in meeting their licence obligations.

Compliance and enforcement action

- Only 15% of respondents report that a NOW compliance officer conducted an inspection of their property and less than 5% of respondents report having experienced compliance or enforcement action by NOW.
- Of those survey respondents who report experiencing compliance action, 42% have changed their practices *subsequently*. Around two-thirds think the action taken against them was not appropriate. And half reported not having experienced timely action nor being kept informed. Overall, only 25% report being treated fairly by NOW.

Views on NOW

- Most survey respondents are unsure of their views of NOW across several criteria (e.g. equity, fairness, detection, targeting and judgment). The next largest groupings have favourable views. There is a positive correlation between those with favourable views and perceptions of whether NOW officers are working in their region.
- Most (or equal most) respondents have favourable views of NOW's level of service, and think it is an effective regulator and able to investigate illegal activities. However, those subject to a compliance and enforcement action do not have favourable views of NOW in general.
- Around two-thirds of survey respondents support tougher enforcement action against those who break the rules, and half think NOW should prosecute more water users who break the rules.

6 Communication and education

6.1 Introduction

Non-regulatory measures taken to promote compliance with the legislation are often effective and reduce the need for enforcement.³⁶ Such measures include education and providing information and advice. This report examined the role of education and communication in promoting compliance with NSW water laws by examining water users' views on their current sources of information (e.g. do they use NOW letters or flyers), the usefulness of these sources, and their more general views and preferences on further information and communication (e.g. do they want more information about NOW's compliance and enforcement activities).

Before describing the findings, it is helpful to consider that sources of information can be categorised into four broad groupings:

- Impersonal passive – in this instance, information is provided to the licence holder by an external party, usually a government authority, without any personal contact. For example, a flyer, letter or smart phone app.
- Impersonal active – in this instance, information is made available but licence holders are required to actively seek it out. However, there is no personal contact. For example, the NOW website, online hydrological network or water legislation.
- Personal government – in this instance, information is derived from personal contact (meeting, phoning or emailing) with a government official, for example, NOW compliance officer, government phone lines or State Water meter reader. It also includes local government officials and local land service officers, and government run seminars.
- Personal non-government – in this instance, information is derived from personal contact with industry associations, peers, ancillary professionals, neighbours and family.

This section provides a summary of the findings regarding general views on information sufficiency, accessibility and preferences as well as respondents' current sources of information and their usefulness.

6.2 Results

6.2.1 Views on sufficiency, accessibility and preferences for information

For information to assist water users in complying with the law, the information must be sufficient and the regulated community must know where it can be accessed. In order to assess the sufficiency and accessibility of current information provided by NOW to the regulated community, the survey asked respondents to answer yes, no or unsure to a range of questions relating to the provision of compliance and enforcement information, their knowledge of where to access this information and whether they would like more information.

Just over three-quarters of respondents believe that NOW did not provide them with timely hydrological data (76%) and close to a half that NOW did not provide enough

³⁶ Carolyn Abbot, 'The Regulatory Enforcement of Pollution Control Laws: The Australian Experience' (2005) 17(2) *Journal of Environmental Law* 161.

information about water legislation and their obligations as a licence or approval holder (52%) (see Table 6.1). It is perhaps not surprising, then, that approximately a half of respondents want more information about their water management obligations (50%) and NOW's compliance and enforcement activities (51%). Further a majority of respondents (61%) report that they would prefer *not* to find information about water legislation and their obligations themselves (this may indicate a preference for passive sources of information).

Table 6.1: Views on the provision of information by NOW

Topic:	n	Yes	No
The Office of Water provides me with timely hydrological data (e.g. dam levels, bore levels etc)	484	24%	76%
The Office of Water provides me with sufficient information about water legislation and my obligations as a licence or approval holder	473	48%	52%
I would like more information about my water management obligations	509	50%	50%
I would like more information about the compliance and enforcement activities of the Office of Water	504	51%	49%
I would prefer to find information about water legislation and my obligations myself	503	39%	61%

The survey accordingly asked respondents to write in their preferred methods (from a list of sources) of receiving information from NOW on four different issues that may assist with compliance and enforcement, namely:

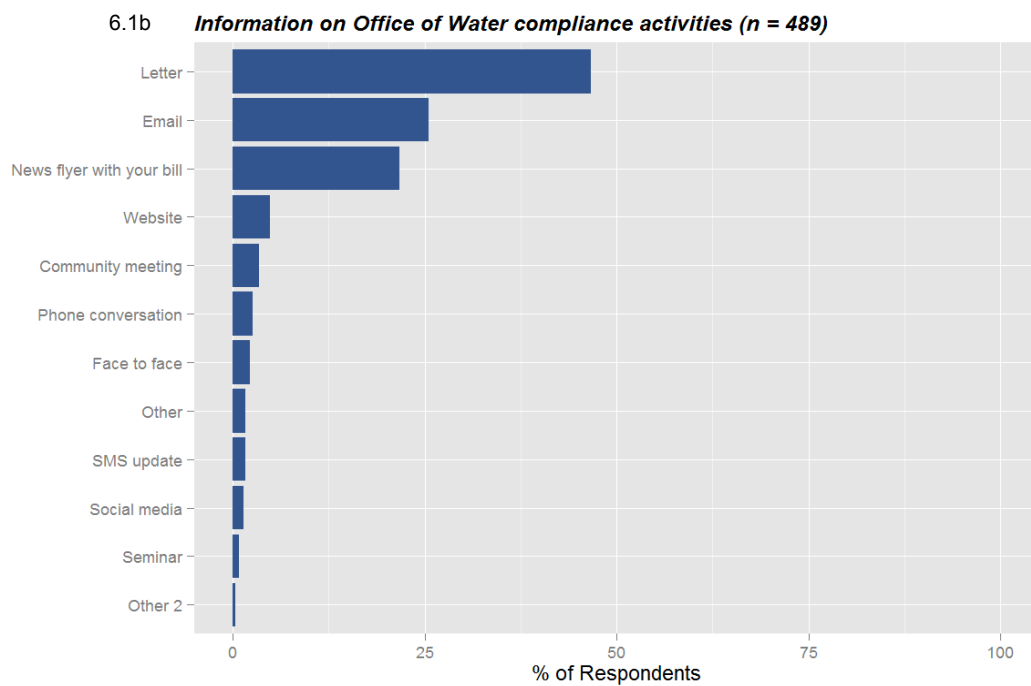
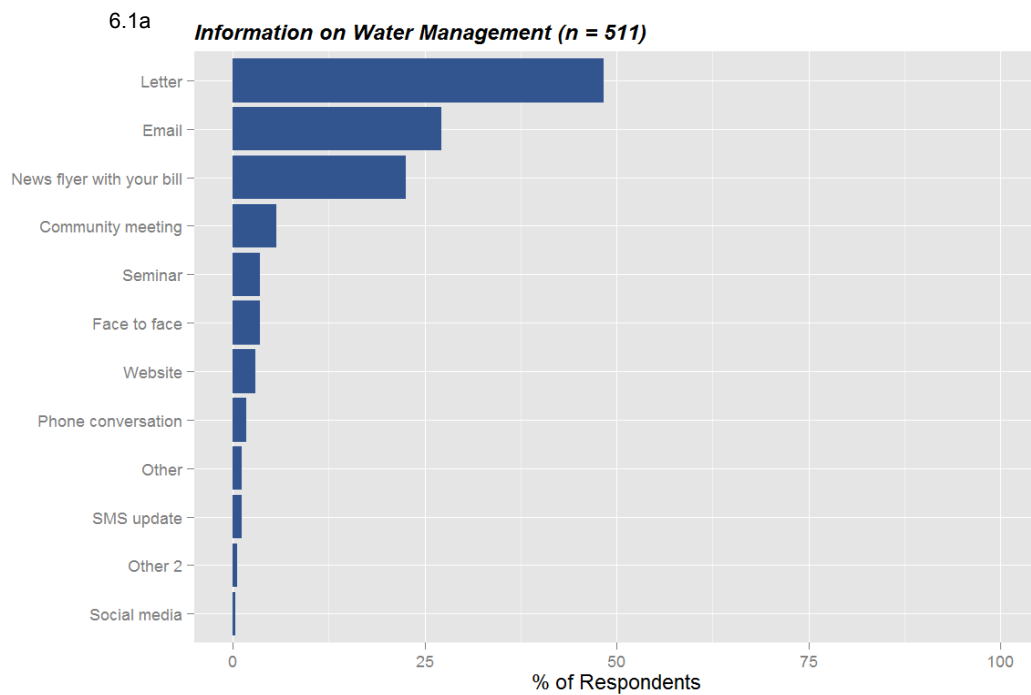
- Water management (e.g. research on groundwater, evaluations of water sharing plans).
- NOW compliance activities (e.g. recent prosecutions, compliance operations and policies).
- Information that helps users comply with their licence or approval (e.g. specific legal requirements on using meters).
- Changes to water legislation and associated requirements (e.g. amendments to the *Water Management Act 2000*; new powers for the Office of Water).

Across all categories, respondents nominate letters as their preferred method of receiving information from NOW, with approximately 50% of survey respondents indicating it is as their first choice in each case (Figure 6.1a-d). Emails and news flyers are the next most preferred channels, with approximately 25% and 20% of respondents, respectively, indicating them as preferred channels. All other channels have very low preferences, with none having greater than a 6% preference for any of the four information questions asked.

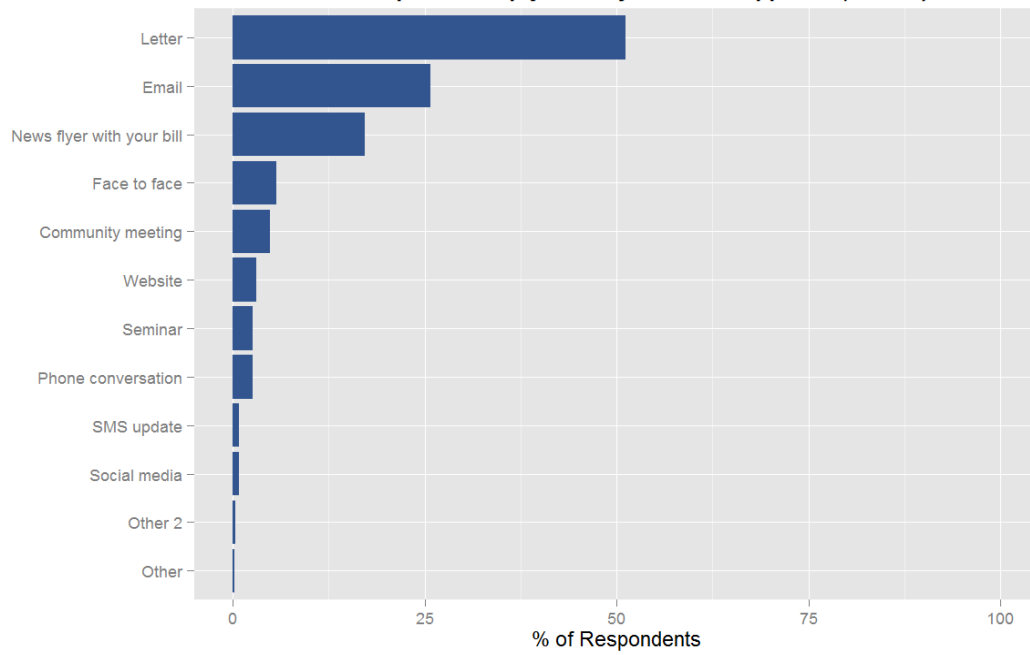
These results resonate with the high ranking of letters and flyers, both as sources and as useful information (see Section 6.2.2). An exception is that of email, which does not rank as highly in terms of being a source or for usefulness. It is possible that this may be a result of the limited application of emails to date (whereby they are principally used as an enquiry vehicle).

