



## Australasian Journal of Environmental Management

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/tjem20>

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Published online: 10 Apr 2014.

To cite this article: E. Sharp & A. Curtis (2014): Can NRM agencies rely on capable and effective staff to build trust in the agency?, Australasian Journal of Environmental Management, DOI: [10.1080/14486563.2014.881306](https://doi.org/10.1080/14486563.2014.881306)

To link to this article: <http://dx.doi.org/10.1080/14486563.2014.881306>

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## Can NRM agencies rely on capable and effective staff to build trust in the agency?

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Trust is recognised as an important component of agency–community relations, influencing the social acceptability of resource access and natural resource management (NRM). It is not clear if perceptions of the trustworthiness of agency staff members can lead to trust in an agency. This is an important question for agencies working in contentious policy arenas such as water reform in Australia’s Murray-Darling Basin. This research addressed that gap and developed a set of survey items that can be employed to benchmark trust and trustworthiness by exploring groundwater irrigator’s trust in the New South Wales Office of Water (NoW). A survey was mailed to all farming properties with a groundwater licence in the Namoi catchment. As might be expected, licence holders were more likely to trust agency staff than NoW itself. Perceptions of agency and staff trustworthiness influenced landholder trust in NoW. Agency trustworthiness partially mediated the relationship between staff trustworthiness and agency trust. These findings suggest that trust should be viewed as a multi-level phenomenon. To the extent that these findings are replicated, a key implication is that community engagement strategies attempting to build trust in an agency should set out to influence how the agency itself is perceived as an organisation.

**Keywords:** trust; trustworthiness; NRM agency; community engagement

### Introduction

Trust is fundamental to the success of human relationships (Cook 2001). Trust forms part of an individual’s or an organisation’s social capital (i.e. the social relations, networks, trust, norms and institutions) that arises between people when they interact, and which can then lead to further benefits (Sobels et al. 2001). Social capital can be both positive and negative, and it is increasingly recognised that trust between place-based communities and the government agencies responsible for natural resource management (NRM) is a critical factor in determining the social acceptability of resource access and management decisions (Leahy & Anderson 2008; Ter Mors et al. 2010). Trust is considered an essential foundation of effective public engagement (Beunen & de Vries 2011; Cooke et al. 2011) and there is evidence that, where trust exists, there is less likely to be litigation and delays in implementing policy and management decisions (Marshall & Jones 2005; Baral 2012).

While there is no consensus among disciplines about the definition of ‘trust’ (Kramer 1999), definitions by Mayer et al. (1995) and Rousseau et al. (1998) are frequently cited and used in the NRM literature (e.g. Davenport et al. 2007; Liljeblad et al. 2009). In this article, trust is defined as ‘a willingness to accept vulnerability based upon positive expectations of the intentions or behaviour of another’, adapted from Mayer et al. (1995,

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p. 712) and Rousseau et al. (1998, p. 395). This definition of trust makes a distinction between ‘trust’ and ‘trustworthiness’ (Sharp et al. 2012). First, the willingness to accept vulnerability represents trust or ‘trusting intentions’. Second, these trusting intentions are based on positive ‘trusting beliefs or expectations’ (i.e. beliefs or expectations about another’s trustworthiness). Trustworthiness is a quality of the trustee (i.e. person being trusted) while trusting is something that the trustor (i.e. person doing the trusting) does (Mayer et al. 1995). These constructs are linked in that perception of trustworthiness contributes to the intention to trust.

