BEFORE THE AUCKLAND UNITARY PLAN INDEPENDENT HEARINGS PANEL.

IN THE MATTER	of the Resource Management Act, 1991 ("The RMA") and the Local Government (Auckland Transitional Provisions) Act, 2010
AND	
IN THE MATTER	of Topic 081b, Rezoning and Precincts (Geographical Areas) of the Proposed Auckland Unitary Plan

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STATEMENT OF REBUTTAL EVIDENCE
OF
TREFFERY JEAN BARNETT
ON
BEHALF OF
THE OKURA ENVIRONMENTAL GROUP
AND
THE LONG BAY – OKURA GREAT PARK SOCIETY

ECOLOGY
WEITI PRECINCT

13 MARCH 2016

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1 SUMMARY

1.1 My name is Treffery Jean Barnett. I am providing ecological evidence on behalf of the Long Bay – Okura Great Park Society and the Okura Environmental Group in relation to submissions on the Weiti Precinct.

1.2 The receiving environment for the Weiti Property is the northern half of Long Bay - Okura Marine Reserve, a sensitive receiving environment bounded by the Okura Estuary, Karepiro Bay - a protected sand beach, and the Weiti River.

1.3 The Weiti Precinct includes Significant Ecological Areas Land and Significant Ecological Areas Marine 1 (64(a) lower reaches of the Karepiro Stream), the adjacent marine environment is classed as Significant Ecological Area Marine 1. The site and receiving environment supports nationally rare or threatened species and the effects of the proposed development on these habitats and species are highly likely to be more than minor.

2 INTRODUCTION

2.1 My full name is Treffery Jean Barnett. I am currently employed as a Senior Aquatic Ecologist and have over 30 years' experience working in Marine and Freshwater Ecosystems. My qualifications and experience are set out at Annexure 1.

2.2 I appear in relation to Topic No: 081 Rezoning and Precincts (Geographical) – Weiti Precinct.

2.3 I have been involved with the project since November 2007, when I was requested to undertake a review of the Boffa Miskell Assessment of Ecological Effects[1] for Keep Okura Green Society Incorporated.

2.4 I live in the local area and have visited the Okura Estuary, Karepiro Bay and Weiti River on a frequent basis both professionally and recreationally and I am familiar with and have visited the Weiti property. I have reviewed the ecological information on the sites presented in the evidence by David Slaven, Sharon De Luca and Sean Grace on behalf of Weiti Development LP, and the ecological evidence presented by Shona Myers on behalf of Auckland Council.

2.5 I have read the current Code of Conduct for Expert Witnesses as contained in the Environment Court's Consolidated Practice Note (2014), and I agree to comply with it. I can confirm that the issues addressed in this statement are within my area of expertise, except where I state I am relying on the opinion or evidence of other witnesses, and that in preparing my evidence I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

[1] Boffa Miskell Ltd, 2007. Weiti Assessment of Ecological Effects. Revision B, Volume 2 and Volume 3, Appendix F.

3 SCOPE OF EVIDENCE

3.1 I have prepared this statement on behalf of the Long Bay – Okura Great Park Society and the Okura Environment Group (OEG). It relates to the ecological reports and evidence provided on behalf of Weiti Development LP to enable a total of 1750 dwellings.

4 ECOLOGY - WEITI PROPERTY

FRESHWATER ECOLOGY

4.1 The ecological evidence presented by Mr Slaven is primarily based on the 2007 Boffa Miskell report. These ecological surveys were carried out 10 years ago and within the context of allowing the then total 150 houses to be sited near the coastal area, not within the context of effects of 1200 dwellings and not of 1750 dwellings.

4.2 The streams and freshwater ecosystems are only briefly mentioned in Mr Slaven's evidence (paragraphs 3.4 and 3.5), with a two paragraph description of the freshwater habitats based on survey information from 2006. A minimum requirement should have been the classification of all of the watercourses on the proposed development sites and a determination of the length of permanent, intermittent and ephemeral streams within the proposed developments.

4.3 The Auckland Council GIS viewer overlay for overland flow paths - 3ha and above, corresponds closely with permanent watercourses; overland flow paths - 4000m^2 to 3ha, corresponds closely with intermittent watercourses; and overland flow paths 2000m^2 to 4000m^2,

corresponds with the transition from intermittent to ephemeral watercourses (Refer Figure 1).