Notably, it is somewhat surprising that SMS updates ranked so poorly as a preferred medium, given the increasing use of this method for many other community communications (for example, bushfire alerts). SMS updates have several attractions, including immediacy, familiarity and low cost.

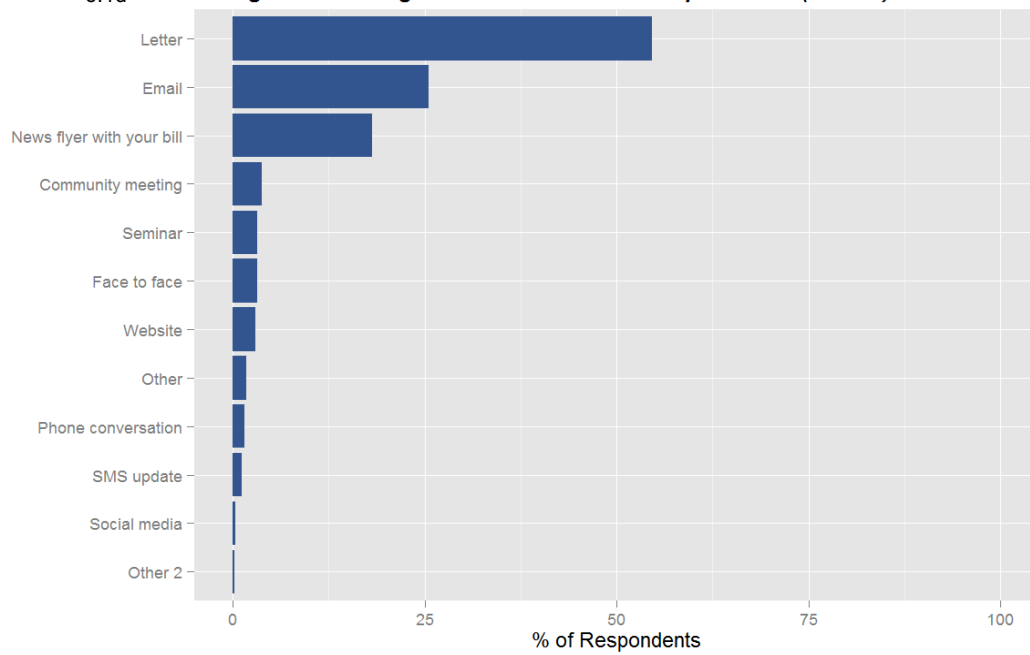
Figures 6.1a to 6.1d: Preferred sources of information



6.1c

Information that helps me comply with my licence or approval (n = 493)

6.1d

Changes to water legislation and associated requirements (n = 505)

Although respondents nominate the above channels for receiving information from NOW, they report little trouble knowing where information could be found. Aside from the compliance policy (44%), over two-thirds of respondents are confident in knowing where to find information about: requirements for their water licences and/or approval (70%), water licences/approvals (67%), water allocations (67%), and over a half for information on water legislation (59%) (Table 6.2). Over two-thirds also report that they know who to ask if they have a query about their water licence/approval (70%).

Table 6.2: Knowledge of information sources

Topic: Knowledge of sources	n	Yes	No
I know where to find information about water legislation	458	59%	41%
I know where to find information about water licences and approvals	502	67%	33%
I know where to find the current water allocation for my water source	501	67%	33%
I know where to find the Office of Water compliance policy	461	44%	56%
I know who to ask if I have a query about my water licence/approval	517	70%	30%
I know where to find information about the requirements for my water licences and/or approval	515	70%	30%

Notably, the size of the property has a significant positive relationship to the knowledge of where to find information on water legislation. This is backed up by a similar significant positive relationship between the size of the property and their stated preference for more information on their obligations such that the larger the property the less likely that they wanted information.

6.2.2 Current sources of information

The general findings on the sufficiency, accessibility and preferences for information are complemented by a second section of the survey designed to drill down and identify the specific sources that water users currently rely on to gain information and the usefulness of that information.

This analysis is important because understanding which information sources are most used by water users, and the sources they find most useful can accordingly help to ensure that compliance and enforcement information is channelled efficiently and effectively to the regulated community to maximise the chances of such information improving compliance.

The survey asked respondents to nominate their sources of information as either *minor*, *moderate*, *major* or *not used* from a comprehensive list of potential sources (Figure 6.2). They were then asked to rank the usefulness of each source of information as *not very*, *moderately*, *very useful* or *not applicable* (Figure 6.3).

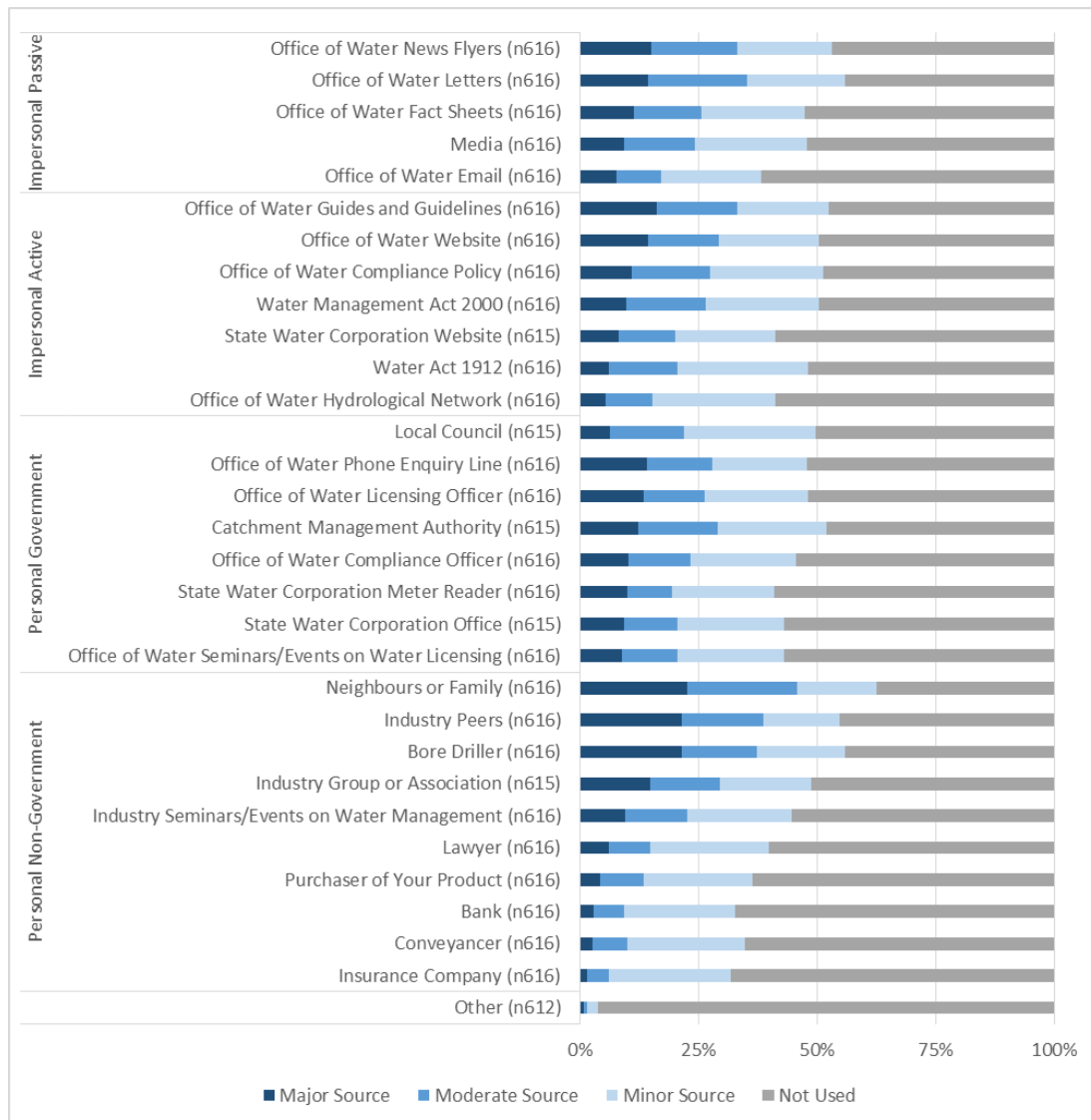
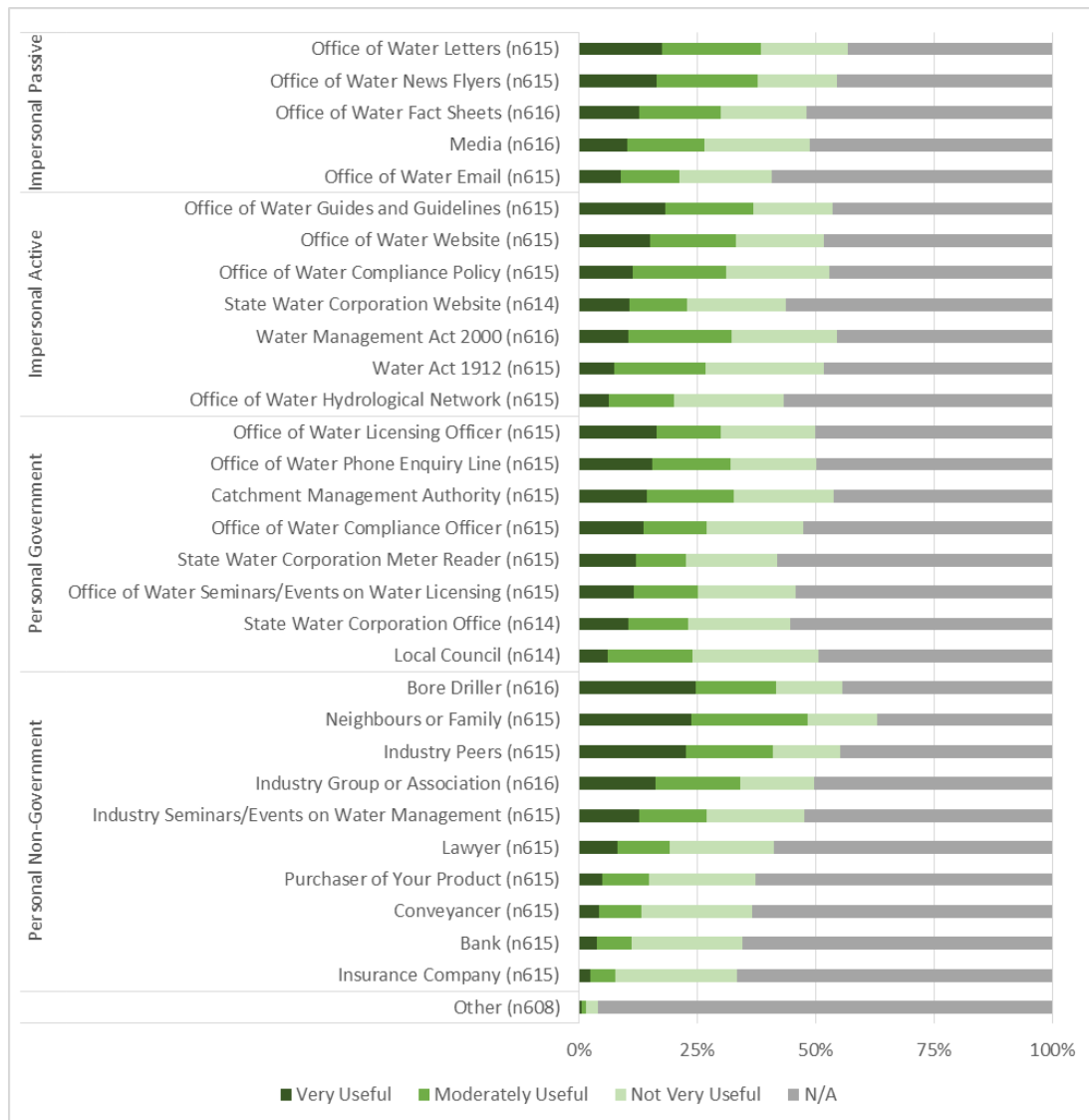
Figure 6.2: Information sources