Given the benefits of community–agency trust, there are conflicting findings about how trust at one level of analysis (e.g. interpersonal) influences trust at another level (e.g. organisational or institutional). For example, some organisational management research suggests that trust is relational (Rousseau et al. 1998; Lewicki et al. 2006) and that increased frequency of contact between relationship partners at the interpersonal level leads to increased trust at the organisational level (Shapiro et al. 1992; Burt & Knez 1995). NRM studies have recommended that increasing on-ground staff interaction with the public at the interpersonal level will lead to trust in managing agencies at organisational level (e.g. Ryan & Klug 2005; Toman et al. 2008; Olsen & Shindler 2010). However, other NRM research has found that trust in agency staff does not always translate into trust in the managing agency itself (e.g. Davenport et al. 2007; Leahy & Anderson 2008, 2010). This is an important question for agencies working in contentious policy arenas such as water reform in Australia’s Murray-Darling Basin (MDB) or coal seam gas mining in southeast Australia. That is, is it possible for agencies to rely on the ability of capable and effective staff to build trust in the agency amongst place-based communities? This article addresses that gap in the literature by exploring rural landholder trust in the New South Wales Office of Water (NoW) amongst property owners with groundwater licences in the Namoi catchment.

This article extends earlier work in the wildfire context exploring the nature of trust and trustworthiness between community members and agency staff (Sharp et al. 2012) by examining organisational trust and trustworthiness. The article also makes an important contribution to NRM literature in Australia by providing a theoretically derived set of items that can be adapted to benchmark and evaluate trust and trustworthiness in an NRM organisation. In the next section we further explore the concepts of trust and trustworthiness. We then introduce the case study and the research approach. Our results section is followed by a discussion of the contribution of the research to the wider literature and a brief conclusion where we explore some of the practical implications of the research.

## **Background**

In this article we have defined trust as ‘a willingness to accept vulnerability based upon positive expectations of the intentions or behaviour of another’ (Mayer et al. 1995; Rousseau et al. 1998). The willingness to accept vulnerability represents trust and those trusting intentions are based on positive beliefs or expectations about another’s trustworthiness. Several authors (e.g. Hosmer 1995; Rousseau et al. 1998; Hudson 2004; Mollering 2006) have suggested that trust, or trusting intentions, is usually associated with several elements: (1) interdependence among actors; (2) uncertainty regarding the intentions or behaviour of the trustee; (3) risk, that is, the trustor could experience negative outcomes if the trustee proves untrustworthy; (4) vulnerability of the trustor through taking on that risk; and (5) expectations that the trustee will not abuse the trustor’s vulnerability. Trust, or the

willingness to be vulnerable, is often operationalised as reliance on the other party for certain actions that carry some sort of risk or potential for negative outcomes.

Most of the trust literature views trustworthiness as a multidimensional construct. For the research discussed in this article, we adopted the suggestion by Mayer et al. (1995) that trustworthiness is comprised of three characteristics: ability (i.e. trustor perceptions of the trustee's knowledge, skills and competencies); benevolence (i.e. the extent to which a trustor believes that a trustee will act in the best interest of the trustor); and integrity (i.e. the extent to which the trustor perceives the trustee as acting in accord with a set of values and norms shared with, or acceptable to, the trustor).

Trust may be built or maintained at different levels of analysis (Currall & Inkpen 2006; Fulmer & Gelfand 2012). Interpersonal trust refers to trust between individuals. It is embedded in interactions within a relationship and arises from the history and quality of that relationship (Rus & Iglic 2005). However, reputations of the trustee and the attitudes of a trusted third-party towards the trustee may be important to a trustor's perception of trustee trustworthiness in newly formed relationships when the parties do not know one another (Burt & Knez 1995).

Organisational trust, referred to as 'social trust' (Siegrist & Cvetkovich 2000), represents the extent of trust that an individual places in a collective entity. Trustor perceptions of an organisation's trustworthiness stem from the way in which the organisation regularly interacts with the trustor, which reflect the organisation's institutional 'culture' or values, its beliefs and decision-making systems (Zucker 1986; Blomqvist 1997). Some authors suggest that organisational trustworthiness may transfer to individuals in an organisation, because it acts as a proxy for interpersonal trust when detailed knowledge of individual organisation members is absent (Zaheer et al. 1998; McEvily et al. 2006). In other words, group membership can be taken to signal individual trustworthiness.

