

**BEFORE THE ENVIRONMENT COURT**  
**I MUA I TE KOOTI TAIAO O AOTEAROA**

**IN THE MATTER** of the Resource Management Act 1991 (**RMA**)

**AND**

**IN THE MATTER** of a direct referral application under section 87G of the RMA for resource consents for the necessary infrastructure and related activities associated with holding the America's Cup in Auckland

**BETWEEN** **PANUKU DEVELOPMENT AUCKLAND LIMITED**

(ENV-2018-AKL-000078)

Applicant

**AND** **AUCKLAND COUNCIL**

Regulatory Authority

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**STATEMENT OF EVIDENCE OF DR KALA SIVAGURU  
ON BEHALF OF THE AUCKLAND COUNCIL**

**(ECOLOGY)**

**Dated 21 August 2018**

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## 1. INTRODUCTION

- 1.1 My full name is Kalayarasi (Kala) Sivaguru.
- 1.2 My evidence is given on behalf of the Auckland Council (the **Council**) in its regulatory capacity in relation to the direct referral application filed by Panuku Development Auckland Limited (**Applicant**) seeking resource consents for the construction, occupation, use and maintenance of permanent and temporary infrastructure and undertaking of activities within the coastal marine area and on land, associated with the America's Cup (the **Application**). My evidence relates to the effects on marine ecology, sediment and water quality of the Application.

## 2. QUALIFICATIONS AND EXPERIENCE

- 2.1 I hold MSc (Hons) and Ph.D degrees in Marine Ecology from the University of Auckland. My MSc research work involved rocky shore ecology and my Ph.D research work included soft sediment ecology and ecotoxicology.
- 2.2 I am currently employed as a Senior Coastal Specialist in the Specialist Unit at the Council. I have been working in this Specialist Unit since March 2013. Prior to this, I worked for the Department of Conservation for 11 years where I provided advice on the conservation and management of the ecology of the marine environment in the Auckland region.
- 2.3 I am a member of New Zealand Marine Sciences Society. During my time with the Department of Conservation, I gained experience in designing and conducting ecological monitoring programmes of intertidal and subtidal fauna and flora in marine reserves in Auckland.
- 2.4 In my current role, I have been involved in assessing the potential effects of a number of regionally significant projects on marine ecological values.
- 2.5 My recent experience of particular relevance to this proposal includes:
  - a. Assessing the effects on marine ecology and seabirds (blue penguins in particular) of the marina proposals at Matiatia and Kennedy Point, Waiheke;
  - b. Assessing the marine ecological effects of wastewater discharges to the receiving environment at Martins Bay from Snells Wastewater Treatment Plant (WWTP) and Clarks Beach from the South-west Subregional WWTP;

- c. Assessing the marine ecological effects from the proposed East West Link project;
- d. Assessing the marine ecological effects from a number of proposed large scale mussel farming applications, For example mussel farm applications in the Firth of Thames (470 ha) by the Western Consortium and Westpac mussel limited (128 and 171 ha); and
- e. Assessing the marine ecological effects from a number of applications related to coastal structures, dredging and mangrove removal.

### 3. MY ROLE

- 3.1 I prepared a report on the ecological aspects of the Application (**Report**)<sup>1</sup>. My Report was attached as Appendix B to the Council's section 87F Report by Nicola Broadbent. I reaffirm the contents and conclusions of my Report, subject to the matters noted below.
- 3.2 In preparing my Report and this evidence, I carried out a site visit in May 2018.
- 3.3 I participated in expert witness conferencing with the Applicant's expert, Paul Kennedy, and was a signatory to the resulting Joint Witness Statement (**JWS**) on ecology and the coastal environment dated 25 July 2018<sup>2</sup>.
- 3.4 In preparing this evidence I have reviewed the following documents and reports:
  - (a) The documents listed at paragraph 1.2 of my Report;
  - (b) The statement of evidence of Paul Kennedy, attaching a draft Biosecurity Management Plan as Attachment A (contents page only) and a draft Inner Viaduct Harbour Environmental Management Plan as Attachment B (dated 3 August 2018)<sup>3</sup>; and
  - (c) The planning evidence of Karl Cook and Vijay Lala, attaching a revised set of proposed conditions as Attachment A (**Proposed Conditions**) dated 7 August 2018<sup>4</sup>.

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<sup>1</sup> CB137, page 3596 onwards.

<sup>2</sup> E20, page 1273 onwards.

<sup>3</sup> E16, page 0965 onwards.

<sup>4</sup> E19, page 1060 onwards.

#### 4. CODE OF CONDUCT

4.1 I have read the Code of Conduct for Expert Witnesses (**Code**) outlined in the Environment Court's Consolidated Practice Note 2014 and have complied with it in preparing this evidence. I also agree to follow the Code when presenting evidence to the Court. I confirm that the issues addressed in this brief of evidence are within my area of expertise, except where I state that I rely upon the evidence of other expert witnesses. I also confirm that I have not omitted to consider material facts known to me that might alter or detract from my opinions.

