bushfire&natural HAZARDSCRC

BUILDING RESILIENCE THROUGH FLOOD RISK COMMUNICATION

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Bushfire and Natural Hazards CRC, Macquarie University

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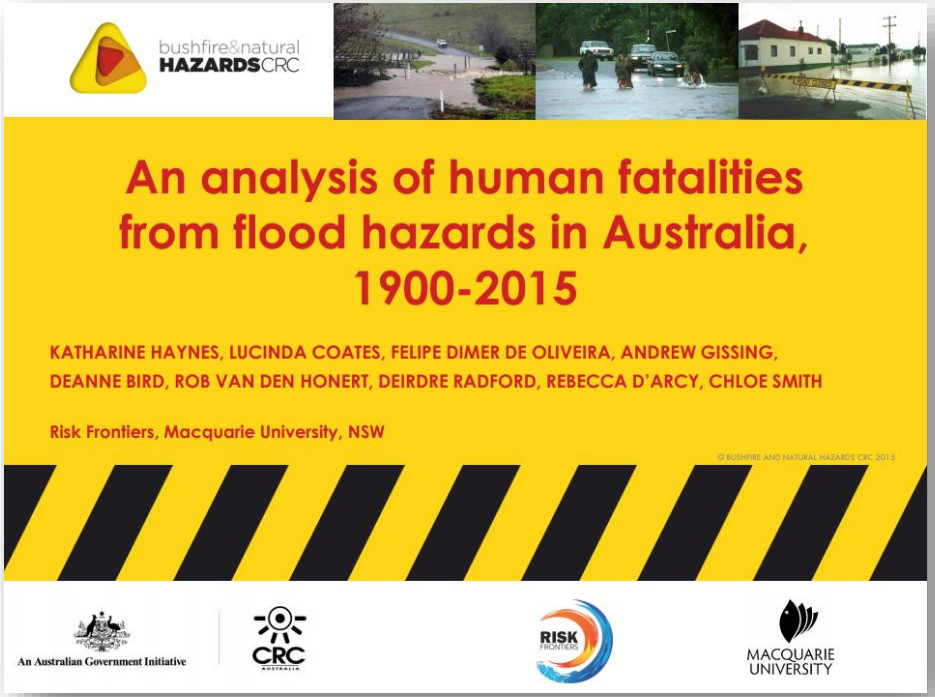
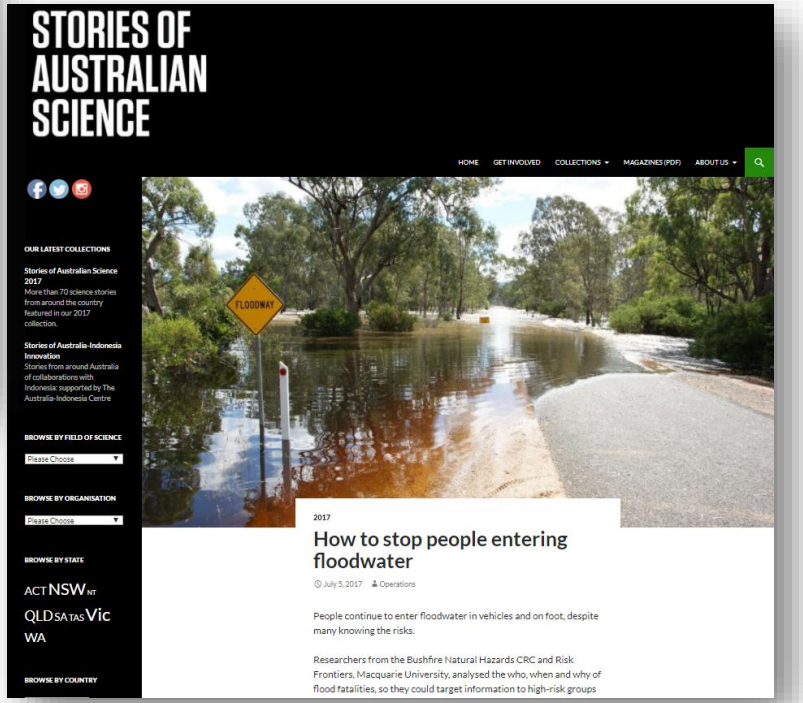
Australian Government
Department of Industry, Innovation and Science

Business Cooperative Research Centres Programme

MACQUARIE University

PROJECT FOUNDATIONS





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MAIN ACTIVITIES

1. Understanding behaviour in and around flood water
   - Survey Research (Driving into floodwater)
   - Cue utilisation
   - Decision-making (Driving into, and recreating in, floodwater)