It is important to note that interpersonal and organisational trust interactions occur within a social context and are enhanced or constrained by macro processes (Sitkin & Pablo 1992), including those at the institutional level. Institutional trust refers to the rules, legal and regulatory obligations, codes of practice and other formal frameworks, as well as informal rules such as norms, which influence an organisation's actions (Zucker 1986; Offe 1999).

Conflicting findings regarding trust at different levels of analysis suggest a need to explore how organisational trust is influenced by perceptions of trustworthiness at both the interpersonal and organisational levels. On a practical level, considering trustworthiness at both the interpersonal and organisational levels will help to clarify where barriers to trust-building may lie in community–agency relationships, thereby providing insights into more effective and efficient ways to allocate resources and focus effort.

## **Approach**

This research sought to better understand how trustworthiness at the interpersonal and organisational levels influenced trust at the organisational level. Two simple regression models were designed (Figure 1). The first model was a mediation model (Figure 1A). The second model was a moderation model (Figure 1B).

In the first model (Figure 1A) (Holmbeck 1997), it is hypothesised that agency trustworthiness will mediate the relationship between staff member trustworthiness and agency trust. In other words, staff member trustworthiness influences agency trustworthiness which, in turn, influences agency trust. This model tests whether staff member

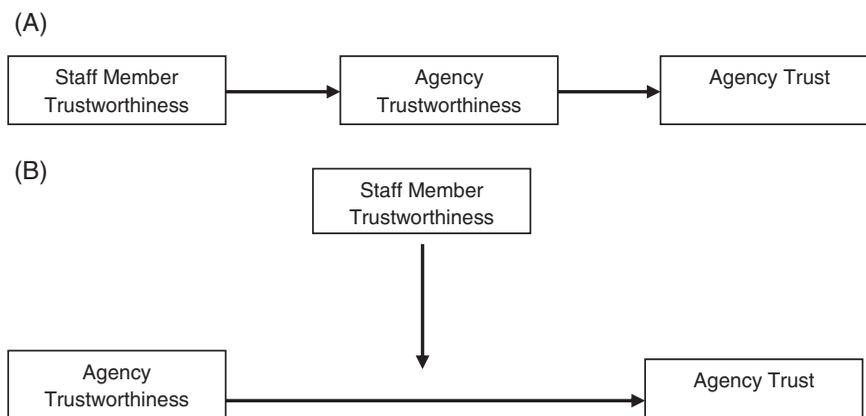


Figure 1. Landholder assessments of NoW trust and trustworthiness. **A**, Schematic diagram of the mediating role of agency trustworthiness. **B**, Schematic diagram of the moderating role of staff member trustworthiness.

trustworthiness: (1) has a significant influence on agency trustworthiness and/or agency trust; and (2) can directly influence agency trust.

The second model tested is a moderation model (Figure 1B). Moderation models explain ‘when’, or under what conditions, a relationship exists. The moderation model tests whether the prediction of a dependent variable (i.e. agency trust) from an independent variable (i.e. agency trustworthiness) differs across levels of a third variable (i.e. staff trustworthiness). In other words, does the relationship between agency trustworthiness and agency trust differ with high or low levels of staff trustworthiness? Therefore, the hypothesis in the second model was that staff member trustworthiness would interact with agency trustworthiness to modify the level of agency trust.

This research was based in the Namoi Catchment Management Authority area in northern New South Wales, Australia (Figure 2). The catchment covers approximately 42,000 km<sup>2</sup> with a population of approximately 100,000 people. The Namoi is an area of intensive agricultural development with the Namoi River alluvial plains extensively developed for both grazing and dryland, and irrigated cropping (cereals, cotton, pulses and oilseeds). Cotton is the main irrigated crop, accounting for 60 per cent of irrigated area and 76 per cent of water used in the catchment (ABS et al. 2010). Groundwater use increased rapidly from the late 1970s, and groundwater resources in the region are now the most intensively developed in New South Wales with 2004/05 groundwater extraction of 255 GL (CSIRO 2007). Increasing groundwater use has resulted in dramatically lowered groundwater levels and consequent reductions in groundwater entitlements of greater than 80 per cent in some parts of the catchment since the early 2000s.

