

**Before the Environment Court  
At Auckland**

**In the matter of** the Local Government (Auckland Transitional Provisions Act 2010  
(**LGATPA**) and the Resource Management Act 1991 (**RMA**)

**And**

**In the matter of** appeals under section 156(1) of the LGATPA

**Between** **Weli Yang, Zhi Lu & Jing Ni**

**(ENV-2016-AKL-000196)**

**Okura Holdings Limited**

**(ENV-2016-AKL-000211)**

**Appellants**

**And** **Auckland Council**

**Respondent**

**And** **Weiti Development Limited Partnership**

**Section 274 Party**

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**REBUTTAL STATEMENT OF BERNARD GEORGE STANLEY ON  
BEHALF OF THE LONG BAY - OKURA GREAT PARK SOCIETY  
INCORPORATED**

**8 SEPTEMBER 2017**

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**And Long Bay-Okura Great Park Society Incorporated  
Section 274 Party**

**And Royal Forest and Bird Protection Society Incorporated  
Section 274 Party**

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# **REBUTTAL STATEMENT OF BERNARD GEORGE STANLEY FOR THE LONG BAY OKURA GREAT PARK SOCIETY**

## **1 Introduction**

- 1.1 My full name is Bernard George Stanley. My relevant qualifications, experience and background in this case are as set out in my evidence in chief, dated 28 July 2017.
- 1.2 The purpose of this statement is to respond to Mr Graeme Ridley's evidence and the expert conferencing report 31 August 2017 on the topic of Sediment and Erosion, which mainly focus on sediment control during the major earthworks phase of the proposed OHL development at Okura. Little consideration appears to have been given to the important issue of continuing sediment generation and discharge and its impact on the Okura Estuary and wider Long Bay-Okura Marine Reserve during the subsequent infrastructure and house building phases to completion and thereafter. This rebuttal addresses that lack.

## **2 Discussion**

- 2.1 The similar geology and hydrology of the proposed OHL development at Okura to that of the recently completed Todd Awaruku Ridge development at the adjacent Long Bay will require similar extensive earthworks using similar methods and technology. It is logical to expect therefore that similar ongoing run-off and sediment loadings will result at Okura as continue to be recorded in the Awaruku catchment at Long Bay with a steadily worsening trend as shown in the attached tabulation. The Awaruku stream outfalling at the southern end of Long Bay beach is the immediate receiving environment carrying the storm water and ground water run-off from the catchment discharging into the Long Bay-Okura Marine Reserve and Hauraki Gulf Marine Park. The sediment loading carried by the stream will adversely impact the marine environment, especially the filter feeders at the bottom of the food chain.
- 2.2 The Structure Plan development at Long Bay provided for an "Oxbow" sedimentation pond on the Awaruku wetland designed to remove pollutants, including sediment from the inflow upstream of the development. It is logical to assume therefore that if this pond is performing its design function all the sediment measured at the location immediately below the development is coming from the development area. Given the very low settling rate of retained samples the writer considers this sediment to be composed of finely divided clay mineral particles.

This view is supported by recent observations of silty muddy deposits overlaying the sand at the stream mouth. There has also been a dramatic decline observed in migratory fish and ducks in the lower reaches of the stream in recent years.

The source of these “fines” is thought to be inadequately consolidated material in the major landscaping of the area being carried by ground water flowing to the stream.

### **3 Methodology**

3.1 Sediment loadings of the Awaruku stream have been monitored by the writer over a period of 6 years by measuring on a randomised basis the clarity at the two locations – one immediately above the development adjacent to 31-33 Glenvar Road (Site A in attached table) and one immediately below (Site B) at the bus terminal in the Regional Park. This is an extension of many years involvement in the Auckland Council Wai Care Programme at Site A which included the same clarity test. The results have been translated into sediment loadings using the research tool of Packman & Associates Centre for Water Research Management, University of Washington, Seattle, USA<sup>1</sup>. It should be noted in comparing clarity/sediment results the relationship is exponential not linear.

### **4 Conclusion**

Monitoring the Awaruku Stream adjacent to the Todd medium density urban development at Long Bay has established the development area to be the source of a continuing significant fine sediment loading in the adjacent Awaruku Stream to the detriment of the ecology of the Long Bay-Okura Marine Reserve and Hauraki Gulf Marine Park into which it discharges. With similar geology, design, scale and development methods being employed in the proposed OHL Okura urban development it is logical to expect a similar outcome with regard to generation and discharge of sediment again to the detriment of the ecology of the receiving environment, the Okura Estuary – a vital part of the Long Bay-Okura Marine

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<sup>1</sup> J. J. Packman, K. J. Comings, and D. B. Booth (1999). “Using turbidity to determine total suspended solids in urbanizing streams in the Puget Lowlands”. **Published** in *Confronting Uncertainty: Managing Change in Water Resources and the Environment*, Canadian Water Resources Association annual meeting, Vancouver, BC, 27–29 October 1999, p. 158–165.  
<https://digital.lib.washington.edu/researchworks/handle/1773/16333?show=full>

Reserve. The adoption of the precautionary principle by maintaining the existing Rural Urban Boundary and Zoning of the area would appear appropriate.

B G Stanley

8 September 2017

Appendix: Turbidity Testing of the Awaruku Stream, Jan- Sept 2017 (by B G Stanley, MSc(Hons)) - Table 1 & Fig.

**APPENDIX: Turbidity Testing of the Awaruku Stream, Jan- Sept 2017 (by B G Stanley, MSc(Hons)) - Table 1 & Fig. 1**

Date	Location A (31-33 Glenvar Rd – above Long Bay development)		Location B (Bus Terminal at Regional Park - below Long Bay development)		Comments
	Clarity (cms)	Sediment (mg/l)	Clarity (cms)	Sediment (mg/l)	
17/01/2017	73	11	52	22	Hot dry weather - low stream flow at A
24/01/2017	96	<7	58	20	Hot dry weather - low stream flow at A
13/02/2017	45	30	37	44	No recent rain - moderate stream flow
18/02/2017	45	30	33	55	Showers previous day - medium stream flow
7/03/2017	75	11	58	18	No rain - low stream flow
8/03/2017	30	67	22	124	Overnight rain - high stream flow
11/03/2017	23	113	18	185	Overnight rain - high stream flow
22/03/2017	56	19	45	30	No rain 48 hrs -medium flow
5/04/2017	35	49	20	150	Heavy rain previous day - medium flow
12/04/2017	12	416	7	1222	Heavy rain previous day - high stream flow
20/04/2017	48	26	46	28	Occasional light showers - medium flow
2/05/2017	62	16	40	37	Heavy rain 2 nights previous - medium flow
17/05/2017	19	166	12	416	Overnight rain - high stream flow
23/05/2017	52	22	39	39	No recent rain - medium flow
16/06/2017	57	18	42	34	Showers - medium flow
20/06/2017	60	17	46	28	No rain 48 hrs -medium flow
18/07/2017	52	22	56	19	No rain 48 hrs -medium flow
26/07/2017	52	22	42	34	Showers - medium flow
3/08/2017	52	22	39	39	Showers - medium flow
10/08/2017	38	41	30	67	Overnight rain - medium flow
14/08/2017	16	234	9	739	Overnight rain event - high stream flow
15/08/2017	34	52	21	136	No rain -medium flow
23/08/2017	51	23	43	32	No rain - medium flow
3/09/2017	35	49	17	207	Showers - medium flow

Figure 1