2. Evaluating and adapting flood risk communication materials

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SURVEY RESEARCH – DRIVING INTO FLOODWATER

1) Defining Floodwater – FMA 2017
2) NSW SES - Driving through Floodwater Survey (Pilot/Extension) (Rachel Begg)
3) Other NSW emergency services – Driving through Floodwaters Survey (Lisa Sato)
4) Water on Roads Survey (Pilot)
5) Public – Driving through Floodwater Survey (Arifa Ahmed)
6) Intentions to turn around/not enter floodwater – young people (Marvin Najem)

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SURVEY RESEARCH – DRIVING INTO FLO

Extended invitation to other SES jurisdictions to take part

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Your participation is requested!
At the breakout session, and beyond…

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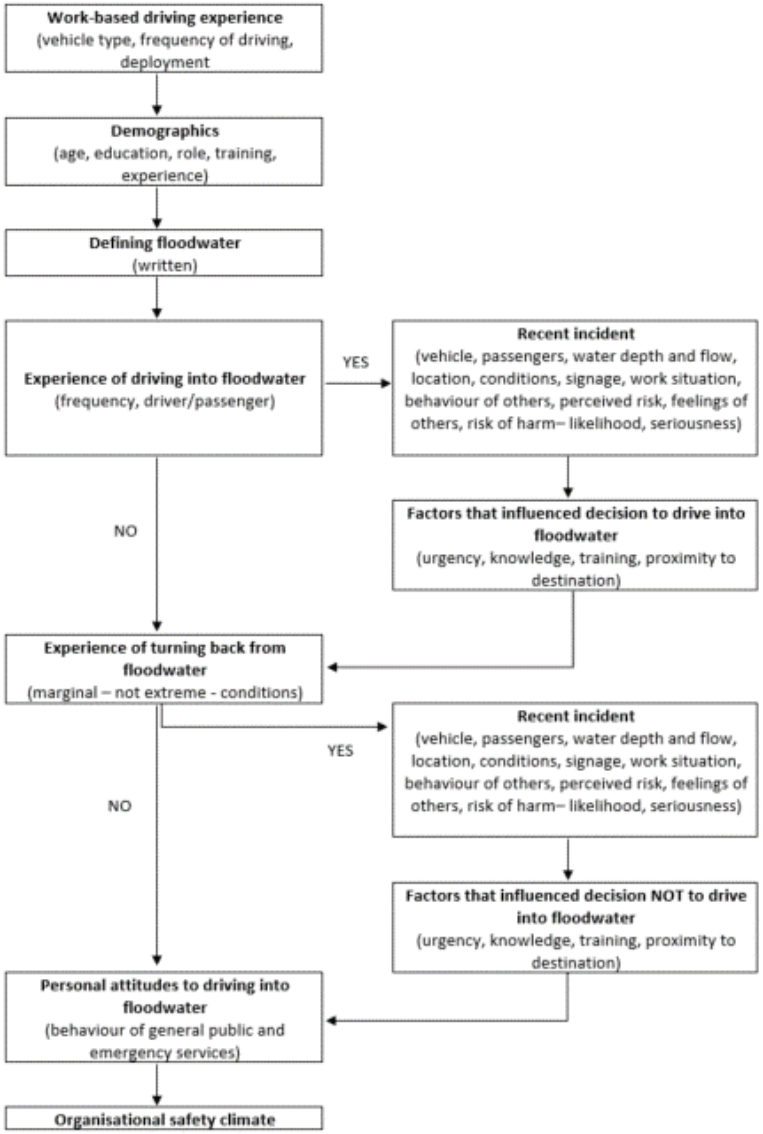
NSW SES – DRIVING INTO FLOODWATER SURVEY (PILOT)

Aims

a) Explore experiences of driving into floodwater in a work context

b) Explore experiences of turning back from floodwater in a work context

c) Look at associations with
- demographics, training,
- organisational safety climate,
- influencing factors