Groundwater entitlement reductions were undertaken through the development of ‘water sharing plans’ at the state government level, which established rules for sharing water between water users and environmental needs and between different types of water use (e.g. irrigation, rural domestic supply, stock watering). The development of the groundwater sharing plan for the Namoi catchment caused considerable concern among groundwater licence holders. There were many delays, threats of litigation, and allegations that the decision-making process and the methods used to determine entitlement reductions were unfair and lacked meaningful engagement with licence holders (Kuehne & Bjornlund

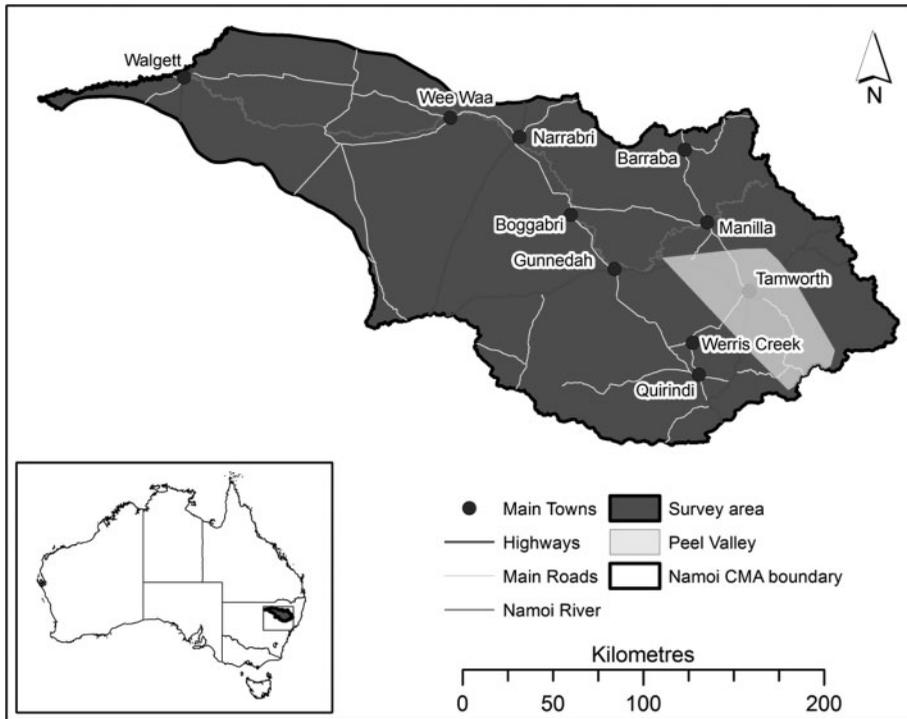


Figure 2. The Namoi Catchment Management Authority region and the area surveyed.

2006). Water reform processes have continued under the various iterations of the Murray-Darling Basin Plan and have further strained relationships between water management authorities and groundwater licence holders.

Using a NoW database, a survey was posted in 2011 to all farming properties associated with a groundwater licence in the Namoi catchment, with the exception of the Peel Valley which is managed under a separate water sharing plan. Draft survey instruments were peer-reviewed by other social researchers and staff at the Cotton Catchment Communities Cooperative Research Centre (CRC). A final draft was pre-tested with five local landholders, identified by key informants as representative of the main enterprise types and localities. Each pre-test participant was mailed a copy of the draft survey, a draft cover letter, and a note explaining the purpose of the pre-test and inviting them to attend a half-day workshop to discuss their experience completing the survey. Revisions to the survey based on this feedback included: rewording the survey title and introduction; changing the sequence of sections; and removing a water usage table to make the survey shorter. The cover letter and introduction at the front of the survey assured recipients that information they provided would never be made available to anyone outside the research team, that individual survey responses would not be identifiable and that the final report would only provide aggregated results. Following the initial mail-out, a series of reminder cards and a second complete mail-out were sent to non-responders. Of the 447 surveys distributed, 210 useable surveys were returned. After taking into account surveys 'returned-to-sender' and other legitimate reasons for non-returns (e.g. property sold, owner overseas), a final response rate of 54 per cent was achieved.