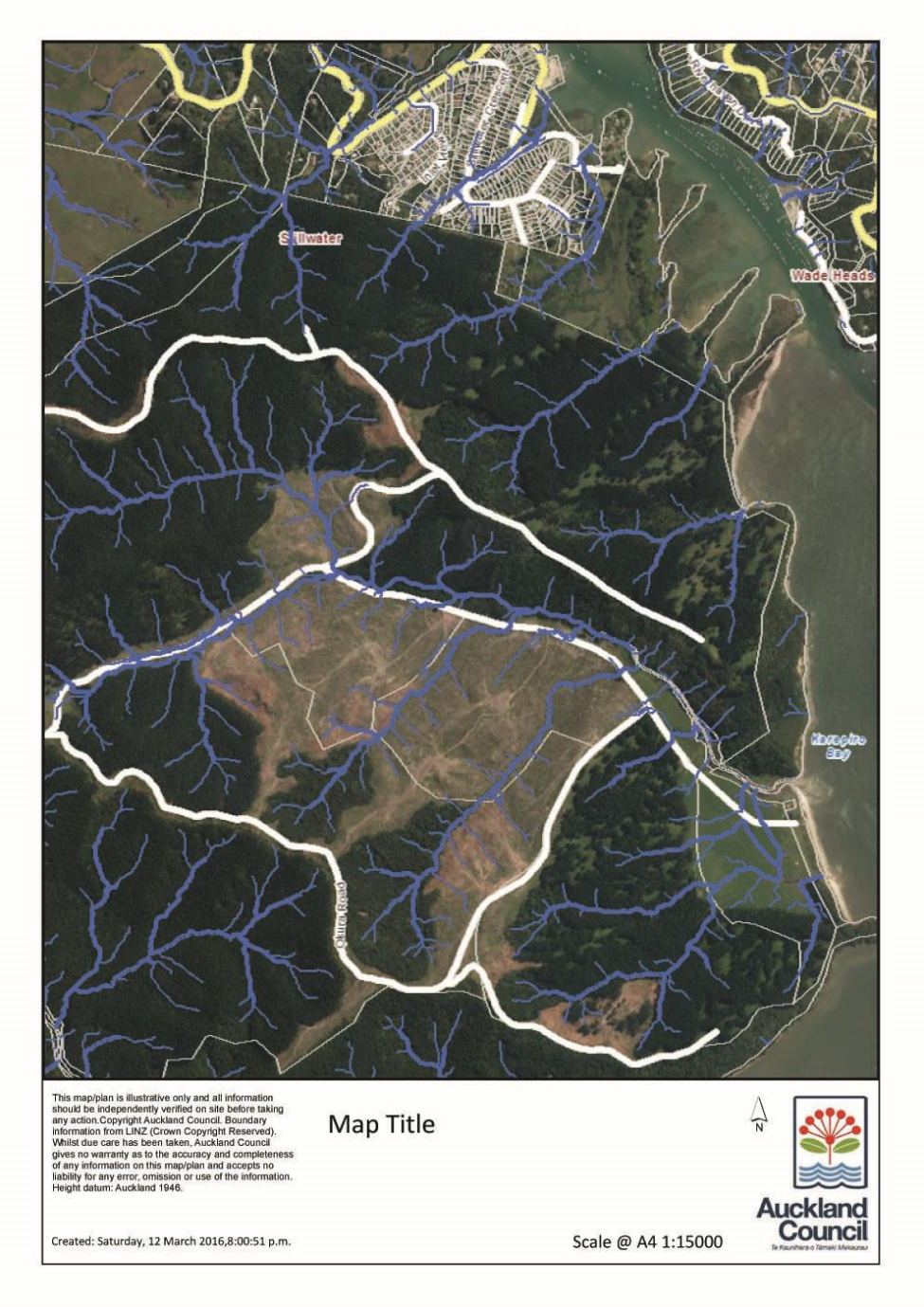

Figure 1. Predicted Permanent and Intermittent Streams in the Weiti Development Area from the Auckland Council GIS Viewer.

4.4 It appears from overlaying the WDLT Plan Precinct1[2] some allowance has been made for the main stem tributaries but very little or no allowance has been made for the streams with catchments < 4000 m^2 and their riparian margins.

4.5 Under the PAUP any reclamation of and/or permanent works within intermittent and permanent streams is a non-complying activity. The concept plans appear to make no allowance for the protection of the intermittent streams.