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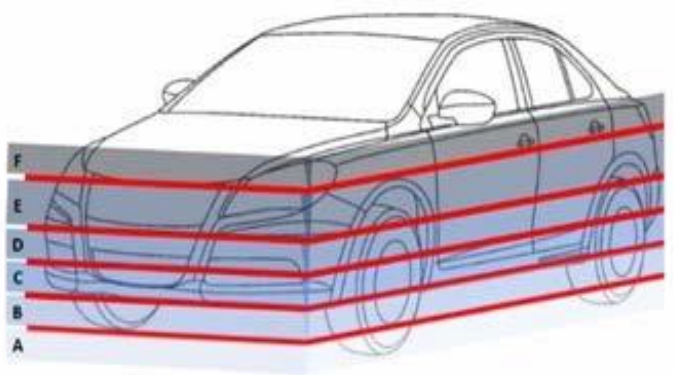
SURVEY ADMINISTRATION

1) Circulated link in weekly newsletter 'Members Connect'
2) Link on Members Facebook page
3) mid-October to end-November



☐ a. Less than 15cm
☐ b. 15cm – 30cm
☐ c. 30cm – 45cm
☐ d. 45cm – 60cm
☐ e. 60cm- 95cm
☐ f. 95cm or above

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OVERALL PROFILE OF RESPONDENTS

1) 77 responses
2) 37% female; 63% male
3) 44% most often drive passenger vehicle; 35% light truck/dual cab
4) 41% drive SES vehicle rarely (<1 per/m), 29% few times a month, 29% most weeks
5) 80% get deployed to work in flood/storm conditions
6) 86% volunteer members; 14% paid staff members

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TRAINING

1) Flood rescue
   a) 44% no current flood rescue qualifications
   b) 19% Level 1, 10% Level 2, 10% Level 3
2) Driving training
   a) 62% drive operational vehicles
   b) 23% 4WD operations
3) Safety training
   a) 62% maintain team safety

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EXPERIENCE OF FLOODED ROADS

56% experience flooded roads at least once or twice a year

Driven through floodwater in the last two years…?

a) 30% as a driver in a NSW SES vehicle
b) 27% as a passenger in a NSW SES vehicle
c) 45% in their own private vehicle

(26 respondents completed the section about their experience)

Turned around?

53% reported that they'd turned around in a situation that other colleagues might have continued driving through

(22 respondents completed the section about their experience)

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DRIVING INTO FLOODWATER

Risk perception

1) Generally not felt to be risky
2) However 16% rated seriousness of harm at higher level

Factors that influenced decision to drive into floodwater

1) Lack of alternative route, careful consideration of the situation, Professional SES training/knowledge, knowing the road well

"The water on the road was unexpected, around a bend, there was not sufficient time to come to a complete stop safely to make an evaluation. Water on road was not signposted"

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TURNING AROUND FROM FLOODWATER

Risk perception

1) Felt it would have been risky to go through (55% rated risk as 5-7 on 7-point scale) Interestingly 33% rated it as low risk (1-3)
2) Main risks were perceived as damage to vehicle (35%), and being washed away in vehicle (26%)

Factors that influenced decision to turn around from floodwater

1) careful consideration of the situation, NSW SES's attitude towards safety, professional SES training/knowledge

"I talked the driver out of attempting to drive through it. Other 2 passengers let me do the talking so not sure of their opinions, but I suspect were relieved. The driver was over confident being in a high clearance 4wd ute"

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EXTENSION OF THE SES SURVEY TO OTHER JURISDICTIONS

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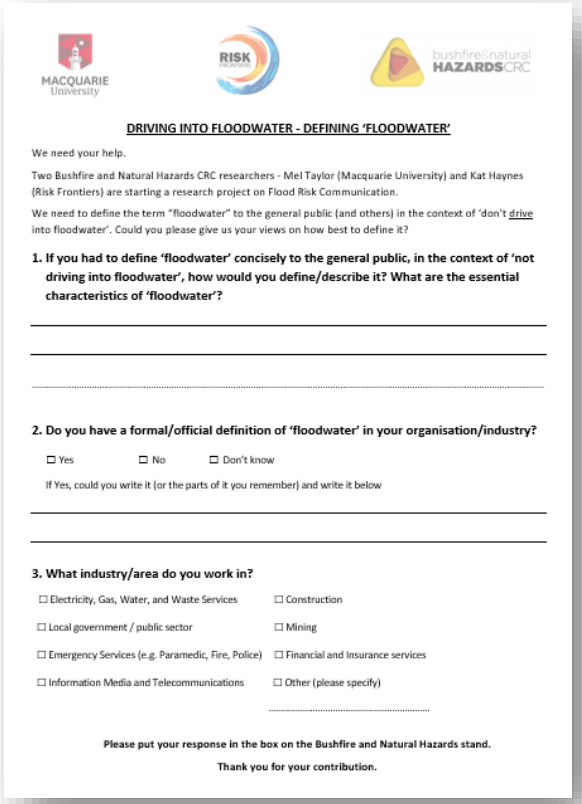
DEFINING FLOODWATER

1) Fundamental question
2) Pilot survey (FMA 2017)
3) Initial focus on 'experts' and organisational definitions
4) Ideas for next wave of responder and public surveys
   a) What do people regard as 'floodwater' (on a road)?
   b) When does a puddle become a flood?
   c) Is there consistency in evaluation – 'experts' vs 'public'?