The referents for the survey items were the NoW and its staff. NoW is responsible for the management of the state's surface and groundwater resources.

The survey included items expected to provide insights into groundwater licence holders' values, beliefs and attitudes, as well as land use and land management practices (Sharp & Curtis 2012). The framework proposed by Mayer et al. (1995) and Mayer and Davis (1999), which distinguishes between trust and trustworthiness, was used to develop related survey items. That framework measures trustworthiness in terms of integrity, ability and benevolence, and is explicitly designed to capture trust at both organisational and interpersonal levels (Schoorman et al. 2007). All items (Table 1) were adapted from Mayer et al. (1995) and McKnight et al. (2002). Three items were used to measure agency trust (Table 1). Respondents were asked to indicate their agreement with a series of statements which were measured on a five-point Likert scale from 1: 'strongly disagree' to 5 'strongly agree'. Not applicable was included as a separate response option. The final statement in the agency trust scale was reverse-coded (Table 1).

The data demonstrated acceptable internal consistency reliability for both of the summed trustworthiness measures in this sample: staff member trustworthiness ( $\alpha = 0.78$ ) and agency trustworthiness ( $\alpha = 0.74$ ). No acceptable measures of internal consistency reliability could be found for any combination of the item statements for the summed agency trust items. So, in subsequent analyses, agency trust was included as the single item: 'I can rely on NoW to manage groundwater in a sustainable manner' (Table 1).

## Results

### *Trustworthiness at the agency and staff levels and trust in the agency*

The majority of respondents did not agree that the agency or its staff were trustworthy, though respondents were more likely to agree that staff members were trustworthy than the agency itself. For example, 28 per cent of respondents agreed or strongly agreed that local NoW staff 'followed through with what they said they would do', whereas the level of agreement with this statement dropped to 18 per cent for the agency (Table 1).

Few respondents trusted NoW, with only 10 per cent of respondents agreeing with the statement: 'I can rely on NoW, as an organisation to manage groundwater in a sustainable manner', while 40 per cent disagreed. Similarly, only 8 per cent agreed that they could 'rely on NoW to manage groundwater in a way that was fair to all users' compared to 47 per cent who disagreed (Table 1).

With one exception, a substantial proportion (>34 per cent) of respondents were unsure about each of the trustworthiness and trust items. Those respondents may have thought they were not sufficiently informed to make a judgement about the organisation or staff. It is also possible that those respondents were reluctant to indicate their views on the survey, although they did for item 9 in Table 1.

### *Predicting agency trust*

To test the hypothesis that agency trustworthiness mediates the relationship between staff trustworthiness and agency trust, several statistical conditions must be met. First, a relationship between the independent variable (staff trustworthiness) and the dependent variable (agency trust) needs to be established. Second, a relationship between the independent variable (staff trustworthiness) and the mediator (agency trustworthiness)

Table 1. Percentage agreement with statements at item level\*, means and standard deviations at item and scale level, reliability coefficients and intercorrelations for NoW trust and independent variables at scale level ( $n = 210$ ).