4.6 Ephemeral and intermittent streams are headwater streams that are crucial to the sustained hydrology of the lower watercourses. Within a protected receiving environment such as the Long-Bay Okura Marine Reserve maintenance of headwater tributaries are crucial to the sustained hydrology of the streams, the attenuation of rainfall during storm events and the remediation of sediment and contaminants prior to entering the main stem watercourses.

4.7 Under the provisions of the PAUP, any length of the intermittent or permanent streams that are reclaimed or piped for an extended length is non-complying and if permitted will require compensation. As the streams in the Okura Catchment have already been proposed for re-vegetation as the alternative location of the re-vegetation depicted in the Special 8 Zone Outline Plan they could not be used for potential compensation or mitigation sites for stream works within the proposed development areas as it would be considered "double dipping".

4.8 Six species of native freshwater fish and koura were recorded in the 2007 ecological assessment. Although other threatened native fauna were referred to in Mr Slaven's evidence, no mention was made of the three species of native freshwater fish listed on the nationally threatened list as "At Risk: declining" present in the Karepiro Stream. These are inanga, red-fin bully and longfin eel. No management plan or mention has been presented for their sustained existence or preservation of their habitats.

4.9 Although inanga are recorded in the catchment and the lower catchment has good conditions for habitat, no investigation of actual or potential inanga spawning habitat has been carried out. This habitat will be particularly vulnerable to sedimentation from the developments.

4.10 The effects of increased sedimentation and storm water on aquatic environments are cumulative. During storm events it is likely there will be significant sediment discharge from the development sites, even using best practicable methods, and the cumulative effects of the sediment and storm water discharges on the threatened native fish species will not be "of minor or less ecological significance". Spawning habitats for the red-fin bully and inanga would be particularly vulnerable to sedimentation.

4.11 Although Mr Slaven presented evidence on the Ecological Effects (Section 4) on Shore Birds, Terrestrial Birds and Herpetofauna, there is no assessment of effects on streams, freshwater habitats, the threatened species of native freshwater fish or the SNA (saline wetland) in the lower reaches of the Karepiro Stream.

4.12 I do not agree with Mr Slaven conclusions (Section 5) that any potential adverse ecological effects of the additional development will be negligible, particularly in the context of the effects on the development on freshwater habitats, on which no specific consideration has

[2] Evidence, Sean Grace, page 98

been given, the loss of intermittent streams, and the adverse effects of the development on threatened species of native freshwater fish and the sensitive saline wetland.

MARINE ECOLOGY

4.13 In my opinion the contaminants and sediment 1750 dwellings and associated infrastructure will have more than 'negligible' effects on the ecology in the Marine Reserve. Any contaminants in the Okura Estuary or Karepiro Bay have the potential to accumulate and affect the spawning habitats for freshwater fish and the feeding grounds for vulnerable native shore birds. Even the most efficient systems release contaminants and significant pollutants in storm events. If development was to proceed the marine receiving environment would change from negligible domestic inputs to 1750 dwellings with associated roads, vehicles and supporting infrastructure. In my opinion, this will have a greater than minor effect on the soft shore marine ecosystems and the effect will be cumulative over time.

4.14 Ms De Luca states (paragraph 4.10) that the current concentration of common storm water contaminants is low. This is what should be expected to date, but is unlikely to be maintained considering the very much greater loading proposed developments will have on the catchment and her further comments that Karepiro Bay is recognised as a long-term sink for fine sediments (paragraph 4.11) and that the long term average, best practice devices, only remove about 75% of total suspended solids and associated contaminants (paragraph 5.7).

4.15 The three marine environments Okura, Weiti and Karepiro Bay are completely different depositional environments and should be discussed separately. Consequently, the summary sentence in Ms De Luca's evidence in paragraph 4.11 is quite misleading as the sensitive species are recorded in *Karepiro Bay*, which is the environment historically with the *lowest* sediment loading, and that will be the main receiving environment from the proposed developments, and consequently will have the highest potential impact from sedimentation. Animals sensitive to sediment are present in Karepiro Bay, but will unlikely to be present under more sedimentation.

4.16 This contradictory approach is used in Ms De Luca's evidence where she agrees that the Karepiro Bay is a sink for fine sediments (paragraph 4.11) but then in the Effects section 5.9 describes Karepiro Bay as an open sand beach which is well flushed and unlikely to accumulate the residual sediment and contaminants in stormwater. Neither scenario takes into account the effect of sedimentation and accumulation of stormwater contaminants in the highly sensitive salt marsh, a SNA, at the mouth of the Karepiro Stream.

