

# Social Inequality and Water Use Practices in Australian Communities

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## Abstract

This paper explores the impact social inequality has on the way different communities experience and use water in Australian cities. Through a model for understanding the dynamic between social inequality and water use practices in urban centres this paper analyses 60 in-depth interviews with people in communities of varying social advantage and disadvantage in two Australian cities of Melbourne and Perth. Findings show that the cultural and economic resources of households define lived experiences that shape daily water use practices. Using water use meanings as an example, we find that for those in more advantaged communities water use luxury and leisure is emphasised, while disadvantaged communities placed greater emphasis on using water to enhance their basic needs for quality of life. The implications of these findings are then discussed where I *connect* the large scale objectives of water sensitive cities to the everyday concerns and experiences of householders in urban contexts. An understanding of these contexts will ensure better *collaborations* between government, business and communities for water resource management, and *create* avenues for an effective transition to more water sensitive cities and futures.

## Introduction

Sustainable, resilient and liveable water sensitive cities should not just be for those with the capacity and resources to access them, but for everyone. Yet in modern urban contexts in which economic, material, social and cultural resources are highly varied between communities, how do we ensure this accessibility?

This paper explores the impact social inequality has on the way different communities experience and use water, and suggests how integrated water management could be more socially inclusive. It forms part of my PhD research in program A2.1- *Understanding Water Use Cultures* - of the Cooperative Research Centre for Water Sensitive Cities (CRCWSC)- a multidisciplinary collaboration between industry, research and government for the development and transition to sustainable, resilient and liveable Water Sensitive Cities.

The emergence of sociological, psychological and socio-cultural perspectives on water use is a relatively recent phenomenon amidst the broader empirical research body (Supski and Lindsay

2013). As such, the understanding of socio-cultural perspectives on water use, particularly in the context of social inequality has been limited. Since the early 1960's economic discourses have dominated the empirical water use research with a focus primarily on urban residential demand and the elasticity of water under fluctuating pricing (March et.al 2012; Nieswiadomy and Molina 1989; Headley 1963). More recently, socio-demographic, climatic and technical variables- such as domestic contexts, and water use technologies, systems and infrastructures- have been recognised to form interrelated dynamics that influence consumption. These are however, recognised as considerably context dependent and at times conclusively limited (Wasimi and Hassa 2012; Allon and Sofoulis 2006). Yet their inclusion in the literature has made possible some insights into the relationship between social inequality and water use.

As evidenced by other fields of social research such as in health research, there is no straightforward link between knowledge, attitudes and behaviour (Kollmuss and Agyeman 2010; Sanders 2007). Instead people make decisions based on their local context, social relationships and available economic and material resources. Furthermore, socio-demographic variables such as income, education, cultural heritage, and family dynamics are linked to the availability of these resources and collectively these shape the experiences and perceptions of domestic contexts and water use technologies and infrastructures (Supski and Lindsay 2013). For disadvantaged households and communities in which these resources are often more limited, inequities were seen to exist in access and opportunity for water use and water saving practices.

Water resource management bodies often overlook the complex and diverse socio-cultural circumstances that influence water use practices and contexts (Allon and Sofoulis 2006). Instead, water resource management is commonly implemented in a top down, one size fits all approach, which further confines access to water use and opportunities for sustainable practices due to their limited reach and inequitable effect on households and communities (Sofoulis and Williams 2008; Allon and Sofoulis 2006). Sofoulis (2011) for example, recognises the confinement of these initiatives to the more materially resourced and technologically engaged consumer. This, in part, is the result of institutional "mini-meism" in which resource managers assume that the water

literacy, technological insight and education levels of the water user are similar to their own and thus their initiatives are designed accordingly. The lack of understanding by resource managers of the social and cultural diversity of water users limits the effectiveness of these initiatives to engage more broadly as a result. More discrete measures for effective literacy building such as the provision of billing information are often limited to detached dwelling residents and home owners, and the more educated who respond well to quantitative information (Sofoulis 2011, 2005; Ferrara 2008).

Opportunities for fostering water sustainability through building understanding and competence is limited as a result. Where cultural resources such as education, age and geographic context can create foundations for sustainable capacities, there is a need to align these with existing socio-technical components (technologies and infrastructures). Despite knowledge exchange, the lack of any socio-technical reform in current frameworks results in the loss of sustainable behaviours or their confinement to the environmentally conscious guilty consumer (Willis et.al 2013; Sofoulis 2011; Allon and Sofoulis 2006). Therefore, the transition towards more water sensitive cities will require a more collaborative 'co-evolution' of the water user alongside the contexts, systems and technologies in which they are embedded.