Variable	M	SD	$n$	Strongly disagree/ disagree (%)	Unsure (%)	Agree/ strongly agree (%)
<b>Agency trustworthiness</b>						
1. NoW, as an organisation, follows through with what it says it will do in relation to groundwater management.	2.73	.909	206	31	50	18
2. NoW shows good judgement in its decision-making about groundwater management.	2.35	.847	206	52	41	6
3. My needs and concerns are very important to NoW, as an organisation, in its decision-making.	2.75	1.063	206	39	35	23
<b>Staff member trustworthiness</b>						
4. Local NoW staff members follow through with what they say in relation to groundwater management.	3.01	.903	205	23	48	28
5. Local NoW staff are very knowledgeable about groundwater management.	2.83	.936	206	31	45	24
6. My groundwater management needs and concerns are very important to local NoW staff.	2.85	.930	206	33	41	24
<b>Agency trust</b>						
7. I can rely on NoW, as an organisation, to manage groundwater in a sustainable manner.	2.55	.868	206	40	50	10
8. I can rely on NoW, as an organisation, to manage groundwater in a way that is fair to all users.	2.41	.888	206	47	44	8
9. It is important for me to keep an eye on NoW (organisation) decisions about groundwater management.**	4.15	.734	206	3	10	87
	M	SD	1	2	3	$\alpha$
<b>Variable</b>						
1. NoW trust item	2.48	.921	–			–
2. Staff trustworthiness scale	2.52	.802	.552	–		0.78
3. NoW agency trustworthiness scale	2.88	.829	.698	.575	–	0.74

Notes: All correlations are significant at the  $P < .001$  level

\*2% of respondents answered 'not applicable' for each of the item statements

\*\*This item was reverse-coded

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Table 2. Mediation analysis of the dependent variable NoW trust, independent variable staff trustworthiness and mediating variable NoW trustworthiness ( $n = 210$ ,  $n = 172$ ).

Variable	B	SE B	95% CI	$\beta$	$R^2_{\text{adjusted}}$
Step 1					.30**
Outcome: NoW trust					
Predictor: Staff trustworthiness	.61	.07	.47, .75	.55**	
Step 2					.33**
Outcome: NoW trustworthiness					
Predictor: Staff trustworthiness	.56	.06	.44, .68	.58**	
Step 3					.52**
Outcome: NoW trust					
Mediator: NoW trustworthiness	.65	.08	.51, .80	.57**	
Predictor: Staff trustworthiness	.25	.07	.11, .39	.23**	

Notes: CI = confidence interval

Staff and NoW trustworthiness were centred at their means

Final  $F(2,169) = 91.96$ ,  $P < .001$

Sobel test value = 6.30,  $P = .000$

\*\* $P < .001$ .

needs to be established. Third, a relationship between the mediator (agency trustworthiness) and the dependent variable (agency trust) needs to be established after controlling for the independent variable (staff trustworthiness). Fourth, after controlling for the effects of the mediator on the outcome, the relationship between the independent and dependent variables should be significantly reduced (Baron & Kenny 1986; Hair et al. 2010).

Hierarchical regression analyses were used to examine these conditions. As shown in Table 2, the model supports partial mediation. Significant relationships were found between staff trustworthiness and agency trust ( $\beta = .55$ ,  $P < .001$ ) and between staff trustworthiness and agency trustworthiness ( $\beta = .58$ ,  $P < .001$ ). Further, a significant relationship between agency trustworthiness and agency trust was found ( $\beta = .58$ ,  $P < .001$ ) after controlling for staff trustworthiness. Finally, the relationship between staff trustworthiness and agency trust was reduced from  $\beta = .55$  ( $P < .001$ ) to  $\beta = .23$  ( $P < .001$ ) after controlling for agency trustworthiness. A Sobel test value of 6.30 ( $P = .000$ ) indicated that this was a significant change. The model did not support full mediation of the relationship between staff trustworthiness and agency trust by agency trustworthiness because the final beta value between staff trustworthiness and agency trust was reduced but still significant. The  $r^2$  value for this model, which shows how much variance is explained by the model, was acceptable at 0.52 ( $P < .001$ ). This finding indicates that a little more than half of the variance in the model was explained by the included variables.