Figure 6.3: Information sources usefulness

6.2.3 Discussion

There were five specific trends worth noting.

6.2.3.1 Multiple sources of information

As evidenced from Figure 6.2, respondents obtain information from a wide mix of sources (rather than a few major channels). While there are differences in the levels of use for each source, the majority of them are used by more than 40% of the respondents.

As might be expected, there was a relationship between the overall ranking of a document/person/website/event as a source of information, and the overall usefulness ranking of that same source. With very few exceptions,³⁷ the higher the ranking of a source of information the higher its usefulness ranking. This can be seen from the similar pattern in Figure 6.2 and Figure 6.3 moving left from right in each category of information (personal non-government, personal government, active, passive).

6.2.3.2 Many not using information

Many respondents are either not using the information resources that are available or are not using information they have received. Approximately three-quarters of the information sources are ranked as not used by 50% or more of respondents. A similar trend is evident in terms of usefulness (with around half of the information sources being ranked as not applicable in terms of usefulness). Even with the highest ranked source (neighbours/family), at least 37% of respondents do not use this as a source of information. There are several possible explanations for these findings.

One explanation may be that a number of our respondents may not have viewed the listed information as relevant to their individual circumstances. This could include, for example, those holding 'sleeper' licences (those with allocations, but not currently using them), those holding smaller combined entitlements (under 30ML per annum), and those using water for only stock and domestic purposes.

It is also possible that many of the respondents: (i) feel confident that they know what they are doing, and know how to comply with the licence/approval obligations; or (ii) are uninterested in or unaware that they could possibly be non-compliant with their obligations. As a result, they are unlikely to seek out information or consider it useful when it is provided. It is also possible that some respondents have little idea where to start looking for information. However, this seems unlikely given the generally high numbers of respondents reporting that they knew where information could be found (discussed above).

It is also possible that respondents are getting their information from another unlisted source – however, this explanation appears unlikely given that a survey question invited respondents to nominate an unlisted source, but less than a handful did so.

6.2.3.3 Highest ranked sources and usefulness of information

Where information was sourced and used, it was a sub-group of personal non-government sources that ranked most highly (ranked by combining major and

³⁷ *Water Management Act 2000* (NSW), *Water Act 1912* (NSW), Banks.

moderate source scores, and very and moderately usefulness scores). In particular, neighbours and family (63%) and bore drillers (56%) were the highest ranked as information sources (Figure 6.2). Neighbours or family (63%) and bore drillers (56%) were also ranked first and third respectively in terms of usefulness (Figure 6.3). Industry peers were also ranked highly (fourth) as a source (55%) and in terms of usefulness (55%), closely followed by industry associations (sources - 49% and usefulness - 50%).³⁸

It is clear from these findings that water users rely on neighbours, family, drillers and industry peers as common sources of information they believe are useful. This may be because close social ties and the frequent interactions with these groups generate more frequent opportunities to access information and higher levels of trust and reciprocity in these individuals. As a result, family, neighbours and industry peers are likely to be easily accessible, and perceived as trustworthy and useful sources of information. Such relationships can be contrasted to other listed non-government sources, such as lawyers, conveyancers, bankers, suppliers and insurers, who are not a high source of information, and rank lowly on their usefulness. The prominence of bore drillers is perhaps surprising given that they are unlikely to have regular ongoing contact with licence holders. It suggests that when they are present on properties, they are viewed as a trusted source of information.

The next highest ranked categories are from the passive, active and personal government sources of information. Across these three categories, it is passive material produced by government in the form of letters (56%) and news flyers (e.g. flyers delivered with water bills) (53%) that are most commonly used (Figure 6.2). These are closely followed by personal government or quasi-government sources of catchment management authority (52%) and local council (50%) and impersonal active sources, also produced by government, such as online guides (52%), compliance policy (51%), NOW website (50%) and the *Water Management Act 2000* (50%). All these sources are similarly highly ranked in terms of usefulness (see Figure 6.3).

Possible reasons for these sources being ranked slightly more highly than the other sources, such as emails, phone lines and State Water, are not immediately apparent from the survey. However, at least one possible explanation for the highest ranked sources (letters and flyers) is that they do not require effort on the part of licence holders to access – they come posted to them direct or, in the case of news flyers, as part of their water bills. This appears consistent with the findings above regarding preferred sources of information, where letters are ranked as the most preferred source.

In terms of the Catchment Management Authority (now Local Land Services) and local council, it is possible that these sources are ranked more highly than NOW or State Water because the former are likely to play less of a perceived regulatory or monitoring role on water issues. As a result, they may be more likely to be approached for information.

The consistently lower ranking of State Water (offices, meter readers, website) is interesting. Although meter readers are perhaps the water-related government officials most likely to come into regular contact with water users, they do not rank higher as a source or in terms of their usefulness. It may be that water-related meter readers, for example, are an untapped resource in this regard and could take on a greater communication role for compliance and enforcement education. Conversely,

³⁸ This was equal fourth with *Water Management Act (2000)* and news flyers.

it may be that inherent tensions between being a water supplier and addressing compliance compromises progress in this area.

The fact that impersonal active sources such as guides (52%), compliance policy (52%), NOW website (50%) and the *Water Management Act 2000* (NSW) (50%) are also ranked highly as sources may be a reflection of their anonymity and the ease of access to compliance and regulatory information. NOW officers and events (an alternative form of accessing such information) may be difficult to access due to potential infrequencies in local regions. Similarly respondents may want to remain anonymous (through remote online access) rather than personally interacting with the regulator (and heighten a perceived or real risk of regulatory action). To the extent this is true, it would be consistent with the findings above that water users prefer sources other than NOW officers.

6.2.3.4 Background factors had limited impact

Respondents' background information was cross-referenced against responses. In general, this did not elicit any dramatic insights. Nevertheless, some minor nuances did emerge. In particular, as the age of respondents increases, the perceived usefulness of information decreases. There is a significant positive relationship between the size of the property and the use of letters as a source of information. Finally, there are significant differences in views between those with small (<30ML) and large (>30ML) combined entitlements. For example, those with combined entitlements greater than 30ML per annum are more likely to nominate NOW licensing officers as a major source of information. There is a similar significant difference in views between those who regularly extract water and those who do not regularly extract water. For instance, those that had extracted water in the last financial year or the last three financial years are significantly more likely to nominate NOW licensing and compliance officers as major sources of information.

6.2.4 Conclusion

In summary, although water users utilise a wide mix of information sources, many of them are not using the information resources they have received or are available to access. Neighbours, family, bore drillers, NOW letters, industry peers and NOW flyers are the highest ranked in terms of sources used and for their usefulness. While most respondents know where to get more information about water legislation, water licences and approvals and water allocations, a majority of survey respondents do not believe they are provided with timely hydrological data or sufficient information about their licence obligations.

6.3 Summary of key findings

Information sufficiency, accessibility and preferences

- A majority of respondents do not believe they are provided with timely hydrological data or sufficient information about water legislation and their obligations as a licence or approval holder.
- Approximately a half of respondents want more information on water management obligations, and NOW's compliance and enforcement activities.
- A large majority of respondents know where to get more information about water legislation, water licences and approvals and water allocations.
- A majority of respondents report that they would prefer *not* to find information

about water legislation and their obligations themselves.

- Letters, emails and news flyers are the preferred sources of information from NOW regarding water management, compliance activities, help with compliance and changes to laws.

Current sources and usefulness of information

- Respondents use a wide mix of information sources, ranging across the personal non-government, personal government, impersonal active and impersonal passive categories.
- A large number of water users are not using available information sources.
- Neighbours and family, bore drillers, NOW letters, industry peers and NOW flyers rank highest in terms of sources used and for usefulness of information.
- Catchment Management Authority, local council, NOW online guides, compliance policy, NOW Website and the *Water Management Act 2000* are also highly ranked in terms of sources used and for usefulness.

7 Compliance knowledge, resources and technology

7.1 Introduction

Motivations to comply with laws can be influenced by water users' knowledge, capacities and technological capabilities to understand, manage and meet their water obligations. These might include knowledge of law, policies and regulations, support for investing in water efficiency and management, and metering and monitoring technology to track water extraction.

A lack of knowledge of the rules can often be a significant cause of non-compliance (e.g. inadvertently failing to follow an 'unknown' requirement, despite a desire to comply with the law). It is accordingly important to understand water users' knowledge of legislation, policy and regulations. This information can reveal issues and topics that should be the focus of future information and communication activities. It is also important to understand to what extent compliance knowledge varies between regions.

Beyond water users' knowledge of regulatory obligations, it is also helpful to identify sources of encouragement (namely, the provision of resources such as water management training) for better on-property water efficiency management (including the role of third parties in supporting water efficiency). These may contribute to both compliance and achieving better than compliance.

Water users' technological capabilities can also impact on compliance. For example, an inability to read, use or maintain measurement technologies like meters can make it difficult to accurately measure water use and thus ensure compliance and effective on-property water management. In this respect, water users' views on and experiences with the use and maintenance of metering technology will assist with understanding the contribution of metering to compliance. It will also be useful to establish water users' views on additional monitoring technology, in particular, satellite monitoring.

