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16 July 2019

Attention: Andrew Garratt, Principal Transportation Engineer, Auckland Transport

RE: Mackie Research experience with data analysis and review

Dear Andrew,

Further to our conversation on the 15th July, please find my response to your query about the experience that Mackie Research has in analysing and reviewing data and evidence.

Mackie Research specialises in applied research and consultancy services. All of our researchers have a Masters-level qualification or higher. The diversity of backgrounds and expertise within Mackie Research is indicative of our range of skills in research, evaluation, peer review, and consultancy work. We are adept at designing and undertaking research projects that are based on the accurate collection, analysis, and comprehension of data.

In particular we have specialist expertise in:

- Road safety – including road safety systems, crash analyses, active transport, and user-friendly transport infrastructure and systems;
- Evaluations – formative, process, and outcome evaluation of interventions, programmes, and initiatives;
- Social research – including in-depth interviews, focus groups, ethnography, and workshop planning and facilitation
- Human systems and ergonomics – workplace systems; urban systems; biomechanics; sport and recreation; technology usability.

To successfully complete our research projects and reports, we regularly obtain, analyse, and interpret data from numerous sources. This includes:

- Crash data – Mackie Research has level 3 access to the Crash Analysis System (CAS). We use CAS on a regular basis to
    - Determine the crash history of areas (i.e. a single intersection, or a whole suburb) to understand the extent and severity of crashes;
    - Understand the pattern of locations where particular user types i.e. pedestrians or cyclists are most vulnerable;
    - Identify factors pertaining to Safe System failures underlying crashes.
- Traffic volume and speed data – Through a third party, we regularly undertake surveys of traffic volume and speed, usually via pneumatic tubes, though sometimes radar is also used. Our team has substantial experience analysing these data to understand

speed environments and behaviour, and assess the impacts of interventions on traffic speed and volume.

- All team members have a background in academia and are competent at conducting **literature searches** and reviewing academic articles. We continue to write and publish academic articles based on our work.
- We regularly **design and facilitate workshops, interviews, and focus groups** to:
    - Generate client feedback;
    - Understand community perceptions and behaviour;
    - Gather data.
- We have access to, and regularly use the **Safer Journeys Risk Assessment Tool** to understand the road environment context behind crashes.
- We design, conduct, and analyse **perceptions surveys** of the community to gather feedback about their attitudes towards proposed infrastructure, and their experience with street changes.
- We undertake **bike rack counts** and analyse **school roll maps** to understand and provide advice on school travel patterns.
- We design and conduct rigorous **coding protocols for video footage**. Some examples include:
    - Road user behaviour and interactions (between pedestrians, cyclists, and vehicles) on streets before and after the Te Ara Mua – Future Streets in Māngere and the Federal Street contra-flow bike lane in Central Auckland;
    - Pedestrian compliance with level crossing signals;
    - Braking behaviour of vehicles at intersections;
    - Reaction of motorcyclists to perceptual countermeasures painted on the road
    - The frequency and severity of interactions between cyclists and vehicles at intersections.
- We regularly conduct **site visits** to assess potential issues, understand road user experiences, and examine research contexts in person.

Examples of how we use our research expertise and experience to provide strategic advice beyond standard reporting include contributing to the development of guidance and support for innovative street trials and designs (Innovating Streets for People), and working with transport delivery organisations to develop and deliver community-centred transport and placemaking projects.

As described in [redacted] CV, [redacted] has also frequently provided independent peer review services for road safety research and planning conducted by other organisations and groups.

As outlined above, Mackie Research has a strong track record and experience in collecting, analysing, and interpreting a broad range of data, and providing advice on road safety, transport planning, and human systems. For examples of our previous work, please refer to the publications list on our website http://www.mackieresearch.co.nz/publications.html

With kind regards,

[redacted]

MACKIE RESEARCH
OPTIMISING HUMAN SYSTEMS

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Curriculum Vitae – [redacted]

[redacted]

Position: [redacted]

Work address: [redacted]

Professional expertise:

[redacted]