#### 5. SCOPE OF EVIDENCE

5.1 This statement of evidence covers the following:

- (a) A summary of my evidence (**Executive Summary**);
- (b) An assessment of the Application, including an overview of the key points from my peer review (**Assessment of the Application**);
- (c) An update following expert witness conferencing, referring to the JWS where appropriate, and a response to the Applicant's evidence (**Update Following Expert Witness Conferencing / Response to Applicant's Evidence**);
- (d) Comments on draft conditions and proposed mitigation (**Conditions / Mitigation**); and
- (e) Conclusions.

#### 6. EXECUTIVE SUMMARY

6.1 The Application site is a highly modified coastal environment, surrounded by historical reclamation, structures related to port and other marine activities including maritime events, and berthage for commercial and recreational activities. The surrounding area has been subject to ongoing use and development related to port and marine related activities such as disturbance from vessel movements, and reconfiguration and dredging.

6.2 For the reasons explained in my Report and this evidence, I consider that any potential adverse effects on marine ecology including avifauna, marine mammals, sediment and water quality resulting from the proposal would be minor, subject to

adherence to the Proposed Conditions (which are agreed with Mr Kennedy, following expert witness conferencing).

## **7. ASSESSMENT OF THE APPLICATION**

### ***Subtidal and intertidal ecology***

7.1 The key potential adverse effects on marine ecology, sediment and water quality from the AC36 project include:

- a. Permanent and temporary changes and loss of habitats resulting from the proposal;
- b. Permanent and temporary new habitats from the proposed structures;
- c. Construction related effects (habitat disturbance, noise, change in the level of total suspended solids (TSS) and other contaminants);
- d. Effects from dredging;
- e. Operational effects (biosecurity, discharge of stormwater, lighting and shading effects); and
- f. Indirect effects (birds, fish and other fauna).

7.2 The proposed structures would permanently shade a subtidal area of less than ~1ha which would in turn change the habitat from an open water nature to a shaded nature mainly by reducing illumination and altering water movement and sedimentation rates. However, this effect is not considered significant as the site has already been impacted by a reduction in light and increase in sedimentation rate as a result of existing development at the site. In addition, the benthic communities in the existing environment are likely to be tolerant to these changes and to be resilient.

7.2 Whilst the soft sediment habitat is lost for the piles, the proposed structures would provide hard substrate for encrusting organisms. As with other similar structures within the Viaduct Harbour, these structures are likely to be colonised by non-indigenous species. The Viaduct Harbour due to its port activities, is an area known for new exotic species to New Zealand. Whilst the proposed structures themselves will not directly act to increase this risk, they would potentially offer habitat for such species. Fouling organisms which are likely to colonise these proposed structures

would change the seabed (substrate and community composition) when they get dislodged or die. This may change the nature of the seabed over time but the change is likely to be minor.

7.3 There may be differences in the encrusting species which are likely to be colonised on these structures depending on the coastal processes and design and material of the structures. Encrusting assemblages on breakwater might be different from the assemblages underneath the piles of wharf or pontoon. However, there are lots of breakwaters already existing in the area, hence the encrusting species that are likely to colonise on proposed breakwaters would be the same or similar. Whilst the proposed structures would increase the area of hard substrate for encrusting species, this effect is not new to the existing environment as there are many similar structures within the subject area. Accordingly, the change in the habitat by the proposed overhanging structures such as pontoons, wharves and decks is considered to be minor, and not significant.

7.4 With respect to intertidal ecology from the proposed structures, only the southern half of the Wynyard Wharf Extension (infill) would be in the intertidal zone. The habitat loss in the intertidal area is ~ 200m<sup>2</sup> which includes temporary and permanent habitat loss for the piles (80 piles). Accordingly, the effects on intertidal habitat are considered minor as the habitat loss or changes from the proposal are small scale.

### ***Avifauna***

7.5 While several coastal bird species feed in the harbour and roost on structures around the harbour edge, the proposed works will not alter the precinct greatly from what already exists. Therefore, the effects on avifauna will be no more than minor.

### ***Fish species and marine mammals***

7.6 In addition to the marine mammal species listed in the applicant's assessment, it is known that New Zealand fur seals are occasional visitors in the Waitemata Harbour. I consider that the potential effects on fish species and marine mammals would be minor.

### ***Sediment and water quality***

7.7 Sediment quality identified in some samples indicates that there are some hot spots

for contaminants especially along the North Wharf area. Some of the contaminants such as DDT, TBT are known to cause acute and chronic toxicity and can cause lethal effects to many fauna and can affect the water quality. While species-specific information in relation to DDT and TBT toxicity is required to assess the effects on species identified in the proposed dredging area, it is considered that the species are already impacted by the toxic contaminants and/or might be tolerant as these contaminants are likely to persist in the area long term. Accordingly, the sediment and water quality information on these contaminants is considered acceptable.