To assess survey respondents' knowledge of legislation, policies and regulations, they were asked to rank their knowledge of a range of topics according to no knowledge, very little knowledge, some knowledge, good knowledge (sufficient to act) or very good knowledge (sufficient to explain to others). To assess respondents' views on management capacities (e.g. water efficiency) and monitoring technologies, the survey asked respondents to rate (on a 5 point scale from strongly disagree to strongly agree) the needs and benefits of metering and the assistance received from third parties for on-property water efficiency.

Section 7.2 outlines the survey results on these issues, and explores knowledge (7.2.1), third party assistance for water efficiency (7.2.2) and metering and monitoring technology (7.2.3) (knowledge of metering is also included in this section). 7.3 concludes with a summary of the key findings.

7.2 Results

7.2.1 Knowledge of laws, policies and regulations

7.2.1.1 General knowledge trends across the three regions

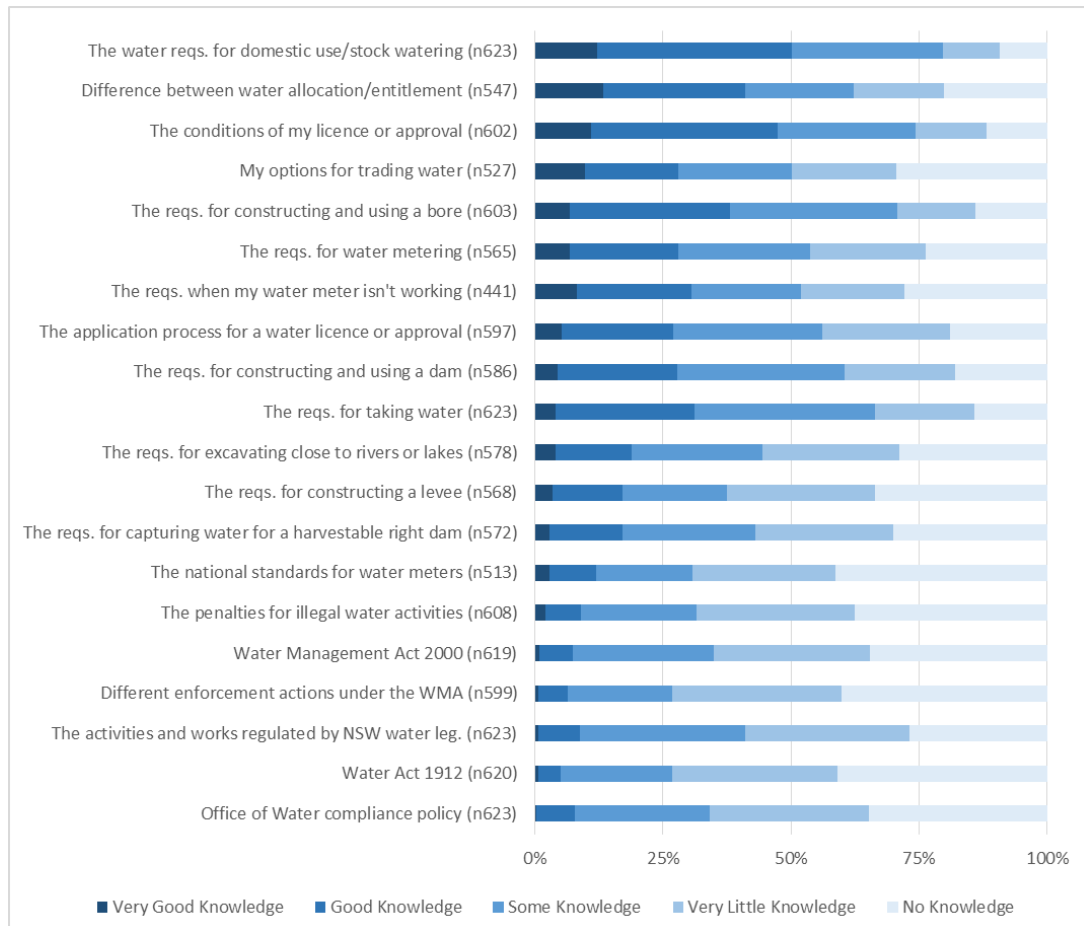
Respondents' knowledge of legislation, policy, compliance and enforcement is very low (Figure 7.1). In particular, few respondents indicate they had good or very good knowledge of the *Water Act 1912* (5%), different enforcement actions under the *Water Management Act 2000* (7%), NOW's compliance policy (7%), the *Water Management Act 2000* (8%), activities/works regulated by NSW legislation (9%), penalties for illegal water activities (9%), and national standards for water meters (12%). There are several possible explanations for these findings. One explanation may be that water users can more easily obtain/understand information about water obligations from secondary sources rather than primary pieces of legislation/policies. Pieces of legislation, such as the *Water Management Act 2000*, are also large, complex documents, which can be difficult to understand. Consistent with this, nearly half of respondents agree that water laws and regulations are too complex (47%) (Table 4.6).

Another explanation may be that although compliance rules and enforcement actions clearly can have a direct and dramatic impact on water users' operations, serious non-compliance and enforcement actions may be relatively infrequent events. Accordingly, ensuring detailed knowledge of the rules and consequences of a breach are pushed aside for more immediate concerns.

The relatively low levels of knowledge of legislation and policies may also be a function of water users having limited time to devote to information gathering tasks. As such, they may prioritise knowledge of topics with a direct and immediate impact on the on-property operations. Certainly, more survey respondents indicate they have good or very good knowledge for a range of on-property topics, in particular, options for trading water (28%), the requirements when meters are not working (30%), the requirements for taking water (31%), bore requirements (38%), the difference between water allocation and water entitlement (41%), the conditions of their licence or approval (47%), the requirements for water metering (47%) and stock and domestic requirements (50%). These findings suggest that respondents are far more familiar and confident with topics of immediate interest to their on-property operations.

Nevertheless, there are several knowledge areas that fall in-between these two different levels, in particular, those that relate to development or works, namely, constructing a levee (17%), harvestable right dams (17%), excavating close to rivers or lakes (19%) and constructing and using a dam (24%). A potential explanation for this is that although these are indeed on-property information topics, they are likely to be encountered infrequently in the course of day-to-day property/farm operations. For example, excavating close to rivers or lakes might only occur once or twice. Accordingly, it is perhaps not surprising that respondent knowledge of such activities is lower than that of regular water user events and practices. An exception to this conclusion is knowledge of the application process for a water licence or approval – whilst this is most likely be an infrequent event, a somewhat higher 28% claim good or very good knowledge of this.

Figure 7.1 Knowledge of legislation, policy and regulations (note that topic titles have been abbreviated)



7.2.1.2 Significant variations in knowledge between the regions

There are some regional variations in response to the survey's knowledge questions. In particular, respondents from the MM region are typically up to twice as likely as the other two regions to report good and very good knowledge of the overarching legislative, regulatory and policy framework (see Appendix 2). This, however, is still a very small proportion in comparison to the number of MM respondents with low or no levels of knowledge. This pattern of good knowledge in the MM region continues in relation to on-property knowledge issues, such as taking water and allocations. However, there is minimal regional variation in relation to the more infrequent activities such as constructing dams or levees, and excavating near water. Finally, although all regions report low level knowledge of penalties, nearly twice as many MM respondents report knowledge of possible enforcement actions (again, however, this was still a small proportion of the total response). In considering this regional variation, it is highly likely that the higher levels of irrigation in the MM region and therefore familiarity with water allocations and takes have increased the working knowledge of on-property topics, as well as provoked a more general interest in the legal and regulatory landscape. This did not, however, extend to likely infrequent construction/excavation activities and, surprisingly, the knowledge of enforcement penalties was equally poor across all regions.

7.2.1.3 Water use and variations in knowledge

There are significant differences in views between the responses of water users with large (>30ML) and small (<30ML) combined entitlements. In particular those with larger entitlements are more likely to have good knowledge of the requirements for taking water, the difference between water allocations and entitlements, their options for trading water, the requirements for water metering and the requirements when water meters were not working.

There are also significant differences between the responses of active and inactive water extractors. In particular those respondents that had extracted water in the last year or three financial years are more likely to have some or good knowledge of the *Water Act 1912*, the compliance policy, requirements for taking water, the requirements for taking water for stock and domestic use, requirements for metering, requirements when metering is not working, the national standard for water meters, the difference between water allocation and water entitlement, options for trading, the application process for a water licence or approval and the penalties for illegal water activities.

These findings suggest that more active water extractors and those with larger combined entitlements are likely to have greater levels of knowledge of legislative, policy and regulatory information.

7.2.1.4 Summary

In summary, while most respondents have good and very good knowledge of specific requirements impacting on their operations (e.g. licence conditions, allocations, entitlements, bores) most have very limited or no knowledge of key water legislation and compliance policy. This suggests that water users may be unaware of important water rules and requirements, making it much more difficult for them to comply.

More active water users (those that had extracted water in the last financial year or the last three financial years) and users with larger water entitlements (those with a combined entitlement greater than 30ML per annum) report significantly different

responses to those who are less active water users and have smaller entitlements. For example, the former appear to have significantly higher levels of knowledge across a broad range of issues (including metering requirements) than those who did not extract water or hold smaller entitlements, respectively.

7.2.2 Third party assistance for water efficiency

In addition to water users' own knowledge of rules, their compliance with law can be affected by their access to resources provided by third parties (such as water management training) to improve on-property water efficiency. For example, third party assistance and encouragement to reduce water use may help to minimise risks of water theft when water users don't have sufficient entitlement for their enterprise. In this respect, a substantial proportion of respondents appear to draw on the resources of third parties in achieving improved on-property water efficiency (Table 7.1). This includes the Catchment Management Authority (CMA) (now known as Local Land Services) (43%) and industry associations (62%). However, fewer respondents agree that purchasers of their products encourage them to use water more efficiently (31%). Interestingly, while few respondents report being a member of a local Landcare or Rivercare group in the last 5 years (19%), more report being a member of an industry group in the past 5 years (40%). Consistent with these findings, water users rely on industry sources more than government or other third parties to improve water management.

Table 7.1: Views on management and efficiency

Topic: Efficiency	n	Strongly disagree	Disagree	Unsure	Agree	Strongly agree
The CMA encourages me to use my water more efficiently	506	10%	21%	27%	35%	8%
My industry association encourages me to use my water more efficiently	463	5%	14%	19%	49%	13%
The purchaser of my products encourages me to use my water more efficiently	418	11%	30%	27%	25%	6%

7.2.3 Metering and monitoring technology

7.2.3.1 Metering

Monitoring water extraction is vital to effective compliance and enforcement. However, water users who are unfamiliar with the monitoring technology and its maintenance pose a potential risk to the accurate monitoring of water extraction.