### A Model for Understanding Domestic Water Use Practices

In the transition to water sensitive cities, mapping and understanding the influences of socio-cultural, material and economic resources on everyday water use, is key to ensuring the effective implementation of emerging institutional and technological innovations (Supski and Lindsay 2013; Allon and Sofoulis 2006). In Figure 1, I propose a model for investigating this dynamic, which reflects the mutually influencing relationship between the resources of individuals and groups, the domestic contexts and technologies they are embedded in, and the systems and infrastructures they experience, which shape the meanings, materials and competencies that comprise their daily water use practices.

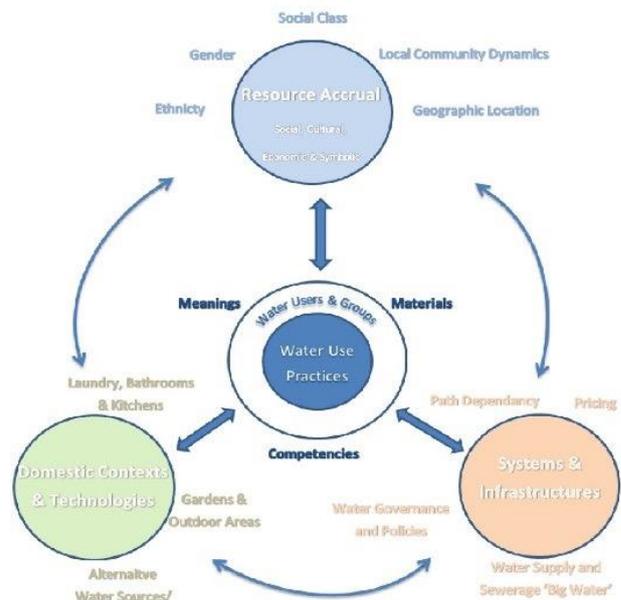


Figure 1: A model for investigating water use practices in Australian cities

Notably, the work of Shove et.al (2012) is drawn on here, who define Water Use Practices to represent a series of three elements. They recognise things and their uses simply as "Materials", while forms of understanding, know-how and practical knowledge are placed together as "Competencies". "Meanings" are defined as representing the social, cultural and symbolic significance of participation, encompassing things such as "mental activities, emotion and motivational knowledge" (Shove et.al 2012). In doing so they suggest that practices are the interdependent relations between these three elements, Materials, Meanings and Competencies (Shove et.al 2012; Reckwitz 2002).

Figure 1 denotes the spheres of influence necessary for understanding water use in varying socio-cultural contexts. However the model does not explicitly acknowledge the differences that may occur between different socio- economic and socio-cultural groups. This study set out to explore the components of this model as it plays out in different social classes to offer insights into social inequality and daily water use in urban communities. Through a similar interrelation of these spheres, inequalities were seen to exist amidst varying social class levels in the accessibility and engagement in water use practices. Accordingly, it is the components (and their interrelations) of this diagram that also offer insights into the relationship of social inequality and daily water use in urban communities.

## **Methods: Investigating Social Inequality and Water Use Practices in the Australian Urban Context**

The cities of Greater Melbourne (Victoria, South Eastern Australia) and Greater Perth (Western Australia) were selected for the exploration of the above dynamic. These presented considerably different biophysical and socio-technical characteristics to one another.

The metropolis of greater Perth for example is characterised as an increasingly drying climate. Over the past ten years, ongoing below average rainfall has seen a shift to a drier climatic regime which has led to increasing pressure on the region's water resources, and significant investment in alternative water sources (Collet and Henry 2011). Despite large scale investment in technologies and infrastructures, consumption reduction initiatives at a domestic level have remained comparatively scarce. This, as Porter (2013) suggests, is in part a result of the strong preference of Western Australians for "a well-watered-garden culture" and economic viability for technological investment in light of the minerals boom on account of Chinese economic growth (Porter 2013). Currently, domestic water restrictions are limited to regional garden watering rosters (BOM 2014).