To test the hypothesis that staff trustworthiness would interact with agency trustworthiness to modify the level of agency trust, a hierarchical regression analysis was conducted in which agency trust was predicted by the main effect terms (agency trustworthiness and staff trustworthiness) at step 1 and the interaction term at step 2. Following Tabachnick and Fidell (2007), agency trustworthiness and staff trustworthiness were centered (i.e. by subtracting the mean from each score), and the interaction term was based on these centered scores. Table 3 shows the regression results. Agency trust was positively related to agency trustworthiness ( $\beta = .57$ ,  $P < .001$ ) and staff trustworthiness ( $\beta = .23$ ,  $P < .001$ ). However,

Table 3. Moderation analysis of the dependent variable NoW trust, independent variable NoW trustworthiness and moderating variable staff trustworthiness ( $n = 210$ ,  $n = 172$ ).

Variable	B	SE B	95% CI	$\beta$	$R^2_{\text{adjusted}}$
Step 1					.52**
Staff trustworthiness	.25	.07	.12, .39	.23**	
NoW trustworthiness	.65	.08	.51, .80	.57**	
Step 2					.51**
Staff trustworthiness $\times$ NoW trustworthiness	.006	.068	-.128, .140	.005	

Notes: CI = confidence interval

Staff and NoW trustworthiness were centred at their means

Final  $F(3,168) = 60.95$ ,  $P < .001$

Final  $r^2$  change = .000,  $F$  change = .007,  $P = .931$

\*\* $P < .001$

the agency trustworthiness  $\times$  staff trustworthiness interaction was not significant ( $\beta = .005$ , n.s.) (Table 3).

These results suggest that staff trustworthiness does not significantly interact with agency trustworthiness to influence agency trust. The model also suggests the significant, main effect from agency trustworthiness to agency trust does most of the explanation in the model. In other words, high or low levels of staff trustworthiness do not significantly influence the relationship between agency trustworthiness and agency trust in this model in this case study. These findings also suggest that the mediator model provides a better explanation of relationships between the constructs.

## Discussion

Consistent with the findings of Stern (2008), this study suggests that trust operates at more than one level of analysis. In the Namoi study, survey respondents perceived the trustworthiness of agency staff, and the agency itself, differently, with staff perceived as being more trustworthy than the agency. This may arise because NoW staff responsible for water management usually live in the region where they work. It is likely that these NoW staff are exposed to the concerns of groundwater users and are aware of the importance of irrigated agriculture to the regional economy. It is therefore probable that agency staff have more opportunity, and are more likely, to demonstrate empathy for the concerns of irrigators than the agency itself. Evidence from other contexts suggests that community members do distinguish between staff and organisation and that, in conflict situations, community members may even trust local managers, but not the agency which they believe is not allowing locally-based staff to do their jobs (Shindler et al. 2009).

The mediation model showed that, in this study, staff member trustworthiness influenced agency trustworthiness, as well as influencing agency trust both directly and indirectly. However, the interaction effects in the moderation model were not significant, suggesting that when trust in the staff member is high, it does not necessarily influence the relationship between agency trustworthiness and trust in the agency. These findings are consistent with the findings of Davenport et al. (2007) which suggests that trust in the agency can arise from interpersonal interactions, but does not always do so (consistent with our mediation model), and that some members of the public can express high levels

of interpersonal trust, but this does not influence their perceptions of agency trustworthiness or trust in the agency itself (consistent with our moderation model).

Research into trust in community-organisational partnerships in the health sciences field has found that factors that facilitate trust are most often related to trustworthy characteristics of individuals, and barriers to trust are associated with organisational characteristics (e.g. differing organisational structures between partners) (White-Cooper et al. 2009). Thus, respondents may associate positive trusting experiences with the interpersonal level only and negative trusting experiences with the organisational level. Other research suggests that perceptions of the organisation, or its institutional structures, are formed separately to perceptions of individuals (Luhmann 1979; Nyhan 1999). Having said that, there is also research indicating that different levels of trust complement each other, instead of substituting for one another, which is consistent with the findings from the mediation model in the Namoi study. Currall and Inkpen (2006) suggested this can be accomplished when institutional rules and regulations act as structural safeguards to reduce uncertainty between partners. Research by Safford and Norman (2011) illustrated how formalised planning activities enacted by legislation (i.e. institutional level) created local planning organisations (i.e. organisation level) which helped build trust amongst actors (i.e. individual level).