Acknowledging that the survey encompasses those with and without meters, including those with no requirement to have meters such as those who only use stock and domestic water, the majority of respondents responded positively towards the value and benefits of metering. In particular, two-thirds of respondents agree that accurate measurement of water extraction by metering is necessary to sustainably manage water resources (66%) (see Table 7.2).

However, there are significant differences in the responses from different regions. While more than three-quarters of CW and MM respondents agree or strongly agree with the importance of accurate metering to sustainably manage water resources (76-80%), this is not the case in NC (45%) (see Figure 7.2). This may reflect different

circumstances between the regions. In particular, irrigation is more common in MM. Like MM, the CW area also has a number of irrigation schemes (although less than MM), as well as many properties that use metered takes from rivers. In contrast, many water users in NC are far less likely to have metered takes (see Figure 3.3. above).

Aligned with the above views on metering and sustainable water use, 90% of respondents agree on the importance of ensuring that meters are well maintained (see Table 7.2). There is very little variation between the regions on this question (see Figure 7.3).

In addition to maintaining meters, respondents were also asked to identify whether their meter had been re-calibrated in the last 3 years. Only a small number of total respondents (n237) answered this question, however, of those who answered, a majority (62%) report that their meter had not been calibrated. However, again, there is variation between the regions, with 66% of MM respondents reporting that their meter had been re-calibrated compared to 25% of CW respondents and 4% of NC respondents (see Figure 7.4).³⁹

It is also worth restating the knowledge findings noted above in this section, in particular, that there are significant differences in knowledge between the responses of active and inactive water extractors. Respondents who had extracted water in the last financial year or the last three financial years are more likely to have good knowledge of the requirements for water metering and when their meter is not working and the national standards for water metering.

There were similar significant differences in responses of water users with small (<30ML) and large (>30ML) combined entitlements. Those with larger entitlements are more likely to have good knowledge of the requirements for water metering and when their meter is not working and the national standards for water metering.

Table 7.2: Views on metering and monitoring

Topic: Metering and monitoring	n	Strongly disagree	Disagree	Unsure	Agree	Strongly agree
Accurate measurement of water extraction by metering is necessary to sustainably manage water resources	608	5%	15%	13%	45%	21%
It is important to ensure water metering equipment is well maintained	500	1%	2%	6%	62%	28%
Metering is beneficial to help me manage my on-property operations?	471	12%	25%	10%	38%	14%
The Office of Water should use satellite images to monitor water extraction and storage	596	11%	19%	34%	24%	12%

³⁹ We note that the total number of respondents (both as a whole, and within the CW and NC regions) who answered the survey question about meter calibration slightly exceeded the total number of respondents who report having meters (under the 'type of meters' question in section 3.1.4). There are a number of possible reasons for this, including that some respondents who answered the calibration question chose not to answer the meter type question (the latter accounting for 634 out of the total of 673 respondents); and that the questions are unclear or misinterpreted by respondents.

Figure 7.2: Accurate measurement of water extraction by metering is necessary to sustainably manage water resources (n608: 194 (CW), 200 (MM), 214(NC))

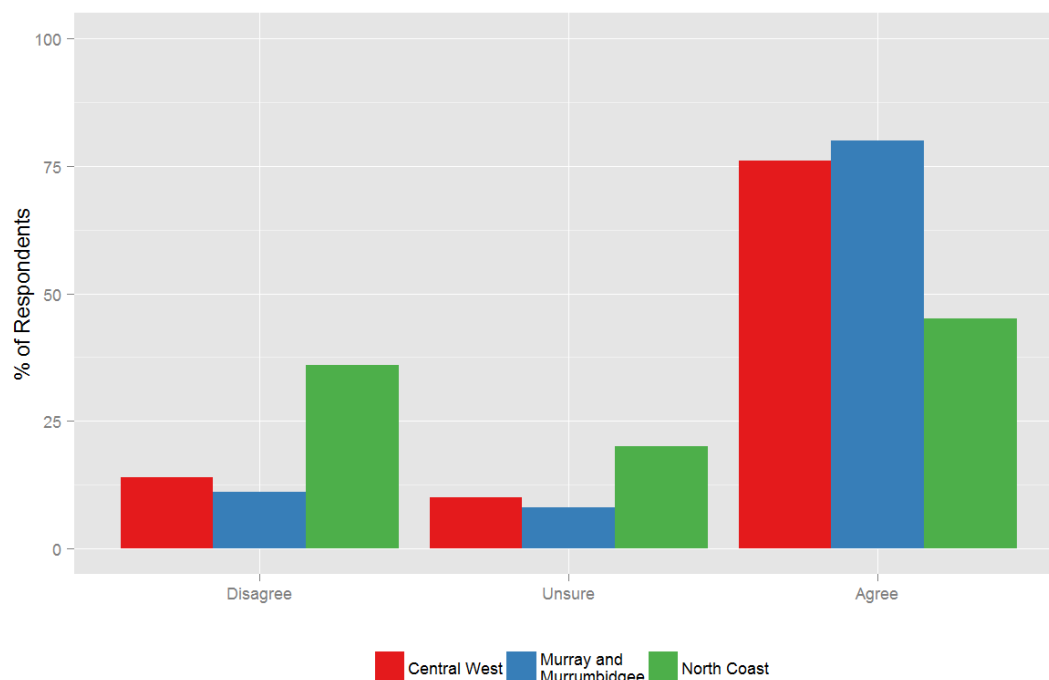


Figure 7.3: It is important to ensure water metering equipment is well maintained (n500: 159 (CW), 185 (MM), 156 (NC))

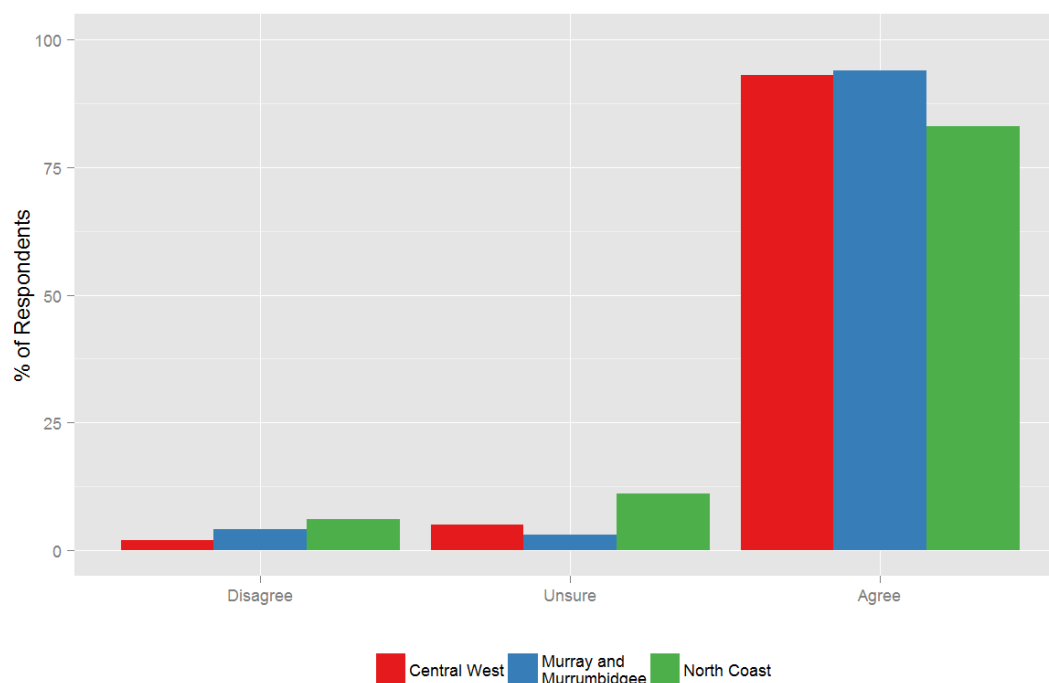


Figure 7.4: Has your meter been re-calibrated within the last 3 years? (n237: 76 (CW), 105 (MM), 56 (NC))

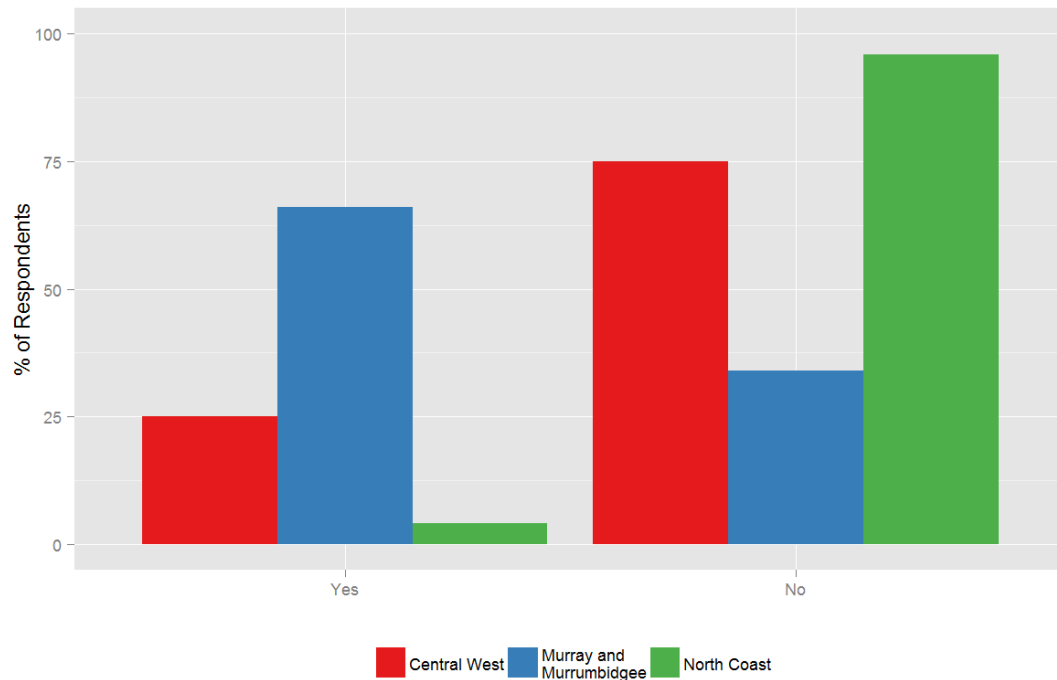
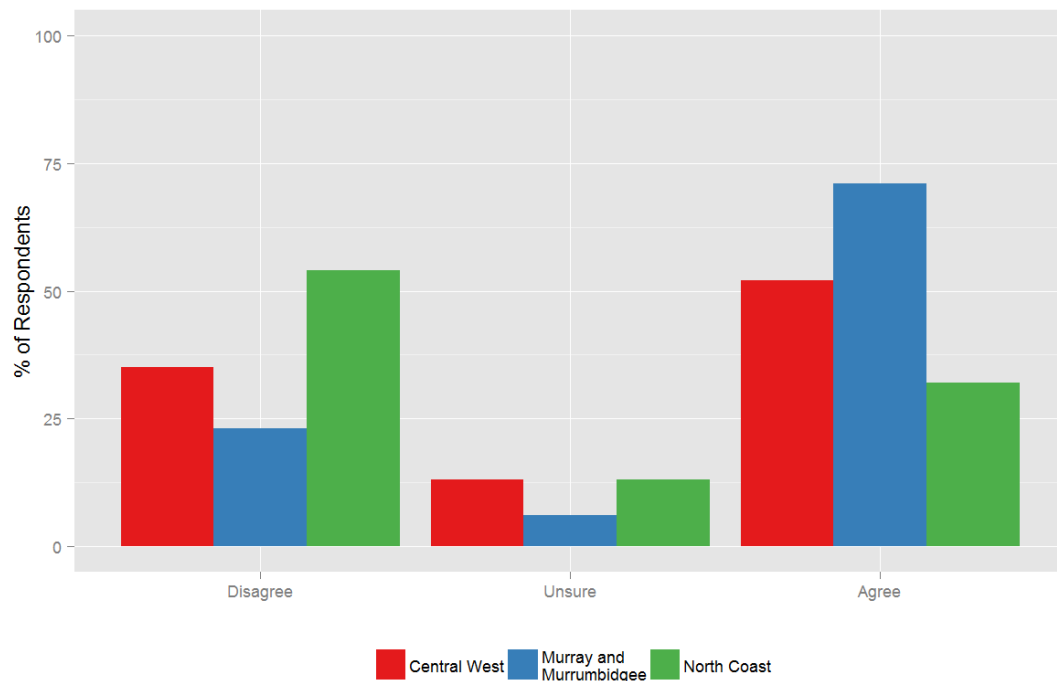


