

**Before Independent Hearing Commissioners
In Ngāruawāhia**

Under the Resource Management Act 1991 (the Act)

In the matter of of a submission by Ambury Properties Limited and others in respect of the proposed Waikato District Plan pursuant to Clause 6 of Schedule 1 of the Act seeking the rezoning of land at Ohinewai

and Ambury Properties Limited (Ambury)
(Submitter)

and Waikato Regional Council
(Further Submitter)

Summary of evidence of Ghassan Wadi Basheer for the Waikato Regional Council – Flooding and Stormwater

8 September 2020

1. Introduction

1.1 My full name is Ghassan Wadi Basheer. I am the Principal Technical Advisor within the Regional Resilience Team of the Integrated Catchment Management Directorate of the Waikato Regional Council. I have the qualifications and experience as set out in my evidence in chief. I also confirm that in preparing this summary statement I have complied with the Code of Conduct for Expert Witnesses in the current Environment Court Practice Note (2014).

2. Summary of evidence

2.1 The site is currently protected from flooding by the Lower Waikato Flood Protection Scheme to specific rural standards, which are not suited for urban development. The vulnerability of the site to flooding and residual flood risks can be addressed by setting minimum building platform levels. The reference to building platform level and its definition are explained in my comments below.

2.2 Ambury Property Limited (APL) has undertaken additional modelling to assess flood risks resulting from stopbank breach scenarios. APL has undertaken additional modelling of stormwater systems within the development to assess flood risks within the site and neighbouring properties. At the time of preparing my evidence, this technical work had not been discussed and/or shared with the Regional Resilience Team of WRC to confirm parameters and results. This work has now been provided and I comment on it below.

2.3 There are some statements in Mr. Desai's evidence, which do not clearly and/or correctly describe the flood scheme operational parameters which need to be noted and/or amended.

2.4 The proposed rezoning of the Shand Properties Ltd. from the Rural Zone to the Country Living Zone, presented as a submission to this District Plan review, included a section on flooding. The technical evidence is based on a desktop assessment and lacks detailed modelling. It also assumes that the Lower Waikato Flood Control Scheme will adequately protect the site from flooding. In my opinion, it is not appropriate for this property to be re-zoned for a more intensive land use in the absence of more specific information on how flood risk can be adequately managed in this location.

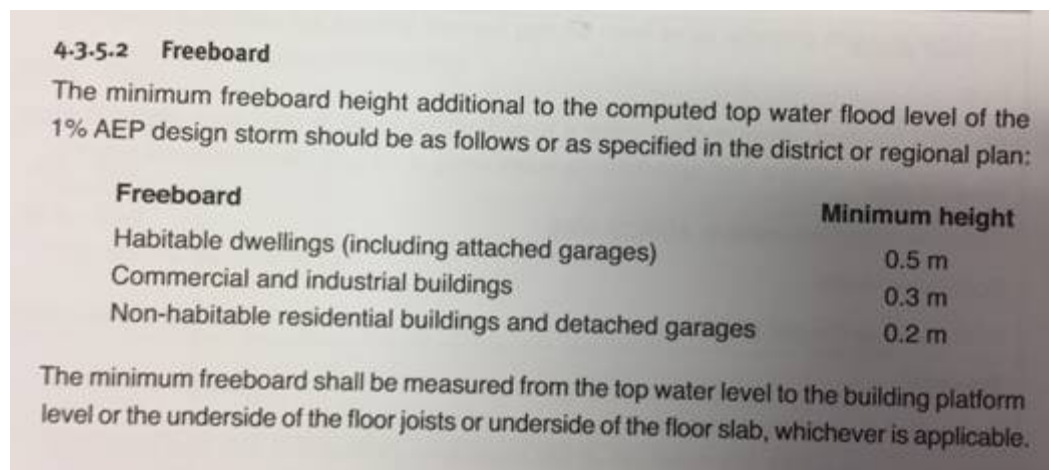
3. Response to rebuttal evidence of APL

3.1 I have read the rebuttal evidence of Mr. Desai, which was submitted following a meeting between Ajay Desai, Stuart Penfold, and myself, on Thursday 20 August 2020. Mr. Desai sent me an email later that afternoon to confirm the discussion.

This email is submitted as Attachment A to Mr. Desai's rebuttal evidence. This was followed by further correspondence in which both agreed the following:

- a. The 1% AEP minimum flood level for Lake Waikare including Climate Change effects is RL 8.0 m (Moturiki Datum). This minimum level is measured along the northern foreshore of the Lake. Flooding above this level will overtop the existing Northern Foreshore stopbank, flowing over farmland and eventually into the Whangamarino Wetland.

3.2 Section 4.3.5.2 of the New Zealand Standard for Land Development and Subdivision Infrastructure NZS 4404:2010 defines the minimum freeboard height for residential, industrial and commercial, and non-habitable residential building, as 0.5 m, 0.3 m and 0.2 m respectively. This section states that "the minimum freeboard shall be measured from the top water level to the building platform level or the underside of the floor joists or underside of the floor slab, whichever is applicable".



4.3.5.2 Freeboard
The minimum freeboard height additional to the computed top water flood level of the 1% AEP design storm should be as follows or as specified in the district or regional plan:

Freeboard	Minimum height
Habitable dwellings (including attached garages)	0.5 m
Commercial and industrial buildings	0.3 m
Non-habitable residential buildings and detached garages	0.2 m

The minimum freeboard shall be measured from the top water level to the building platform level or the underside of the floor joists or underside of the floor slab, whichever is applicable.

3.3 I note that Mr Desai advises that it is more appropriate for the rules to refer to 'finished floor levels' as this is consistent with section 4.3.5.2 of the standard. However, I consider that this is potentially misleading as finished floor level is more likely to be interpreted as the top of the floor, rather than the underside as per section 4.3.5.2. In my opinion it is more appropriate to refer to the building platform level.

3.4 I have reviewed the stopbank breach model scenario results and can confirm that the developed site will not be subject to Waikato River flooding as a result of a stopbank breach, as the flow path runs immediately to the north of APL property. Flooding from Lake Waikare is addressed by setting building platform levels above Lake flood level of RL 8.0 m. Local flooding resulting from direct rainfall can be addressed through stormwater design at the resource consents stage.

3.5 I have reviewed the evidence of Dr. Grant Webby for Mercury, in which he expresses concerns with potential future development and accumulative effects of infilling and reduced flood storage in the Lake. Dr. Webby requests setting the 1% AEP flood level for Lake Waikare at RL 7.37 m. The Regional Resilience Team of WRC agrees that the accumulative effects of infilling should be closely managed, however does not support setting RL 7.37 m as the 1% AEP level for Lake Waikare. This is because setting flood levels should incorporate climate change effects and other residual risks, and these have not been defined by full robust hydrological and hydraulic modelling at this stage. In my opinion, RL 8.0 m is the minimum acceptable 1% AEP level for the Lake. This is considering that historically the lake level reached RL 8.38 m in 1958 before the flood control scheme was built, which represents a worst case scenario.

4 Revised s42A report recommendation

4.1 I agree with statements 41, 42 and 43 and 45 of section 4.2 of Ms Trenouth's report.

4.2 I do not agree with statement 44 of section 4.2, specifically to using the term "finished floor level" instead of that recommended in NZS 4404:2010 "building platform level" as explained in 3.2 and 3.3 above. The Standard is specifically written for land development and specifically refer to platforms upon which buildings can be constructed. The building platform levels are in fact the developed ground levels, which must be above the flood level by a safe margin or freeboard. This is logical, in that the 1% AEP flood level and ground level should not have the same value.

Ghassan Basheer

8 September 2020