MACQUARIE University

RISK FRONTIERS

bushfire&natural HAZARDSCRC

DRIVING INTO FLOODWATER - DEFINING 'FLOODWATER'

We need your help.

Two Bushfire and Natural Hazards CRC researchers - Mel Taylor (Macquarie University) and Kat Haynes (Risk Frontiers) are starting a research project on Flood Risk Communication.

We need to define the term "floodwater" to the general public (and others) in the context of 'don't drive into floodwater'. Could you please give us your views on how best to define it?

1. If you had to define 'floodwater' concisely to the general public, in the context of 'not driving into floodwater', how would you define/describe it? What are the essential characteristics of 'floodwater'?

2. Do you have a formal/official definition of 'floodwater' in your organisation/industry?

☐ Yes ☐ No ☐ Don't know

If Yes, could you write it (or the parts of it you remember) and write it below

3. What industry/area do you work in?

☐ Electricity, Gas, Water, and Waste Services ☐ Construction

☐ Local government / public sector ☐ Mining

☐ Emergency Services (e.g. Paramedic, Fire, Police) ☐ Financial and Insurance services

☐ Information Media and Telecommunications ☐ Other (please specify)

Please put your response in the box on the Bushfire and Natural Hazards stand.

Thank you for your contribution.

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DEFINING FLOODWATER

How do you define floodwater?

Do both these photos show dangerous floodwater?

Would you enter the water in a vehicle?

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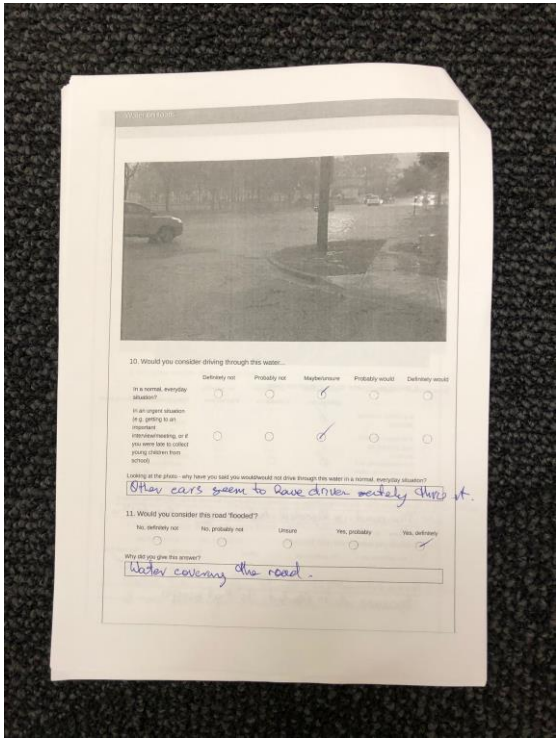
WATER ON ROADS SURVEY

1) Collection of 16 photos of water on roads
2) Piloted on 32 attendees at TOP last week
   a) Would you consider driving through?
   b) Would you consider this road 'flooded'?
3) Cut down to a set of 8 photos – based on analysis of data
4) Now ready for more testing…..

……with 'experts'