7.8 Proposed dredging has the potential to expose anoxic sediment with or without contaminants of concern and can mobilise the sediment and transport to adjacent areas depending on the physical processes at the site. However, the elutriate testing did not detect any contaminants of concern other than ammoniacal nitrogen, because the detection limit was higher than the ANZECC 95% protection trigger value for other contaminants such as TBT and PAHs. Therefore, it is likely that other contaminants of concern are present in the sediment and can cause water quality effects when the TSS is released in the water column. However, the level of dilution at the site would minimise this effect.

7.9 Overall, whilst there is a potential for some of the contaminants identified in the sediment and water to cause adverse effects on benthic fauna, sediment and water quality related effects, given the highly disturbed environment, these effects are considered minor.

## **8. UPDATE FOLLOWING EXPERT WITNESS CONFERENCING / RESPONSE TO APPLICANT'S EVIDENCE**

8.1 As noted, I participated in expert witness conferencing with Mr Kennedy, which resulted in the JWS dated 25 July 2018. As Mr Kennedy observes in his evidence<sup>5</sup>, there were no matters of disagreement between us.

### ***Marine ecology, sediment and water quality including effects from dredging***

8.2 As recorded in sections 2, 3 and 5 of the JWS, Mr Kennedy and I were in general agreement over matters relating to effects on marine ecology (intertidal and subtidal ecology, seabirds, marine mammals and fish), sediment and water quality from the proposal, including dredging.

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<sup>5</sup> E16, page 0969, paragraph 2.2.

### ***Biosecurity***

- 8.3 Section 4 of the JWS sets out our agreed position in relation to the topic of biosecurity. Mr Kennedy and I agreed that the Waitemata is recognised as having the greatest number of unwanted marine species in New Zealand. Our discussions focused in particular on the risks posed by construction vessels.
- 8.4 As Mr Kennedy notes at paragraph 10.3 of his evidence, I recommended that the proposed “Decommissioning Biosecurity Management Plan” (Golder 2018) be extended to cover the construction period as well as the decommissioning period. Following discussions, Mr Kennedy agreed with this suggestion. I discuss the relevant biosecurity conditions further below in section 9.

### ***Inner Viaduct Harbour Environmental Management Plan***

- 8.5 The remaining topic for discussion at conferencing was the Inner Viaduct Harbour Environment Management Plan (**IVHEMP**). Section 6 of the JWS records our general agreement over the wording of the IVHEMP conditions, including the frequency of ecological monitoring. Again, I discuss the relevant conditions below in section 9.

## **9. CONDITIONS / MITIGATION**

- 9.1 I have reviewed the relevant Proposed Conditions attached to the planning evidence of Mr Cook and Mr Lala (which are reproduced in Attachment A to Ms Broadbent’s evidence) and am satisfied that they are appropriate. In particular, I note that:
- a. Conditions 114 to 116 require a Biosecurity Management Plan (**BMP**) to be prepared, which would manage the potential biosecurity risks during construction and decommissioning period; and
  - b. Condition 117 to 119B concerning the IVHEMP appropriately reflect the outcome of discussions at expert witness conferencing.
- 9.2 I comment briefly below on the draft BMP and IVHEMP attached to Mr Kennedy’s evidence as Attachments A and B respectively.

**Draft BMP**

- 9.3 I note that the draft BMP at Attachment A to Mr Kennedy's evidence provides only an outline of the BMP (essentially the contents page for the proposed BMP)<sup>6</sup>.
- 9.4 Whilst the outline provided in Attachment A aligns with the framework in Proposed Conditions 114, 115 and 116, I merely observe that detailed content of each matter specified in the outline will obviously be required to enable the Auckland Council to certify the BMP. It is difficult to comment further in the absence of a detailed draft BMP.

**Draft IVHEMP**

- 9.5 The draft IVHEMP at Attachment B to Mr Kennedy's evidence provides a draft plan with monitoring programme for water, sediment and ecological monitoring<sup>7</sup>. Whilst the IVHEMP outlines all aspects of the monitoring programme required under the condition, I consider that the Plan requires further work to refine the draft monitoring plan and methodologies, and parameters need to be tested.
- 9.6 My initial comments on the draft IVHEMP are as follows:
- a) Ecological monitoring (section 4.3) is proposed annually in November from 2018-2020, however Table 4.1 presently indicates ecological monitoring as occurring in October.
  - b) Water quality (section 5.1) notes that baseline water quality samples will be collected at least 3 times prior to the commencement of construction. The sampling period needs to be defined to cover the temporal variability (i.e. sampling frequency needs to be specified in relation to changes over time during construction).
  - c) Biofouling communities are proposed to sample randomly at 6 sites. As these surveys are likely to be repeated annually 3 times, it would be useful to sample the same area rather than monitoring randomly every year to monitor the changes in the communities.

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<sup>6</sup> E16, page 1004 onwards.

<sup>7</sup> E16, page 1007 onwards.

## 10. CONCLUSIONS

- 10.1 Overall, as stated in above sections, I consider that any potential adverse effects on marine ecology including avifauna, marine mammals, sediment and water quality resulting from the proposal would be minor, subject to adherence to the Proposed Conditions.

**Dr Kala Sivaguru**

**21 August 2018**

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