



Evidence-based risk communication: An industry – academy research collaboration that enhanced dam release messages

Sophie Walker, Seqwater

Associate Professor Amisha Mehta, QUT Business School



bushfire&natural
HAZARDSCRC





What we do

- Produce drinking water for 3.1 million people
- Provide irrigation water to 1200 farmers
- Provide essential flood mitigation services to SEQ communities
- Manage recreation areas visited by 2.6 million people last year

Where we operate

- One of Australia's largest water businesses
- Most geographically spread and diverse asset base of any Australian capital city water authority
- \$11B in assets
 - 26 dams, 51 weirs, 2 bore fields
 - 37 water treatment plants
 - 22 pump stations
 - 18 reservoirs
 - 600km pipeline network
 - recycled water scheme
 - desalination plant



Evolution of Seqwater dam notifications



- Qld Floods Commission of Inquiry report – opt-in notification service from Jan 2012
- Service further developed in subsequent years
- Short severe weather event 1 May 2015
- IGEM Review of Seqwater and SunWater Warnings Communications
- App developed for 16/17 summer



IGEM Review recommendation on messaging



- *Focus immediate attention and action on issues of collaboration with local disaster management groups, addressing information sharing, messaging responsibilities, terminology and timing*
- Seek community feedback on their understanding of these messages

Research objectives and design



**Evidence-based modifications to
Seqwater's existing message suite**

Phase 1: Six focus groups

- Two each downstream of Hinze Dam, Wivenhoe Dam and North Pine Dam
- 33 community members participated

Phase 2: 30 Online surveys

- Tested effectiveness of existing and modified messages for gated and ungated dams
- 1334 community members

Community knowledge



1. General understanding of the multiple functions of dams: water storage, recreational use, flood mitigation and flood management
2. Dam operators sometimes confused with utility companies
3. Some participants couldn't identify if they lived downstream of a gated or ungated dam
4. Lack of knowledge about operational differences between gated and ungated dams
*I imagine **there's a valve or something that's controllable** so I guess they could choose to not spill water from a dam, I assume. (Hinze)*
5. Lack of geographical awareness of position in relation to dam and dam catchment areas

Message insights



Specificity

- **“Are we talking now or are we talking in the next few hours or the next few days?** So that’s pretty critical in terms of even an estimation of when that could happen, you know, would be pretty important I would think.”

Calls-to-action/guidance

- “I reckon that’s just dumb. Like **I’d rather have something like, “avoid low lying...” or “avoid...”**, just something where you know that okay, that generally does go under. You know what I mean? I think take extra care, well I don’t know.”

Comprehension

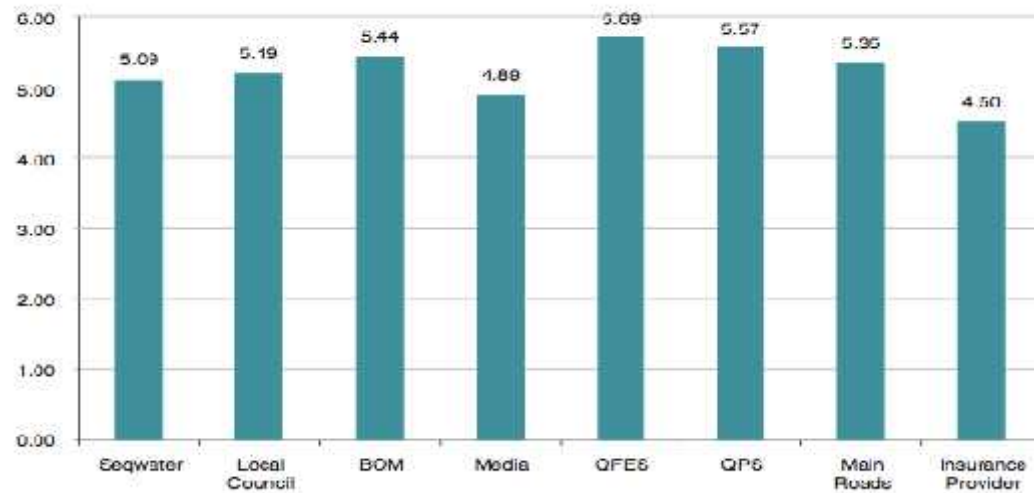
- “But this **needs to aim at everybody who can understand it, from all ages, level of education, and that needs to be more simple.** So ...even that first sentence [from the Seqwater FOC Stand Up activation notification], that something has been mobilised, they’re going to go, huh? So I think it needs to be a little bit more simple.”