Figure 7.5: Metering is beneficial to help me manage my on-property operations? (n471: 142 (CW), 172 (MM), 157 (NC))



The potential management benefits of metering and associated telemetry appear important to water users. Just over half of the survey respondents agree that metering is beneficial to managing their on-property operations (52%) (Table 7.2). However, there are marked contrasts between the regions. Total agrees of 71% in MM, and 52% in CW, are matched by an underwhelming 32% in NC (no doubt a function of the particular conditions of the NC discussed above, not least the lower levels of meter use) (Figure 7.5).

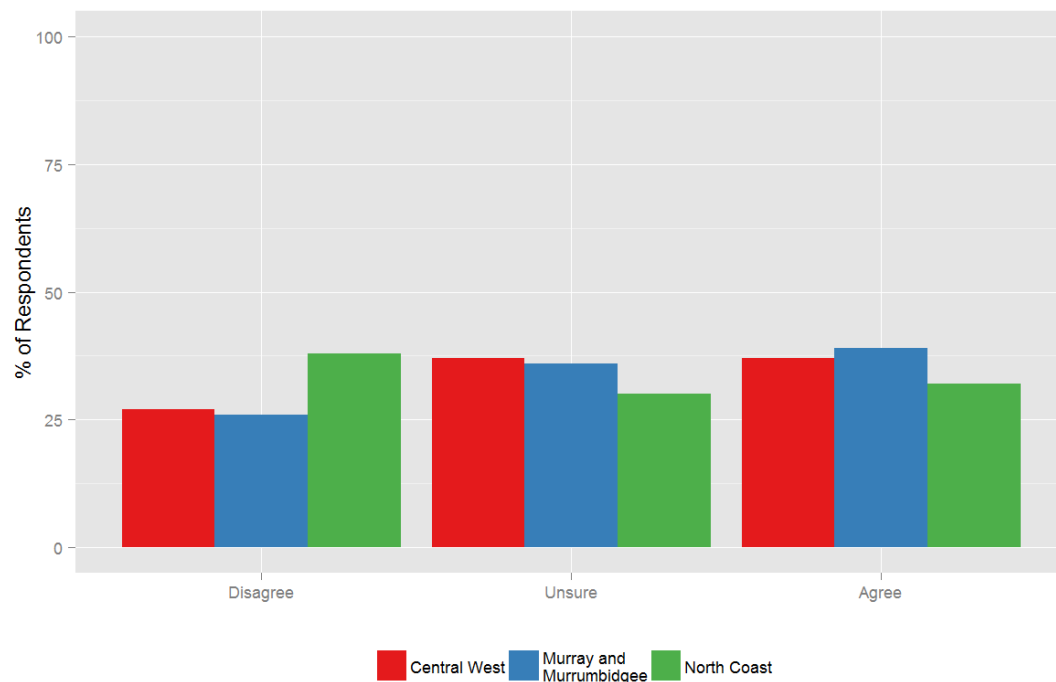
Further, there are similar significant differences in responses of water users with small (<30ML) and large (>30ML) combined entitlements. Those with larger entitlements are more likely to agree that metering was beneficial to managing their on-property operations.

This suggests that those with larger entitlements are more likely to find benefits in measuring their water extraction.

7.2.3.2 Satellite monitoring

Beyond meters, roughly equal thirds of respondents supported, are unsure or opposed to the use of remote sensing satellites to monitor water extraction and storage, albeit with a very slight weighting towards support (see Table 7.2). As displayed in Figure 7.6, there is a small variation between the regions, with support slightly stronger in the MM, and lowest in NC, suggesting that a greater familiarity/need with metering and monitoring technology may lead to greater support for use of satellite images.

Figure 7.6: The Office of Water should use satellite images to monitor water extraction and storage (n596: 190 (CW), 192 (MM), 214 (NC))



7.2.3.3 Summary

The findings suggest water users are generally accepting of the need and benefits of monitoring water use through meters, and maintaining metering technology (despite reports that a majority of meters have not been re-calibrated in the last 3 years). At a general level, these findings suggest water users are able to understand, manage and use meters to meet their water obligations. However, the findings also point to regional variation, with views on the necessity of metering and its benefits to on-property management understandably greatest in regions with high levels of extraction and more meter experience. Related studies of metering in NSW have also revealed concerns regarding the lack of definitive guidance on meter selection, costs of meters and the location of metering in the NC and CW regions.⁴⁰

In contrast to metering, the perceived benefits and weakness of other monitoring technologies (i.e. satellite images) to water management, enforcement and compliance are relatively unclear to respondents.

7.2.4 Conclusion

Having limited knowledge of rules can make it difficult for water users to comply with law and regulations. The above findings suggest there is a significant proportion of respondents who have no or very limited knowledge of water legislation and compliance policy. Most respondents claim very poor knowledge of enforcement actions and penalties. Claimed knowledge of specific requirements impacting on their operations (e.g. licence conditions, allocations, entitlements, bores) is much higher.

Water users rely on industry sources more than government to enhance water management capabilities and practices. Further, a majority of respondents have a positive attitude towards the value and benefits of metering.

7.3 Summary of key findings

Water users' knowledge of laws and regulations, as well as their capacities and technology capabilities to manage and meet their water obligations, can have a significant impact on their ability to comply.

As discussed above, at least two-thirds of respondents report having no or very limited knowledge of key water legislation and compliance policy. This suggests that water users may be unaware of the detailed legislative, regulatory and policy framework, making it more difficult for them to comply with these rules.

Interestingly, respondents report very poor knowledge of enforcement actions and penalties (only 7-9% with good or very good knowledge). Even though enforcement actions can impact on them directly, this suggests the possibility that water users have little expectation of experiencing such action. Further, it suggests that the 'deterrence' impact of such penalties and actions on illegal behaviour may be limited. This is broadly consistent with the findings in Section 4, where penalties and criminal records are a comparatively lower driver of compliance than other motivations.

Nevertheless, when it comes to the several specific requirements impacting on their operations (e.g. licence conditions, allocations, entitlements, bores), the levels of respondents' knowledge increases roughly two-fold (31-47% report good or very

⁴⁰ Holley and Sinclair, above n 4.

good levels of knowledge). Slightly less respondents (27-28%) report good or very good knowledge of trading options and the approval application process. Water users appear to take a more active interest in knowledge based topics that impact them directly, potentially enhancing their ability to comply with the laws and requirements in their day-to-day management.

Overall, more active water users and larger water users appear to have significantly different views to those who are less active water users and have smaller water entitlements. For example, the former have higher levels of knowledge across a broad range of issues (including metering requirements) than those who do not extract water or held smaller entitlements, respectively.

Turning to capacity and capabilities to meet water obligations, water users rely on industry sources more than government or other third parties to enhance their water management and encourage them to use their water more efficiently.

Finally, in terms of monitoring and technology, a majority respond positively towards the value and benefits of metering. This support is greatest in regions with high levels of extraction and more meter experience. There is agreement that accurate measurement of water extraction by metering is necessary to sustainably manage water resources (66%). And just over half of the respondents agree that metering is beneficial to managing their on-property operations (52%). As such, a large majority of respondents agree on the importance of ensuring that meters are well maintained (90%), although a majority of respondents report their meter had not been re-calibrated in the last three years.

Beyond metering there is a fairly even split between respondents who support, oppose or are unsure about using satellite images to monitor water extraction and storage (with those in support just ahead of the other two categories). This suggests that the perceived benefits and weakness of satellite images to water management, enforcement and compliance are relatively unclear to respondents.

8 Conclusion

This report provides important insights into water users' views, perceptions and experiences of compliance, enforcement and water extraction in NSW. Its insights complement ongoing research in other states (see Figure 8.1) and may have several policy implications for an enhanced compliance and enforcement regime that engages a broader range of parties and facilitates better management of water extraction. Ultimately, this could lead to more effective and efficient regulation.

Several key issues emerge from the survey findings. First, there is strong in-principle support of the need for water regulation. Most respondents see this in terms of providing sustainable water resources, communities and environments. As such, respondents nominated personal values and social reputation as key compliance motivators. The fear of enforcement does not appear to be as significant a driver of water users' compliance behaviour. That respondents report low levels of awareness of compliance officers working in their regions supports this conclusion.

Second, despite a perceived lack of regulatory deterrence, approximately half of survey respondents were confident that water users in their regions complied with their licence conditions. The survey results suggested that a desire for economic advantage is seen as the primary reason for non-compliance. Crucially, a lack of knowledge/understanding of the law and, in particular, licence conditions and obligations (see below), were associated with both a lower identification with the aims of water regulation and a greater propensity to justify illegal extractions.

Third, there is little interaction between compliance officers and water users. Few respondents are aware of NOW compliance officers working in their region, nor received assistance from, regulatory officials.

Fourth, there is support for NOW taking stronger enforcement action against those who break the rules. It is also important to recognise that although positive views of NOW's service, role as a regulator and other compliance and enforcement activities outweighed negative views, many are unsure about NOW. Further, of those that had been subject to enforcement action, most think that the action taken by NOW was not appropriate – and the majority also think they had not been treated fairly. Overall, this indicates that while there is a degree of support that NOW can draw on in conducting and communicating its compliance and enforcement activities, there is room to improve its activities.