Trust is critical to successful collaborative planning (Marshall & Jones 2005; Cooke et al. 2011) and the social acceptability of NRM policies (Leahy & Anderson 2008). At a practical level, this research suggests that focusing community engagement resources solely at the interpersonal level ignores the important role that perceptions of trustworthiness at the organisational level play in influencing trust in the managing agency. While the willingness of community members to rely on the agency (i.e. trust) is directly influenced by whether a staff member exhibits knowledge, care, concern and integrity, it is also influenced by whether the organisation itself exhibits these characteristics. This emphasises the importance of communicating agency 'culture' to community members in a way that demonstrates that the agency, through its policies, strategies and actions, is knowledgeable, shares at least some of a community's values and will act in the community's best interest. Agencies should initiate community engagement activities that enable the agency to demonstrate that perceived organisational motives are consistent with public expectations (Ter Mors et al. 2010); and that the agency shares the values of agency staff in direct contact with the community (Earle & Cvetkovich 1995; McCaffrey 2006). Having said that, there is also evidence that in larger organisations, including NoW in the Namoi, agencies need to identify ways to build trust at all levels (Ryan & Klug 2005). Of course it would be naive to expect that the priorities of agencies and communities will always align. For example, agencies are often tasked with implementing policies that limit local stakeholder access to natural resources. In these situations it is unlikely that the affected resource users can have their key concerns addressed. However, as the work of Currall and Inkpen (2006) and Safford and Norman (2011) suggests, there are approaches that improve the likelihood of stakeholders accepting decisions that impinge on their interests. To the extent that agencies adopt appropriate and sound engagement practices, they can expect to be seen as more trustworthy (i.e. competent, benevolent and acting with integrity).

## Conclusions

Trust is an important part of decision-making processes in NRM, but there are conflicting findings in the literature about the relationships between trust and trustworthiness at

interpersonal and organisational levels. This research examined relationships between staff member trustworthiness, agency trustworthiness and agency trust. The key findings are consistent with international research suggesting that both staff and agency trustworthiness influence agency trust; and that trust in agency staff may lead to trust in the agency itself, but not in all cases (as in the Namoi study). This study demonstrates the importance of differentiating levels of analysis in examining trust and trustworthiness. However, this study targeted a specific group of respondents (i.e. groundwater licence holders) instead of the general public, so generalising the findings to other contexts should be undertaken with care.

The article provides a set of theoretically derived items that can be adapted by other researchers to benchmark and evaluate trust and trustworthiness in an Australian NRM organisation. Subsequent to the Namoi research, we have adapted those items for inclusion in a survey of all rural landholders (i.e. not just groundwater irrigators) to benchmark trust and trustworthiness with a regional NRM organisation in Victoria (Curtis & Mendham 2012). The combined experience suggests that the conceptualisation of trustworthiness, as being comprised of competency, integrity and benevolence, can provide a useful framework for NRM practitioners.

The key findings from the Namoi case study suggest that agencies should not focus their community engagement resources solely on the interpersonal level because this ignores the important role that other levels play in positively influencing agency trust. Agencies operating in contentious policy arenas, such as water reform in Australia's Murray-Darling Basin (MDB) or coal seam gas mining in southeast Australia, should seek to directly engage key stakeholders in ways that demonstrate their competency, integrity and benevolence. While it is important to have trustworthy staff on the ground, this research suggests it is unlikely that agencies can rely solely on staff working in the regions to build trust in the agency amongst place-based communities.

### Acknowledgements

This research was funded by the Cotton Catchment Communities Cooperative Research Centre and the National Centre for Groundwater Research and Training, Australia. Simon McDonald, CSU SPAN, created the map in [Figure 2](#).

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