Consistency and trust



- *“It doesn’t matter if they’re all giving the same information. There might be bits of information that are not included on other websites that are on some. People look at lots of different websites. **But I think the key thing is that they all work together.**”*

Figure 4. Mean trust in information for each response organisation (scaled from 1 to 7)



Perceptions of message effectiveness of existing and modified messages



Hinze Dam (ungated)	The <i>modified</i> message for 'spilling commenced' (M=4.93, SD=1.08) was perceived to be significantly more effective than the existing message for 'dam spilling' (M=4.45, SD=1.03).
	The <i>modified</i> message for 'spilling commenced' (M=4.93, SD=1.08) was perceived to be significantly more effective than the existing message for 'dam spilling and downstream hazard' (M=4.28, SD=1.51).
	The <i>modified</i> message for 'spilling stopped' (M=4.82, SD=1.00) was perceived to be significantly more effective than the existing message for 'dam spilling stopped' (M=4.04, SD=1.32).
North Pine Dam (gated)	The <i>modified</i> message for 'dam release possible' (M=4.94; SD=0.94) was perceived to be significantly more effective than the existing message for 'alert' (M=4.33, SD=1.14).
	The <i>modified</i> message for 'dam release possible' (M=4.94; SD=0.94) was perceived to be significantly more effective than the existing message for 'stand up' (M = 4.35, SD=1.41).
Wivenhoe Dam (gated)	The <i>modified</i> message for 'dam release possible' (M=5.02, SD=1.03) was perceived to be significantly more effective than the existing message for 'lean forward' (M=4.40; SD=1.17).

Recommendations



Adopt modified messages

Pursue opportunities for consistent messaging

Consider reduced number of messages

Invest in continued community education

Distribute messages through multiple channels

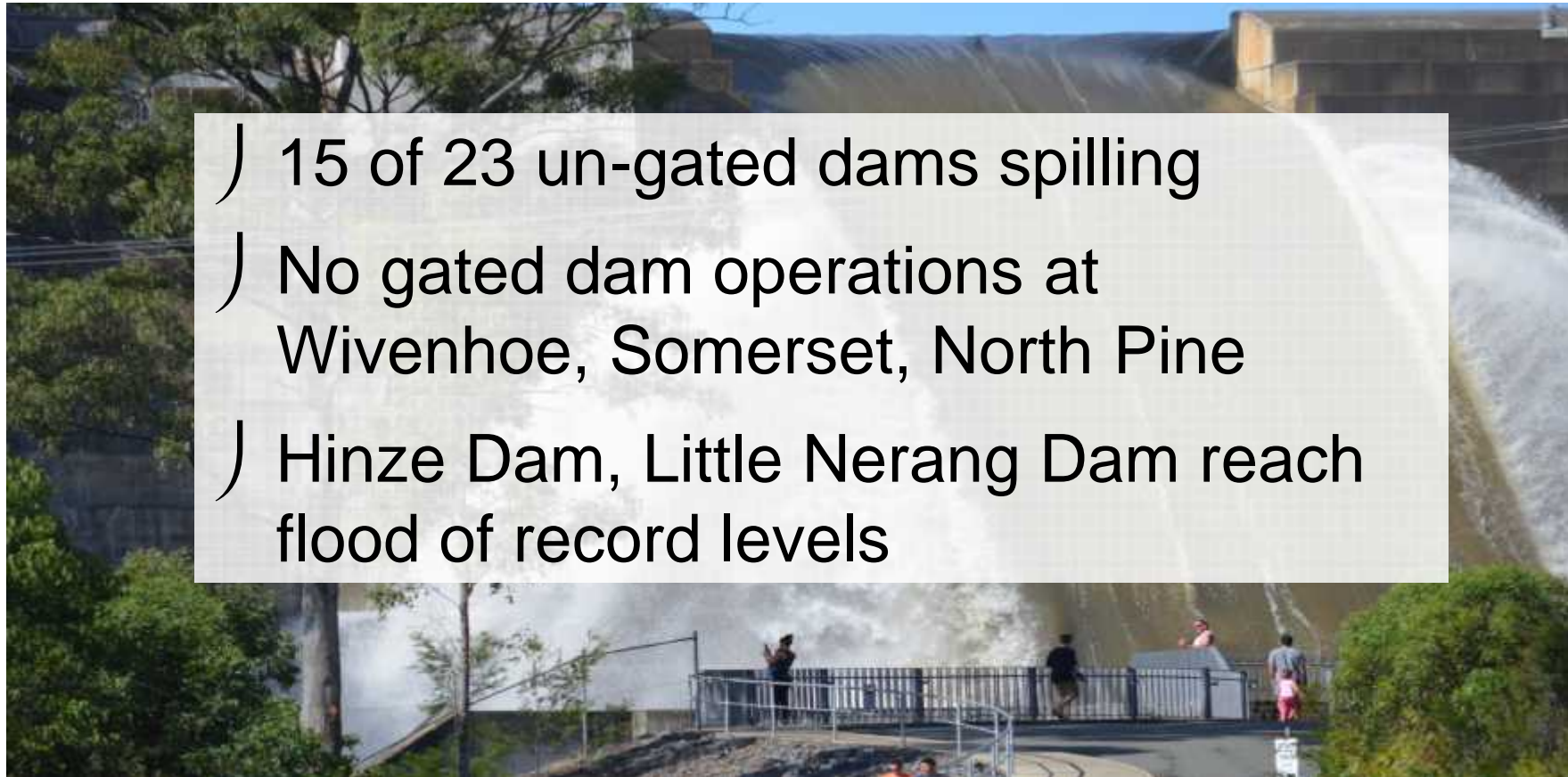
Continue to systematically review messages