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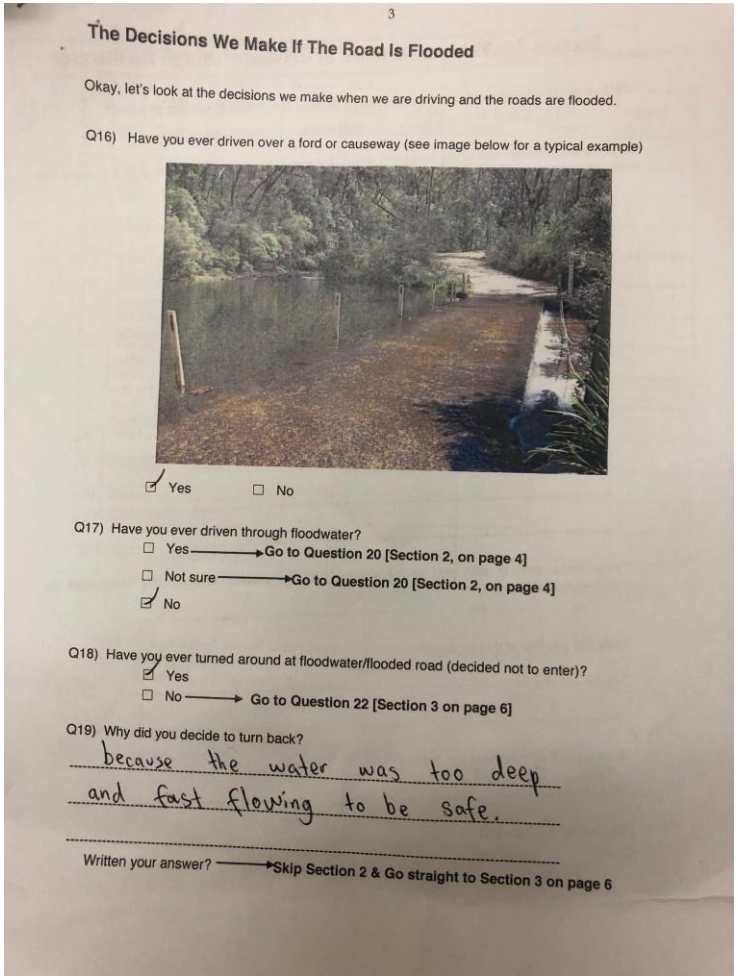
ADDITIONAL RESEARCH DATA

1) Traffic offenders program

(Ian Faulks – Technical Panel)

Data collected from more than 230 traffic offenders in program in 2017



3

The Decisions We Make If The Road Is Flooded

Okay, let's look at the decisions we make when we are driving and the roads are flooded.

Q16) Have you ever driven over a ford or causeway (see image below for a typical example)

☑ Yes ☐ No

Q17) Have you ever driven through floodwater?

☐ Yes → **Go to Question 20 [Section 2, on page 4]**

☐ Not sure → **Go to Question 20 [Section 2, on page 4]**

☑ No

Q18) Have you ever turned around at floodwater/flooded road (decided not to enter)?

☑ Yes

☐ No → **Go to Question 22 [Section 3 on page 6]**

Q19) Why did you decide to turn back?

because the water was too deep and fast flowing to be safe.

Written your answer? → **Skip Section 2 & Go straight to Section 3 on page 6**

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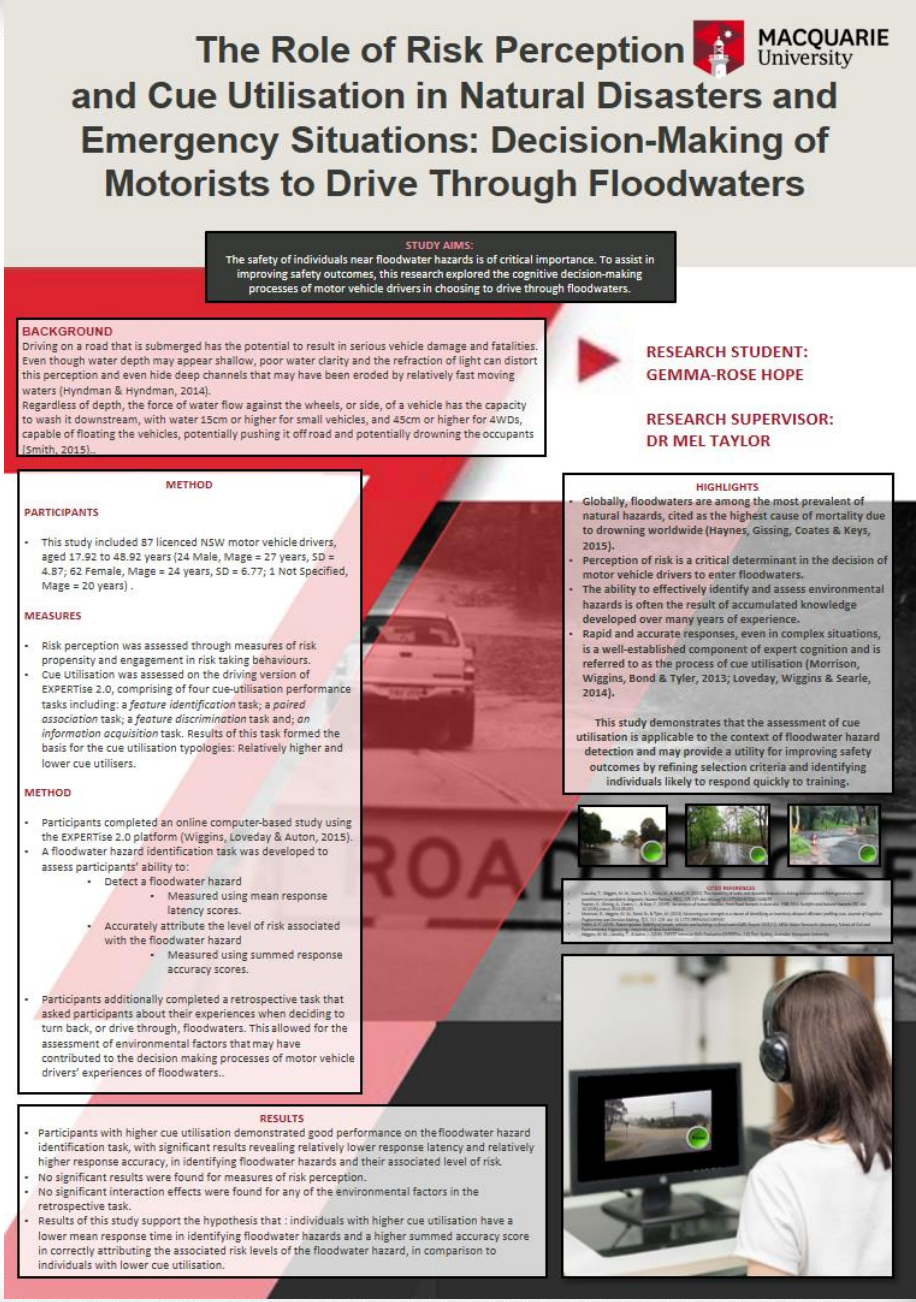
ADDITIONAL RESEARCH DATA