Comparatively Melbourne is characterised by a cooler, wetter climate with higher annual rainfalls and cooler average temperatures. Most of Melbourne's drinking water comes from pristine Mountain Ash forests in the Yarra Ranges that have been closed to public access for almost 100 years. Additional investment in large scale infrastructures has however been comparatively limited. Melbourne's first Desalination Plant was commissioned as part of a State Government water saving initiative implemented during a recent period of extensive drought (1998- late 2000's) (Porter 2013; Collet and Henry 2011). However good catchment based water availability since this time has meant that desalinated water has not been used (BOM 2013). Concerns over the long-term security of Melbourne's water supplies at this time also led the Victorian Government (2004) to unveil a comprehensive plan with 110 domestic water saving initiatives to secure future water supplies. These included a range of education and incentive programs (eg. Rebates on water tanks and water saving appliances) aimed at curbing user based domestic consumption practices. Additionally in 2005, permanent water saving rules were introduced with penalties for non-compliance (e.g. restrictions on manual watering) (BOM 2013; Collet and Henry 2011). Average rainfall for 2010, 2011 and 2012 however, saw restriction and initiatives eased as water storages in the region returned to above 80% of total capacity by the beginning of the 2012–13 year (BOM 2013). There

are currently no urban water restrictions in place (BOM 2014).

The observed variation to water resource management approaches (which included systems, infrastructures and technologies) and biophysical contexts (which shape domestic settings) between the two metropolises allowed for a broader reflection of social inequality and water use practices in the Australian urban context. Furthermore the ability to gain thematic insights through the comparison of the two contexts, presented the opportunity to more intricately understand the role and nature of social inequality on water uses in Australian metropolises.

For this research Socio Economic Index For Areas (SEIFA) data was used to effectively identify communities and explore the relationship of social inequality on water use practices. Suburbs of low, mid and high social advantage were identified for use through the review of the Index for Social Disadvantage, Index for Advantage and Disadvantage, Index for Education and Occupation and Index for Economic Resource. Communities were selected based on the suburbs with scores consistent across the three indexes to be the case study locations in both Perth and Melbourne (N=6) (ABS 2014).

Low scoring SEIFA areas are characterised by lower incomes, education and rates of employment and included the suburbs of Broadmeadows (Melbourne) and Armadale (Perth). These were among the most disadvantaged communities in their states (ABS 2014). Mid-high socio-economic indexed areas (Moderate social advantage areas) appear closely aligned to the Australian average and are representative of the greater majority of the Australian population residing in urban settings (ABS 2013). These included Coburg in Melbourne and Ballajura in Perth. While suburbs of Camberwell and Cottesloe were in the top percentiles of social advantage in Melbourne and Perth respectively, characterised by high income, education levels and employment rates. The representation of these suburbs offered a stark comparison of social inequality (comparing the very low to the very high), while presenting a reflection of social advantage and disadvantage in each metropolis.

For the investigation of water use practices, ten in-depth interviews were carried out with community members in each suburb (n=60). Additional insights were also sought from water industry practitioners and community stakeholders in exploring the domestic contexts, technologies, systems and Infrastructures that embed water use practices.

## Results and Discussion

### Water Use Practices and the Influence of Lived experiences and Context

Across all case study areas, participants described daily water use practices associated with bathing, dish and clothes washing, toilet and bathroom use, general cleaning and maintenance (outdoor and indoor), car washing and gardening. Yet the forms of material, economic, social and cultural resources that participants possessed, were observed to shape lived experiences and influence the meanings, materials and competencies of their daily water use practices.

Past experiences such as upbringing, and former leisure or employment pursuits, provided people with different forms of know-how and understanding for the techniques and approaches to their daily water use. The influence of parents and other family members for bestowing know-how during upbringing were regularly alluded to. Responses were consistent with the following

*"It's the way we were raised really. In New Zealand in winter, it rains a lot, but it's just the way mum did things. We had what was called a copper. It was a big round thing, and it was filled up with (rain) water, mum brought the water in...It's just me. It's just the way I do things here. I like the feel of the rain water. If I had a bucket big enough I'd bring the water inside and shower in that because it feels so soft" (Cathy, Ballajura, 60).*

*"I used to work with a guy and drill bores when I was living out in (the country). I can do it myself.... I used what they call a percussion drill...you had to have one out there" (David, Armadale, 62)*

*"We had a hobby farm down on the (Coast) and there is no water there so we needed tanks. Big, Big tanks. We have three of them" (Anna, Camberwell, 56)*

Though the lived experiences of immediate household and community contexts were the strongest influence on participant appliance and approach types for water use. As an example the below accounts from Mary and Lou reflect their immediate experiences of their local amenity and how this influences their decisions for the types of water use materials they possess. Mary from the advantaged community of Camberwell explains

*"We really like it here because of all the trees. Gardening is also very important to me... Perhaps it's my inheritance but I couldn't justify using mains water if there were alternate ways of reusing water... During the drought we installed five water tanks in our backyard. We also installed the*