Applying research into operations



- All the modified messages were adopted in Seqwater's communication procedure for dam operations
- Opportunity to discuss research and the modified messages with local Councils ahead of 16/17 summer
- Specific notifications agreed with Mid-Brisbane River irrigators downstream of Wivenhoe Dam
- Link to Flood Warnings issued by the Bureau of Meteorology

Tested during ex-TC Debbie

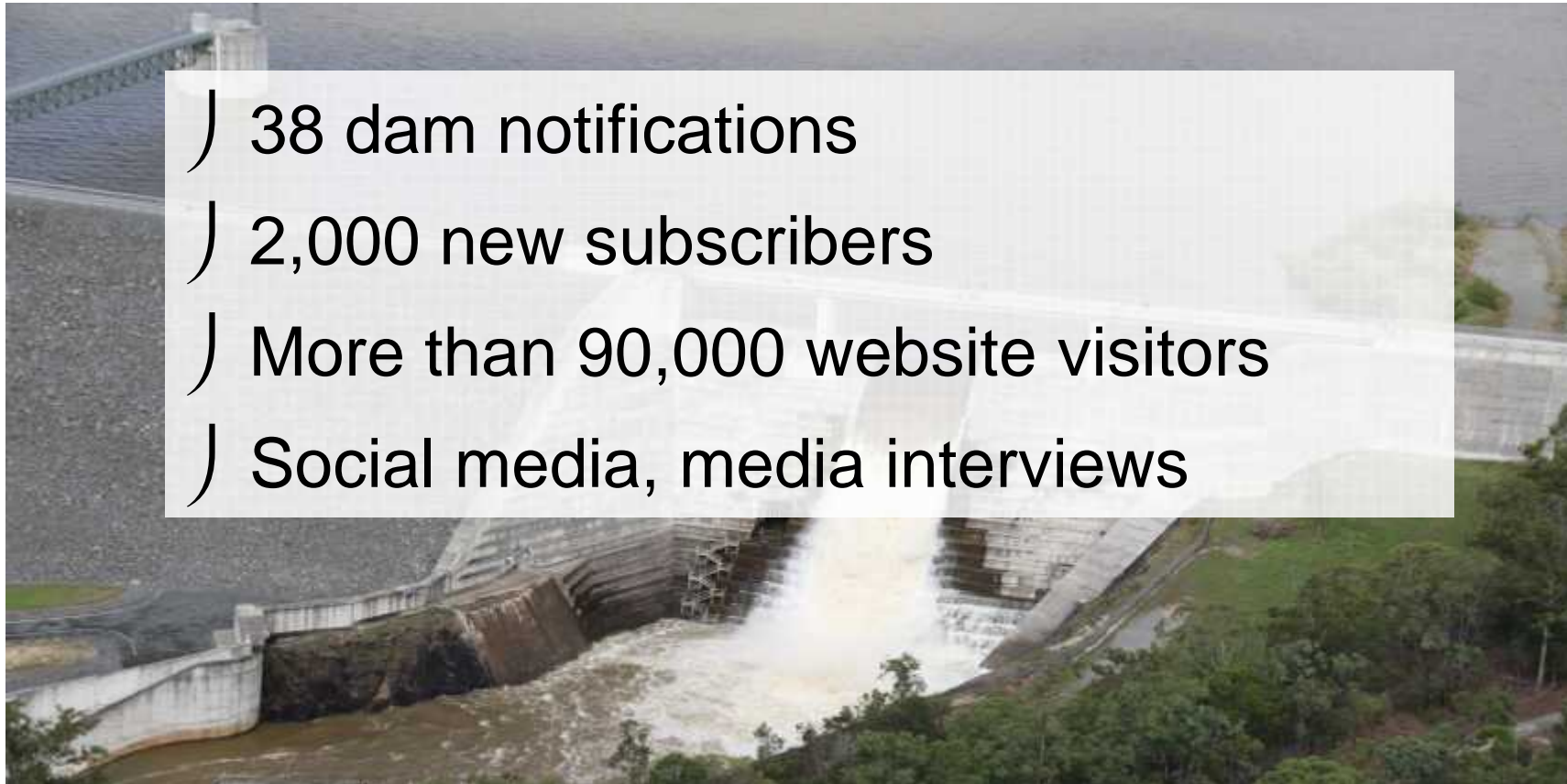


-) 15 of 23 un-gated dams spilling
-) No gated dam operations at Wivenhoe, Somerset, North Pine
-) Hinze Dam, Little Nerang Dam reach flood of record levels

Tested during ex-TC Debbie



-) 38 dam notifications
-) 2,000 new subscribers
-) More than 90,000 website visitors
-) Social media, media interviews



Basis for ongoing engagement



- Targeted approach to engaging and educating downstream communities on dam operations
- Specific fact sheets and dam tours for immediate Population at Risk

Further information

- Sophie Walker (sophie.walker@seqwater.com.au)
- Associate Professor Amisha Mehta (a.mehta@qut.edu.au)



bushfire&natural
HAZARDSCRC