Fifth, there is a desire for more information on compliance and enforcement issues, as well as water management more generally. Many water users are not using information. However, water users have distinct preferences as to how they communicate with NOW. In particular, there is a preference for passive forms of information, whereby they are not required to seek it out. Further, there is a distinct preference for traditional forms of communication, such as letters, over electronic communications (the exception being emails). This suggests that if NOW wishes to pursue more innovative communication avenues, such as SMS, which have many potential advantages, it will need to educate water users about their benefits to facilitate widespread engagement and adoption. Finally, water users display a distinct preference for relying on information from trusted sources, in particular, family, neighbours and water user groups. This provides an opportunity for NOW, with its limited resources, to work with third parties, particularly water user groups, in the provision of more detailed information to complement their other information initiatives.

Sixth, the potential deterrent of NOW's enforcement powers may be compromised by a lack of knowledge of, in particular, enforcement actions and penalties. Similarly, a widespread lack of knowledge of broader water policy goals and mechanisms has the potential to undermine key new policy initiatives implemented by NOW. In contrast, most respondents appear to support and have a good understanding of metering technology, the need for its maintenance and its use in compliance and on-property management. However, the survey found that knowledge and support of metering is greatest in those regions with more regular extraction/irrigation and more metering experience.

In summary, this report seeks to obtain evidentiary data to assist the formulation of future policy and practice developments by NOW and industry associations, and in so doing, contribute to the National Framework for Compliance and Enforcement Systems in Water Resource Management. Drawing on a survey of waters users in three NSW regions, it provides insights on four central themes: (i) motivations for complying with legal obligations; (ii) views and experiences with NOW's compliance and enforcement policies and practices; (iii) sources of information and the perceived usefulness of information; and (iv) knowledge of water regulations and the resources used to assist with compliance. It highlights specific policy implications and, in so doing, identifies opportunities for more efficient and effective regulation of water extraction in NSW. While the report is focused on NSW, its findings may have broader relevance to water regulation in other jurisdictions. The findings from this report will also inform future research projects being conducted by the research team into compliance and enforcement issues in NSW, including in the context of controlled activities and drillers.

Figure 8.1: Insights on compliance and non-compliance in Queensland

McCartney and Durante (2013)⁴¹ have recently completed research examining the drivers of non-compliance under Queensland water resource legislation. While there are some differences between the Queensland and this NSW report, the findings are broadly consistent. Notably, the questions asked and methodology used by the two research projects were different (Queensland relying primarily on interviews with water users, industry groups, department officials and focus groups with water users in two case study areas), so caution must be used when comparing the results between the two states.

In terms of motivations, the Queensland research similarly identified that the majority of water users were perceived to be compliant, that the risk of getting caught and facing sanctions influenced compliance behaviour, and that financial benefits were recognised as a factor influencing non-compliance decision-making and behaviour (although less so in Queensland). In contrast, while peer/social pressure was viewed by Queensland officials/stakeholders as an important motivator, water users themselves were less inclined to agree, and drought as a justification for illegal extractions was more prominent in Queensland.

In terms of experiences, interactions and views, Queensland water users reported regular on-farm inspections by officials (or contractors), although the scope of such inspections was seen as being limited and the risk of breaches being identified very low (except when illegal extractions occurred through a meter). Further, there is uncertainty amongst water users about officials' capacity to investigate potential breaches, to impose penalties and some thought the Department had become too

⁴¹ McCartney and Durante, above n 1.

centralised.

In terms of communication and education, as with NSW, Queensland water users had a strong preference for traditional communication, i.e. letters, over digital media, but they also favoured water user generated face-to-face contact with officials. There was less support for group meeting, field days, and mass media communication. Personal experience and relationships, and notifications of prosecutions, were viewed as important ways to keep up-to-date with their obligations.

In terms of knowledge, as with NSW, there were low levels of knowledge of enforcement penalties in Queensland. Also, there was limited use of legislation and water management policies as sources of information. However, water users were more confident in knowing the entitlements and rules applying to their own water use.

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B. Legislation

Water Act 1912 (NSW)

Water Management Act 2000 (NSW)

Appendix 1: Survey questions

Your views on water regulation and legislation

Examine each statement in the table, then place the number for your response in **each** space provided for 'Your view'. Response options:

Strongly disagree	Disagree	Unsure	Agree	Strongly agree	Not applicable
1	2	3	4	5	6

Your views on water regulation and legislation in NSW	Your view
Water regulation is needed to sustainably manage water resources	
Water regulation is needed to protect the rights of water users	
Water regulation is needed to protect the environment	
Water regulation is needed to protect the long term viability of communities	
Existing NSW water regulation is doing a good job at sustainably managing water resources	
Existing NSW water regulation is doing a good job at protecting the rights of water users	
Existing NSW water regulation is doing a good job at protecting the environment	
Existing NSW water regulation is doing a good job at protecting the long term viability of communities	
Existing NSW water regulation is founded on accurate information about water availability	
Existing NSW water regulation places unfair costs on water users	

Your views and experiences on monitoring and management

Examine each statement in the table, then place the number for your response in **each** space provided for 'Your view'. Response options:

Strongly disagree	Disagree	Unsure	Agree	Strongly agree	Not applicable
1	2	3	4	5	6

Your views and experiences on monitoring and management	Your view
Accurate measurement of water extraction by metering is necessary to sustainably manage water resources	
Metering is beneficial to help me manage my on-property operations	
I am confident the water meter on my property measures accurately	
It is important to ensure water metering equipment is well maintained	
The Office of Water should use satellite images to monitor water extraction and storage	
The CMA encourages me to use my water more efficiently	
My industry association encourages me to use my water more efficiently	
The purchaser of my products encourages me to use my water more efficiently	
Urban/city communities do not have a good appreciation of the difficulties and complexities of on-property water management	

Your views and experiences of the NSW Office of Water

Examine each statement in the table, then place the number for your response in **each** space provided for '**Your view**' and '**Your experience**' respectively. **Response options:**

Strongly disagree	Disagree	Unsure	Agree	Strongly agree	Not applicable
1	2	3	4	5	6

Your views on the NSW Office of Water	Your view
I'm confident the Office of Water is able to detect illegal water extractions	
I'm confident the Office of Water is effectively targeting its enforcement activities to reduce non-compliant water extraction	
I can rely on the Office of Water to ensure that water users are in compliance with water licence and approval conditions	
I can rely on the Office of Water to investigate reports of potential illegal activity relating to water extraction	
I think the Office of Water should take stronger enforcement action against water users who break the rules	
I think the Office of Water should prosecute more water users who break the rules	
I am satisfied with the level of service provided by the Office of Water	
I am confident the Office of Water is an effective regulator	

Your experiences with the NSW Office of Water and State Water	Your experience
Compliance officers from the Office of Water regularly work in my region	
Office of Water compliance or licensing officers have helped me to meet my licence obligations	
State Water meter readers have helped me to meet my licence obligations	
Office of Water compliance officers are fair and equitable in their interactions with water users in my region	
Office of Water compliance officers demonstrate good judgment in their decisions regarding water users in my region	

If you have been subject to compliance or enforcement action (e.g. written warning, penalty infringement notice, direction, stop work order or prosecution) by the Office of Water please respond to these questions (if you haven't, go to the next page).	Your experience
The compliance action taken against me was appropriate	
The investigation was completed in a timely manner	
I was kept informed about the action taken by the Office of Water	
I was given the opportunity to change my water extraction practices before further compliance action was taken	
I have changed my water extraction practices since being subject to compliance action	
I am more likely to seek help from the Office of Water since being subject to compliance action	
I was treated fairly by the Office of Water	

Your views on water compliance and enforcement

Examine each statement in the table, then place the number for your response in **each** space provided for '**Your view**'.

Response options:

Strongly disagree	Disagree	Unsure	Agree	Strongly agree	Not applicable
1	2	3	4	5	6

Your views on compliance and enforcement in NSW	Your view
It is important that my peers comply with their licence conditions	
Illegal water extraction is a big problem in my region	
Illegal water extraction has increased over the past ten years	
Tough economic conditions can justify the illegal taking of water	
High water costs can justify the illegal taking of water	
The decreased availability of water due to drought can justify the illegal taking of water	
The increased availability of water due to flooding can justify the illegal taking of water	
Illegal water extraction occurs because of a desire for economic advantage	
Illegal water extraction occurs because of a lack of awareness of the rules	
Illegal water extraction occurs because the risk of detection is low	
Complying with water laws is the right thing to do	
Complying with my licence conditions is important because breaking the rules is unfair to other water users	
Complying with my licence conditions is important because breaking the rules reflects badly on all water users	
Complying with my licence conditions is important because breaking the rules reflects badly on my reputation with my peers	
Knowing that some water users get away with illegal water extraction makes it unfair for others that comply	
The penalties for illegal water extraction are a strong deterrent	
Getting a criminal record for carrying out illegal water activities is a strong deterrent	
People illegally taking water will be caught	
People illegally taking water will be prosecuted	
I am confident water users in my region comply with their licence conditions	
I find it difficult to understand my licence or approval conditions	
Water laws and regulations are too complex	

Your knowledge of legislation, compliance and enforcement

Examine each statement in the table, then place the number for your response in **each** space provided for '**Your knowledge**'.

Response options:

No knowledge	Very little knowledge	Some knowledge	Good knowledge (sufficient to act)	Very good knowledge (sufficient to explain to others)	Not applicable
1	2	3	4	5	6

Topics	Your knowledge
<i>Water Management Act 2000</i>	
<i>Water Act 1912</i>	
Office of Water compliance policy	
The types of activities and works regulated by NSW water legislation	
The requirements for taking water	
The requirements for constructing and using a bore	
The requirements for constructing and using a dam	
The requirements for constructing a levee	
The requirements for taking water for domestic use and stock watering	
The requirements for capturing water for a harvestable right dam	
The requirements for excavating close to rivers or lakes	
The requirements for water metering	
The requirements when my water meter isn't working	
The national standards for water meters	
The conditions of my licence or approval	
The difference between my water allocation and my water entitlement	
My options for trading water	
The application process for a water licence or approval	
Different enforcement actions under the Water Management Act	
The penalties for illegal water activities	

Your information sources – usefulness and preferences

Examine each statement in the table, then place the number for your response in **each** space provided for '**Source**' and '**Usefulness**'.