4.17 Although sediment runoff during the earthworks phase of the project will be minimised, through erosion sediment control measures, there is still a recognised allowance for which complete control cannot be maintained, particularly during storm events. Ms De Luca outlines that at the adjacent Long Bay development, about 95% of sediment laden water is captured and treated prior to discharge and that it is expected that similar control of sediment runoff can be achieved on the Weiti property. There is a significant difference in the receiving environments of both developments, with the Long Bay development discharging to a high energy open beach and the Weiti Development discharging to a much lower energy protected

sand beach, via a SNA salt marsh. Protected sand beaches are wider and flatter and the beach laid bare at spring tides is very much wider than neap tides. The dynamics are completely different and protected sand beaches are much more vulnerable to sedimentation than open sand beaches.

4.18 Ms De Luca's response to Council's evidence in paragraph 6.4 and 6.5 is sweeping, lacks an evidence base, is reliant on "best practice" as the answer to concerns about the receiving environment, does not take into account the not infrequent urban discharges of hydrocarbons and domestic chemicals into the storm water drains which is compounded by any increase in urban development and compounded in the receiving environment. "Best practice" erosion and sediment control, and storm water treatment are an ideal, and in my experience "best practicable" control is the usual standard in a development. The receiving environment for the Weiti development is extremely vulnerable, it discharges into a protected Marine Reserve via a vulnerable salt marsh and 1750 dwellings, associated infrastructure and thousands of people will, in my opinion, have a more than minor effect on the immediate marine receiving environment.

EFFECTS ASSESSMENT SUMMARY

4.19 The ecological evidence summary by Mr Grace measures all the ecological effects against a baseline of 1,200 dwellings and the supposition that there would be no discernible additional ecological effects over and above those that would likely to be associated with the allowable 1,200 dwellings as notified (paragraph 6.20). No ecological effects assessment of 1,200 dwellings was available for review, and my understanding is that no ecological effect assessment for this level of development has been prepared, so I was unable to ascertain whether those effects are less than minor or significant, and whether the ecological effects of any additional dwellings will exacerbate those potentially significant ecological effects.

4.20 I concur with Mr Roa's statement (paragraph 3.21) that *there is insufficient supporting information or evidence that the proposed development will provide measures to protect the quality of the coastal environment in a way that is consistent with the above objectives and policies, or to mitigate stormwater or sediment-related effects to levels that are "negligible" or "no more than minor", as claimed in the evidence by Mr Grace, Ms De Luca and Mr Slaven.*

5 CONCLUSION

5.1 I do not support the additional development levels proposed by Weiti Development LP and Green and McCahill Holdings Limited. The proposed developments are likely to have significant effects on the aquatic environments, both freshwater and marine. A full assessment of the freshwater habitats of the proposed development areas, classification of watercourses

and detailed effects assessment of the proposed developments on the freshwater habitats is a minimum requirement for land use change in this receiving environment.

5.2 Considering that no assessment of ecological effects has been done for any level of development above 150 dwellings, and the likelihood of significant ecological effects, I cannot support development above 150 dwellings.

ANNEXURE 1

Qualifications, Expertise and Experience

QUALIFICATIONS AND EXPERIENCE: TREFFERY JEAN BARNETT

My name is Treffery Jean Barnett. I have worked as a consultant ecologist for the past thirty years. I currently specialise in freshwater ecology, and have worked and specialised in coastal and marine ecology. I am currently responsible for the undertaking and coordination of assessments of freshwater habitats for over ten developments in the wider Auckland area including Special Housing Areas.

I have a Bachelor of Science and Masters of Science (Hons) from the University of Auckland and I am a member of the New Zealand Freshwater Sciences Society.

During the past 30 years, I have been involved in a number of water quality and ecological surveys of rivers, streams and coastal areas throughout New Zealand. These surveys have included surveys and evaluations of the effects discharges of treated wastewater and/or removal of water on the ecology of rivers, coastal areas and estuaries that receive treated wastewater from timber and dairy processing, sand mining, quarrying, steel and aluminium production. In the Auckland Region I have undertaken assessments of the effects of land development projects on a number of streams and rivers, including the Papakura Stream, Turanga Creek, Mahurangi River, Waitoki Stream, Bomb Bay Creek. I am familiar with the Auckland Council's Stream Ecological Valuation and associated Environmental Compensation protocols and am currently involved with the baseline monitoring of rivers and streams along the designated route of the proposed Puhoi to Warkworth Motorway. I have also appeared as an expert witness at resource consent hearings.