*recycled water unit which processes wastewater to A1 drinking water" (Mary, Camberwell, 57).*

By contrast, Lou describes water use in the disadvantaged suburb of Broadmeadows

*"If you closed your eyes and didn't know where you were in some of these streets you would think you are in a third or second world country... The (tap) water doesn't taste too good. Like every time we drink it we feel like we want to vomit it up... My son and I drink bottled water now" (Lou, Broadmeadows, 38).*

The above experiences reflect the variability in resources between communities with varying social advantage. In Mary's experience the lived amenity- associated with the socially advantaged case study area of Camberwell- is reflective of a context that ensures and reinforces notions of greenery, comfort and leisure. Accordingly Mary's water use meanings are premised around upholding these values, through distribution of financial resources for water efficient products. While the comparative experiences of Lou- in the socially disadvantaged context of Broadmeadows- reflects an amenity limited in basic resources for quality of life such as sufficient housing and water supply. Accordingly, her water use meanings situate around alleviating constraint associated with poor water quality. I move now to discuss the impacts of social inequality on the water use meanings of communities with varying levels of social disadvantage.

### Social Inequality and Water Use Meanings

Access and opportunities to forms of material, social, cultural and economic resources within the communities observed, shaped a daily lived context that was considerably different to one another. For socially advantaged communities- in which resources were in greater abundance and often of a more enriched quality- values for ease and efficiency, appearance and comfort and enjoyment were frequently associated with both household and community based assets including daily liveability, public amenity, and community cohesion. In more socially disadvantaged communities where resources were frequently seen to be more limited or scarce, standards for liveability were far more compromised and values for public amenity and community more limited. Values instead were regularly placed on upholding basic quality of life through ensuring health and wellbeing and financial security.

The meanings placed around daily water uses by participants in these communities were consistent with this dynamic. For those in more advantaged contexts, lived experiences would regularly create and reinforce water's meanings around leisure and

luxury, while for households and communities of greater social disadvantage, water use meanings would orient around upholding living standards for life and livelihood. Notably, for moderate households, a mixing of the two dynamics was observed where values for leisure and luxury were upheld relative to the resources available. The experiences of these communities are outlined below.

### **Socially Advantaged Communities and Households: Water for leisure and luxury**

The Cottesloe and Camberwell case studies reflected an abundance and accessible diversity of material, economic, social and cultural resources. These contextualized water use meanings around three core values, namely water uses for leisure and luxury, upholding social and cultural standards and preferences, and ensuring the ease and efficiency of daily life.

The values of leisure and luxury were the most frequently emphasised, and were reflected through material uses for means of personal and social enjoyment, comfort and the creation of pleasant surroundings. As the below accounts from Samuel suggest, water uses for pools, gardening and luxury based showering were consistently prioritised

*"I do quite like a shower... Definitely a habit for me. There's no particular reasons...and we have the indoor garden. So plant watering indoors...When we moved in, I thought, "Oh, we've got a pool. That would be great, all the kids would come over to our house. Our kids will have lots of friends, then again, everyone has got a pool...When it's clean and on the right day, it's got some visual appeal...."* (Samuel, Cottesloe, 53)

These were also aligned to socio-cultural values for appearances and taste, which included perceived standards for public cleanliness and presentation. Water use meanings were regularly placed on the upholding of these values, both in terms of personal appearance (through showering, grooming and clothes washing) and values for the cleanliness or pleasantness of personal spaces and assets, particularly where publicly observable. The remarks below from Sean and Helen highlight the common perception of these community standards;

*"Well I'll have a shower most mornings, like most people, you can't start the day (at work) without having a shower really. It's just one of those things of taking care of yourself and showing pride within yourself I guess. (Sean, Camberwell, 32)*

*"Yeah, we've noticed that (everybody has nice gardens). I notice sometimes that the houses with the bigger lawns— because we have very big verges here in Cottesloe— their verges are all green as well (like ours)...I do notice that they're green. The neighbours in our street water theirs every day so we do too... keeping it nice and tidy is something we value" (Helen, Cottesloe, 60)*

As reflected above, values for water saving for sustainability or environmental protection were expressed by some participants. These were most commonly observed to come from lived experiences of water scarcity, and environmental degradation through employment, travel and upbringing, which offered an enriched salience, literacy and thus capacity for water sustainable approaches. However, these were infrequently upheld, observed predominantly through competencies for basic forms of consumption reduction

*"I don't think we do much water saving in the house practically... Apart from turning your tap off when brushing your teeth, and yelling at the kids when they're in the shower taking too long...The interesting thing is that we haven't done any water-saving stuff like putting tanks, or grey water diversion or anything like that and we could probably afford it if we wanted to" (Jennifer, 55, Camberwell).*

Resources in these instances were allocated only where the values of the participant for leisure and luxury, ease and efficiency and appearance and taste were met. Where materials and competencies such as water efficient appliances and knowledge of restriction regulations were seen to compromise these values, they were not upheld.