Response options for your sources of information:

Minor source of information	Moderate source of information	Major source of information	Do not use as a source of information
1	2	3	4

Response options for the usefulness of information:

Not very useful information	Moderately useful information	Very useful information	Not Applicable
1	2	3	4

Your information sources and usefulness	Source	Usefulness
Water Management Act 2000		
Water Act 1912		
Office of Water compliance policy		
Office of Water website		
Office of Water hydrological network		
Office of Water phone enquiry line (1800 353 104)		
Office of Water email (information@water.nsw.gov.au)		
Office of Water news flyers (e.g. flyers received with your water bills)		
Office of Water fact sheets (e.g. How much water do I need for my rural property?)		
Office of Water guides and guidelines (e.g. Guide to water access licences and certificates)		
Office of Water letters		
Office of Water compliance officer		
Office of Water licensing officer		
Office of Water seminars/events on water licensing		
Industry seminars/events on water management		
State Water Corporation meter reader		
State Water Corporation office		
State Water Corporation website		
Catchment Management Authority (CMA)		
Local Council		
Lawyer		
Conveyancer		
Bore driller		
Industry group or association		
Your information sources and usefulness (continued)	Source	Usefulness
Industry peers		
Neighbours or family		
Purchaser of your product		
Insurance Company		
Bank		

Media		
Other – <i>please specify</i>		

Please enter in your preferred method or methods of receiving the following types of information from the Office of Water <i>Possible methods of receiving information include: letter, email, news flyer with your bill, website, phone conversation, face to face, seminar, social media, SMS update, community meeting or other (please specify)</i>	
Information on water management (e.g. research on groundwater, evaluations of water sharing plans)	
Information on Office of Water compliance activities (e.g. recent prosecutions, compliance operations and policies)	
Information that helps me comply with my licence or approval (e.g. specific legal requirements on using meters)	
Changes to water legislation and associated requirements (e.g. amendments to the <i>Water Management Act 2000</i> ; new powers for the Office of Water)	

Please examine the statements below and circle your response			
The Office of Water provides me with sufficient information about water legislation and my obligations as a licence or approval holder	Yes	No	Unsure
The Office of Water provides me with timely hydrological data (e.g. dam levels, bore levels etc)	Yes	No	Unsure
I know where to find information about water legislation	Yes	No	Unsure
I know where to find information about water licences and approvals	Yes	No	Unsure
I know where to find the current water allocation for my water source	Yes	No	Unsure
I know where to find the Office of Water compliance policy	Yes	No	Unsure
I know who to ask if I have a query about my water licence/approval	Yes	No	Unsure
I know where to find information about the requirements for my water licences and/or approval	Yes	No	Unsure
I would like more information about my water management obligations	Yes	No	Unsure
I would like more information about the compliance and enforcement activities of the Office of Water	Yes	No	Unsure
I would prefer to find information about water legislation and my obligations myself	Yes	No	Unsure

Background information

The next questions are about yourself and your property/s that may influence your views, knowledge and experiences. The information you provide will be kept strictly confidential.

Background information	Please circle / fill in your response
Are you male or female? Please circle	Male Female
What is your age?	
What is your highest level of education? (e.g. primary, secondary, tertiary, other) Please specify	
Is your main source of income from working on your property?	Yes No
What is the industry type of your water use (e.g. farming, forestry, mining, manufacturing, school, water utility)?	
What type of management do you use (e.g. owner manager, family run, corporate run)? Please specify	
If you farm your property, what are the main enterprises (e.g. cropping, horticulture, cotton, grazing sheep, dairying, etc)	
What is the approximate size of your property? (ha)	
In which Local Government Area is your property located?	
In the past 5 years, have you been a member of a local landcare or rivercare group? Please circle	Yes No
In the past 5 years, have you been a member of an industry group? (e.g. Cotton Australia, Grain Growers, Rice Growers, Irrigator's Council, Meat and Livestock, etc)	Yes No
Do you take water under a basic landholder right? (e.g. domestic and stock; harvestable rights, native title rights)	Yes No
What type of water meter(s) do you have? (e.g. none, don't know, mechanical, electromechanical, ultrasonic, other)	
If you have a water meter, approximately how often do you check your water meter is working properly? Please circle	Daily, Weekly, Monthly Quarterly, Annually, Never
If you do not have a water meter approximately how often do you record your water extraction? Please circle	Daily, Weekly, Monthly Quarterly, Annually, Never
Has your meter been re-calibrated within the last 3 years? Please circle	Yes No Don't know
What is the approximate combined entitlement of all water access licences you hold?	_____ ML or _____ shares
What total volume (approximately) of surface water (SW) and groundwater did you extract in the last financial year ?	Regulated SW _____ ML Unregulated SW _____ ML Groundwater _____ ML
What total volume (approximately) of surface water (SW) and groundwater did you extract in the last 3 financial years ?	Regulated SW _____ ML Unregulated SW _____ ML Groundwater _____ ML
What other sources of water do you use (e.g. supplementary water, flood plain harvesting, rainwater runoff capture)?	
A compliance officer from the Office of Water has conducted an inspection on my property. Please circle	Yes No Don't know
I have been impacted by illegal water extraction. Please circle	Yes No Don't know

Appendix 2: Regions and knowledge

Water Management Act 2000

	CW	MM	NC	Total
No knowledge	35%	27%	41%	35%
Very little knowledge	34%	30%	28%	31%
Some knowledge	23%	33%	26%	27%
Good knowledge	6%	9%	4%	7%
Very good knowledge	1%	1%	0%	1%
n	193	201	225	619

Water Act 1912

	CW	MM	NC	Total
No knowledge	42%	32%	48%	41%
Very little knowledge	35%	34%	29%	32%
Some knowledge	20%	26%	20%	22%
Good knowledge	3%	8%	3%	4%
Very good knowledge	1%	1%	1%	1%
n	194	198	228	620

Office of Water compliance policy

	CW	MM	NC	Total
No knowledge	37%	25%	42%	35%
Very little knowledge	35%	30%	29%	31%
Some knowledge	24%	33%	22%	26%
Good knowledge	5%	10%	7%	7%
Very good knowledge	0%	0%	0%	0%
n	194	201	228	623

The types of activities and works regulated by NSW water legislation

	CW	MM	NC	Total
No knowledge	24%	20%	36%	27%
Very little knowledge	34%	33%	30%	32%
Some knowledge	35%	34%	28%	32%
Good knowledge	6%	12%	6%	8%
Very good knowledge	1%	0%	1%	1%
n	195	201	227	623

The requirements for taking water

	CW	MM	NC	Total
No knowledge	14%	6%	22%	14%
Very little knowledge	26%	17%	17%	20%
Some knowledge	37%	32%	36%	35%
Good knowledge	21%	40%	21%	27%
Very good knowledge	3%	5%	4%	4%
n	196	202	225	623

The requirements for constructing and using a bore

	CW	MM	NC	Total
No knowledge	8%	13%	21%	14%
Very little knowledge	16%	16%	14%	15%
Some knowledge	36%	28%	34%	33%
Good knowledge	33%	36%	25%	31%
Very good knowledge	7%	8%	6%	7%
n	196	191	216	603

The requirements for constructing and using a dam

	CW	MM	NC	Total
No knowledge	14%	19%	21%	18%
Very little knowledge	24%	22%	19%	22%
Some knowledge	30%	27%	40%	33%
Good knowledge	29%	25%	17%	23%
Very good knowledge	3%	7%	4%	4%
n	190	184	212	586

The requirements for constructing a levee

	CW	MM	NC	Total
No knowledge	32%	25%	43%	34%
Very little knowledge	32%	24%	31%	29%
Some knowledge	20%	23%	19%	20%
Good knowledge	14%	22%	6%	14%
Very good knowledge	2%	7%	2%	3%
n	184	182	202	568

The requirements for taking water for domestic use and stock watering

	CW	MM	NC	Total
No knowledge	8%	4%	15%	9%
Very little knowledge	13%	8%	12%	11%
Some knowledge	33%	27%	29%	30%
Good knowledge	36%	46%	32%	38%
Very good knowledge	10%	14%	12%	12%
n	200	200	223	623

The requirements for capturing water for a harvestable right dam

	CW	MM	NC	Total
No knowledge	28%	26%	36%	30%
Very little knowledge	29%	31%	22%	27%
Some knowledge	24%	25%	28%	26%
Good knowledge	17%	15%	12%	14%
Very good knowledge	2%	4%	3%	3%
n	184	180	208	572

The requirements for excavating close to rivers or lakes

	CW	MM	NC	Total
No knowledge	34%	21%	32%	29%
Very little knowledge	28%	31%	22%	27%
Some knowledge	21%	26%	30%	26%
Good knowledge	14%	18%	13%	15%
Very good knowledge	3%	4%	4%	4%
n	182	187	209	578

The requirements for water metering

	CW	MM	NC	Total
No knowledge	27%	8%	36%	24%
Very little knowledge	22%	19%	27%	23%
Some knowledge	26%	26%	25%	26%
Good knowledge	21%	34%	9%	21%
Very good knowledge	4%	13%	3%	7%
n	179	194	192	565

The requirements when my water meter isn't working

	CW	MM	NC	Total
No knowledge	29%	13%	45%	28%
Very little knowledge	20%	19%	22%	20%
Some knowledge	22%	22%	20%	21%
Good knowledge	22%	33%	9%	22%
Very good knowledge	6%	13%	4%	8%
n	129	175	137	441

The national standards for water meters

	CW	MM	NC	Total
No knowledge	42%	29%	54%	41%
Very little knowledge	31%	26%	27%	28%
Some knowledge	16%	24%	16%	19%
Good knowledge	9%	16%	1%	9%
Very good knowledge	2%	4%	2%	3%
n	155	191	167	513

The conditions of my licence or approval

	CW	MM	NC	Total
No knowledge	10%	6%	18%	12%
Very little knowledge	13%	13%	16%	14%
Some knowledge	28%	27%	26%	27%
Good knowledge	38%	43%	28%	36%
Very good knowledge	10%	10%	12%	11%
n	182	202	218	602

The difference between my water allocation and my water entitlement

	CW	MM	NC	Total
No knowledge	23%	10%	28%	20%
Very little knowledge	16%	12%	25%	18%
Some knowledge	21%	16%	26%	21%
Good knowledge	29%	40%	15%	28%
Very good knowledge	12%	22%	6%	13%
n	163	188	196	547

My options for trading water

	CW	MM	NC	Total
No knowledge	28%	10%	49%	29%
Very little knowledge	19%	18%	24%	20%
Some knowledge	26%	26%	16%	22%
Good knowledge	17%	30%	7%	18%
Very good knowledge	9%	16%	3%	10%
n	149	188	190	527

The application process for a water licence or approval

	CW	MM	NC	Total
No knowledge	16%	14%	26%	19%
Very little knowledge	28%	24%	24%	25%
Some knowledge	29%	27%	31%	29%
Good knowledge	21%	30%	15%	22%
Very good knowledge	6%	6%	4%	5%
n	179	198	220	597

Different enforcement actions under the Water Management Act

	CW	MM	NC	Total
No knowledge	38%	31%	50%	40%
Very little knowledge	35%	34%	31%	33%
Some knowledge	23%	25%	14%	21%
Good knowledge	4%	10%	3%	6%
Very good knowledge	0%	1%	1%	1%
n	182	197	220	599

The penalties for illegal water activities

	CW	MM	NC	Total
No knowledge	35%	28%	49%	38%
Very little knowledge	34%	32%	26%	31%
Some knowledge	23%	28%	17%	23%
Good knowledge	7%	9%	5%	7%
Very good knowledge	2%	2%	2%	2%
n	189	200	219	608