

**Before the Hearings Panel
At Porirua City Council**

Under Schedule 1 of the Resource Management Act 1991

In the matter of the Proposed Porirua District Plan

Between **Various**

Submitters

And **Porirua City Council**

Respondent

**Statement of evidence of Ayoub Kasem Rimam on behalf of Porirua City
Council - Geotechnical**

Date: 29 March 2022

INTRODUCTION

- 1 My full name is Ayoub Kasem Riman. I am employed as a Principal Geotechnical Engineer by ENGEO Ltd, based in Wellington.
- 2 I have prepared this statement of evidence on behalf of the Porirua City Council (**Council**) in respect of technical related matters arising from the submissions and further submissions on the Proposed Porirua District Plan (**PDP**).
- 3 I am authorised to provide this evidence on behalf of the Council.

QUALIFICATIONS AND EXPERIENCE

- 4 I hold the qualifications of Bachelor of Engineering (BE Civil) and Master of Engineering (ME Geotechnical).
- 5 I have worked for Tonkin & Taylor in New Zealand (Wellington) and several other overseas consultancies prior to joining ENGEO (Wellington).
- 6 I am a Chartered Member of Engineering New Zealand, holding the qualification of Chartered Professional Engineer; an International Professional Engineer (NZ); and a Registered Professional Engineer of Queensland (Australia).

CODE OF CONDUCT

- 7 I have read the Code of Conduct for Expert Witnesses set out in the Environment Court's Practice Note 2014. I have complied with the Code of Conduct in preparing my evidence and will continue to comply with it while giving oral evidence before the Environment Court.

My qualifications as an expert are set out above. Except where I state I rely on the evidence of another person, I confirm that the issues addressed in this statement of evidence are within my area of expertise, and I have not omitted to consider material facts known to me that might alter or detract from my expressed opinions.

SUMMARY

- 8 I have been asked by the Porirua City Council to provide geotechnical evidence in relation to the Proposed Future Urban Zone (FUZ) on Judgeford Flat and Judgeford Hills.
- 9 My statement of evidence addresses matters raised by the submissions, specifically if future urban development within the Judgeford Flat and Judgeford Hills area should be precluded owing to the presence of the Moonshine Fault.

INVOLVEMENT WITH THE PROPOSED PLAN

- 10 I have been involved in the PDP since 2014 as a Geotechnical Engineer while working for Tonkin & Taylor and ENGEO Ltd.

SCOPE OF EVIDENCE

- 11 My statement of evidence addresses the following matters:
- 11.1 I understand that PCC has notified its district plan, including the proposed Future Urban Zone in the area of Judgeford Flats and Judgeford Hills.
- 11.2 Submissions to date have queried if future urban development in the Judgeford Flats area is appropriate given the presence of the Moonshine Fault in the area. Accordingly, expert advice is required.

- 11.3 The Council's reporting officer, Ms Gina Sweetman, also asked me to consider the Judgeford Hills area.
- 12 The Moonshine Fault passes through both proposed Future Urban Zoned areas and accordingly a large portion of these areas are within the fault zone. The fault return period is indicated to be greater than 5000 years (GNS Active Faults Database). The Moonshine Fault is predominantly a dextral strike-slip fault. There are no fault specific data that constrain its slip rate or recurrence interval. It has been estimated to rupture in earthquakes of approximate magnitude 7.0 – 7.2 (Stirling et al. 2012).
- 13 In forming my opinion, I have reviewed the following documents:
- 13.1 I note that the Moonshine Fault is noted in Cousins 2013 (Title: Wellington without water – Impacts of Large Earthquakes), which discusses the impacts of large earthquakes on the water supply system in Wellington, that the effects of the Moonshine Fault on the water supply are not considered to be required due to the long recurrence period.
- 13.2 The most recent study I have found in relation to the Moonshine Fault is published by GNS in May 2021 (Title: Active Fault Mapping and Fault Avoidance Zones for Wellington City). Although it is mainly around Wellington City, the Moonshine Fault is discussed, and the findings are not contradictory to my current understanding. The study (GNS 2021) highlights that the Moonshine Fault's confidence of reoccurrence interval classification is "Low" and that very little is known about this fault.
- 14 In my opinion, the location of the Moonshine Faultline should not preclude residential development for Judgeford Hills or industrial development for Judgeford Flat.

- 15 For residential structures and normal structures, it is acceptable to build within the avoidance zones since these are considered of building importance Categories 1 (Temporary structures), 2A (Timber-framed residential construction) and 2B (Normal structures and structures not in other categories). More details and examples on the building categories can be found in the GNS 2021 study. It is important to note that these conclusions are relevant to Importance Level 1, 2a and 2b structures. These conclusions may not be applicable for IL3 structures (important structures that may contain people in crowds or contents of high value to the community or pose risks to people in crowds) and unlikely to be applicable for IL4 structures (critical structures with special post-disaster functions). Also, these conclusions may not be applicable to any structure built on potentially unstable sloping grounds.
- 16 From an engineering perspective, there are a few design features that could be applied to improve on life-safety such as recommending single storey structures, light weight ceilings and tied foundations which can accommodate some ground strains.
- 17 Matters that can be addressed when the areas are subsequently rezoned and a structure plan developed are: Type of the structures allowed (single or two levels; foundation type; light weight structure/ceilings; importance Level; etc.), post disaster functionality requirements (mainly for infrastructure and utilities passing through the site if of high importance level), set back from unstable ground if any, and any other geohazard identified.

18 Careful mapping and trenching exercise to determine the location of the fault, and then provide an offset either side if necessary, will be required as part of any future structure plan and subdivision development.

Date: 29/03/2021

A handwritten signature in black ink, appearing to be 'W.B.', is positioned above a dotted line.

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