*"Most of the water that comes out of our showers could quite easily go into the lawn. It's nothing. I would be the first one to have full black water recycling to taps... Then lawns become more sustainable... The only reluctance is the cost in setting up a system. I wouldn't really spend three grand to do it now...I'd rather go on holiday" (Samuel, Cottesloe, 53)*

Limitations on material uses however were rarely observed, as the accessibility of resources placed little constraint on the upholding of the above values and standards.

### **Socially Disadvantage Communities and Households: Water for life and livelihood**

The socially disadvantaged case study communities of Armadale and Broadmeadows reflected a lived context largely restricted in forms of social, cultural, economic and material

resources. Though some variability amongst participants was observed, a general lack of resources placed limitations and encouraged a focus on more core or foundational opportunities for quality of life such as health and welfare, and financial and material security. Water use meanings, were prioritised around upholding these values, and compared to more advantaged communities, leisure and luxury based uses were rarely emphasised

*“Obviously just the same as anyone else. Dishes, washing clothes, bathroom, showering... I've got one garden bed in out the back there” (Tim, 56, Broadmeadows).*

The types of appliances and approaches, and the frequency and extent of their use were instead justified around reducing price impacts and meeting basic health needs, to uphold ease and efficiency for daily life and livelihood

*“As I said before, mainly cost. Now they've (New appliances) got the energy stars on them. I take a bit of notice of that... But basically a top loader is all I've ever known. I'm not getting any younger and I've got a back problem, so bending all the time to put the stuff in and out would have been an issue” (Anthony, 58, Armadale)*

Water sustainability and social appearance and cleanliness were expressed at times. However, these were confined only to uses that would not compromise financial security or ensure health and wellbeing. Some showering procedures and basic gardening practices were reflective of this experience, as Selma and Geoffrey reflect

*“I do get a few aches and pains, so sitting in the hot shower is really (nice), yeah, and it's 5 minutes out of here. I don't have to listen to (my son), “Mum, I want food. I want this” it's 5 minutes out. I've never really thought of it as a luxury, but I guess that's probably quite true” (Selma, 42, Armadale)*

*“I had a lawn out the front here when I came. I don't want to spend the time and money trying to mow and water. So I dug it all out and replaced it with shrubs and roses. Every couple of years I get a load of mulch and mulch it over. So I don't have to be bending down to weed it, and also, I don't have to water it so much” (Geoffrey, 60, Broadmeadows).*

Where the above values were compromised however, water uses for leisure and luxury, social distinction and water sustainability were not upheld

*“I don't any more. I used to. I used to like to (do gardening). Yeah, with a hose. I just don't want my*

*water bill (to increase), to me they are going to die anyway, the grass. Because it's so hot, so why waste water and get it green” (Carol, Armadale, 38).*

Instead, resources were often distributed and prioritised in ways to best meet the demands of the above described water use meanings for improving quality of life.

### **Suburbs of Moderate Social Advantage: Water for leisure and luxury relative to resource limitations**

Communities and households of moderate social advantage, such as those commonly observed in the Coburg and Ballajura case studies presented water use meanings that were similar to both the experiences in socially advantaged, and socially disadvantaged communities described above. Water use meanings were premised on notions of leisure and luxury, however economic, material, social and cultural resources were more limited and thus leisure and luxury were constrained. Meanings in this sense, often reflected a mix of values for ensuring leisure and luxury- similar to socially advantaged communities- while upholding financial security, health and wellbeing- similar to socially disadvantaged communities. Responses that reflected this dynamic included the following

*“Yes. We use water mainly for showers. My partner has about 3 a day. Bathing her (young child) now, we use it for our dishwasher, always put it on the eco cycle though and try and use it wisely. Probably, now, we've got a lot more washing so I use the washing machine, probably, once every 2 days. We use it for the pool, that's another factor in summer...good to keep the bills down and that sort of thing though really” (Martha, Ballajura, 30)*