1) Cue utilisation research (Gemma Hope)

a) Evidence that higher cue utilisers were able to make faster and more accurate judgements about the risk of flooded roads (low/mid/high risk photographs)



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INDIVIDUAL VERSUS GROUP DECISION-MAKING

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PUBLISHED RESEARCH ON VEHICLE ACCIDENTS…

1) There is a relationship between carrying passengers and vehicle accident risk for young drivers.
2) Driver death rates for young drivers increases with the number of passengers.
3) Driver death rates for those aged over 30 decrease when passengers are present.
4) Young male drivers have higher death rates than young female drivers.
5) While carrying passengers significantly increases the death rates for both genders, it is more dramatically so for male rather than female drivers.
6) Death rates of young drivers with passengers is higher at night than during the day. Particularly between 12 and 5.59am

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INITIAL RESEARCH (DRAFT PLAN)

1) Participants: Macquarie University students
2) Scenario: Photos and verbal description to set the flood and social context.
3) Variables: Gender, number of passengers, importance / reason for the journey.
4) Methodology:
   a) Driver / passengers will be asked a series of questions in relation to the risk and to make a decision in terms of entering or turning around.
   b) Driver / passengers will be encouraged to discuss their options
   c) Qualitative data will be collected as participants reason through their decision making
   d) Quantitative data will be collected via a short questionnaire that examines their general risk propensity and their individual views and attitudes to the scenario they just completed.
5) Follow-on work may include utilising the general public as participants; altering the flood risk; testing a wider age range, cultural background and driving experience.

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CHILDREN AND FLOODWATER

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INITIAL RESEARCH (DRAFT PLAN)

1) Work with children to discuss their perceptions, views and experiences of playing in floodwaters.
2) Evaluate current messaging with parents and children.
3) Develop new or improved messaging with children and their parents.
4) Participants: Up to four groups of children from NSW, QLD, Northern Australia. Initial contact will be made through SLSA / Nippers and other relevant clubs.

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NEXT STEPS: EVALUATIONS

1) Consultation with end-users and at risk groups to negotiate which risk communication materials to utilise for evaluations
2) Development of evaluation scenarios following photo pretesting, survey results and experimental work with passengers and children.
3) Preparation, tweaking and improving risk communication materials in consultation with end-users and at risk groups
4) Collaboration with Macquarie Department of Marketing – Have been evaluating traffic safety campaigns

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OUTPUTS

1) Academic papers
2) End-users directed ‘research into practice’ briefs
3) Evaluation tool and methodology
4) Evaluated materials

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THANK YOU

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