*“Ever since I got this fantastic gardener, who's just made it look like the Garden of Eden, when I do see it, it makes me happy that it's there. It's good ... I'm happy to see it all neat and tidy...I think though I'm more aware of wastage. Before, maybe I just didn't care. My sprinklers used to be on twice a week for 20 minutes, but now I only have them on for 8 minutes out the back because no one sees the back. Similarly, buckets of waters that I used to throw away I now put in the garden...It's better for the environment, and secondly the price” (Christine, 35, Ballajura).*

In comparison to the other case studies, Coburg and Ballajura reflected a mid-point in the social advantage/disadvantage spectrum for Australian cities. There was a diversity in the water use meanings prioritised by households of differing levels of advantage and disadvantage. The dishwashing choices of Marty and Janet in the Coburg community reflected this difference. Where households where at a greater level of social

advantage, meanings where more frequently prioritized around leisure and luxury. As Marty explains,

*"I grew up always having to do the dishes, so as we built this house, the first thing I said, "We're having a recess for a dishwasher, because I'm never washing a dish ever again... it goes on maybe once a fortnight, the wife hates putting dirty dishes into the dishwasher... my wife's like, "No, that's not hygienic, the dishwasher will smell because it's not going on every night." In that respect I do understand, so yes, we waste a lot more water because we rinse a lot of the plates, or anything, before they go in there..." (Marty, Coburg, 43)*

However where resources were more limited, and thus households more disadvantaged, health and financial wellbeing was prioritised over luxury

*"I don't own a dishwasher. I'd love one. My husband says "You're not having one because that's my whole income until the next year...I'll hand wash dishes, sometimes two, three times a day. My husband, he hates dishes. He said to me, "I go to work every day. I don't care how sick you are you can wash the dishes." He said, "I don't care if you have to sit on a step or a chair you'll wash the dishes..." (Janet Coburg, 66).*

### **Conclusion: Implications for Water Sensitive Cities**

In considering the experiences of these six case study communities, a relationship between social inequality and water use meanings can be observed where, as the abundances and quality of material, social, cultural and economic resources rise for households and communities in Australian cities, their lived contexts and experiences influence a shift in priorities for water use. This is because the greater availability and accessibility of resources places less of an onus on the requirement for water uses to ensure more immediate foundational life elements (such as health and financial wellbeing). This then allows uses for enjoyment and lifestyle enrichment (such as leisure, luxury, efficiency and social distinction) to be pursued. These findings offer points for consideration for achieving the CRCWSC vision of "Liveable, Resilient and Sustainable Water Sensitive Cities" which encompass requirements for community input in the "Co-management of water resources" (CRC 2014).

Each of the above case studies reflected contexts considerably varied as a result of the economic, material, social and cultural resources that shaped them. The lived contexts, experiences and resulting water uses of participants in these communities demonstrated that standards, expectations and understandings of the above mentioned water sensitive values for "Liveability, Resilience and

Sustainability" were considerably varied between the three groups. For socially disadvantaged groups, water use values for liveability were attributed to more foundational quality of life meanings such as health and welfare. While for communities and households of greater social advantage liveability encompassed notions of pleasant surroundings (through greenery, leisure and luxury), ease and efficiency. Similarly ideals of resilience differed between communities, where for the disadvantaged this included the mitigation of heat and financial impacts, while for socially advantaged communities resilience was more socially aligned through meeting community standards for taste and appearance. Thirdly, values and understandings for sustainability, while observed across all communities were expressed considerably differently (if at all) relative to the water use priorities of the community and their resources available. Immediate approaches in transitioning to more water sensitive cities will as a result need to be sensitive to this diversity as to ensure the co-evolution of communities with new technologies, systems and infrastructures can be achieved in diverse communities.

Finally, implicit in these values are a community capacity and willingness for engagement. In the experiences of this study, communities in which these capacities were observed, reflected a water use culture premised on values for leisure and luxury through water use materials and competencies for enjoyment, comfort, ease and efficiency. As social advantage levels were seen to improve- arguably through improved resources for "Liveability" and "Resilience"- these values were reflected more prominently across communities as a broader water use culture in Australian urban centers. Yet despite the capacities of these communities, levels of engagement (or investment) in sustainable water use were limited where these values were compromised. With the continued investment in public resources and infrastructures to build community cohesion, liveability and opportunity in disadvantaged communities, future technologies, systems and infrastructures for water sensitive cities may then need to take into account leisure and luxury water use values as a cultural phenomena to drive effective community investment and engagement, for the vision of "co-managed" Water Sensitive Cities to be achieved.

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