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**BEFORE THE AUCKLAND COUNCIL**

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*In the matter of* the Resource Management Act 1991 ("the Act")

*And* *WATERCARE SERVICES LTD*  
*First Respondent*

*In the matter of* An application for regional resource consents for the  
Huia Replacement Water Treatment Plant Project  
Woodlands Park Road, Waima.

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**Statement of Evidence in Chief of Dr Monica Gerth  
for The Tree Council, Titirangi Residents & Ratepayers Association, Forest &  
Bird, Waitakere Ranges Protection Society, Titirangi Protection Group and Save  
Our Kauri Trust**

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Dated: 11 April 2021

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## 1. INTRODUCTION

- 1.1. My full legal name is Monica Leigh Gerth. I represent The Tree Council, Titirangi Residents & Ratepayers Association, Forest & Bird, Waitakere Ranges Protection Society, Titirangi Protection Group and Save Our Kauri Trust.
- 1.2. My evidence relates to the proposed Huia Water Treatment Plant and the proposed use of kānuka bundles to mitigate the spread of *Phytophthora agathidicida* (i.e. the causative agent of kauri dieback disease).

## 2. QUALIFICATIONS AND EXPERIENCE

- 2.1 I am a Senior Lecturer in Molecular Microbiology at Victoria University of Wellington. A particular area of my expertise is on the microbe *Phytophthora agathidicida*.
- 2.2 I have a PhD in Biomolecular Chemistry (awarded in 2007 from Emory University). I have published 28 peer-reviewed journal articles. This includes a manuscript entitled “Mātauranga-guided screening of New Zealand native plants reveals flavonoids from kānuka (*Kunzea robusta*) with anti-*Phytophthora* activity” published in the *Journal of the Royal Society of New Zealand* in 2019.
- 2.3 I have been working on kauri dieback since 2015. A major focus of our research is the development of disinfectants and/or treatments to control the spread of the pathogen and/or mitigate symptoms of disease. Our research has been supported via contestable (peer-reviewed) funding, including an MBIE Smart Idea Grant, a Marsden Grant and funding from the Bioheritage National Science Challenge.
- 2.4 I advise that I have read the Code of Conduct for Expert Witnesses contained in the Environment Court Practice Note 2014 and have complied with it in preparing this evidence. I confirm that the issues addressed in this evidence are within my area of expertise and I have not omitted material facts known to me that might alter or detract from my evidence.

### **3. SCOPE OF EVIDENCE**

3.1. My statement of evidence covers:

- The proposed use of kānuka to mitigate potential spread of the pathogen (*Phytophthora agathidicida*).

### **4. EXECUTIVE SUMMARY**

4.1 There is no data on the impact of kānuka mulch on *Phytophthora agathidicida*.

We also have no evidence that these compounds would leach naturally from kānuka bundles and enter into the surrounding environment (*e.g.* soil, water).

4.2 Therefore, in my opinion, it is not prudent or responsible to suggest that kānuka bundles can be used to mitigate the spread or movement of Kauri Dieback.

## 5. EVIDENCE

- 5.1 Our published research has shown that three bioactive compounds (5,7-Dihydroxy-6-methylflavanone; 5,7-Dihydroxy-6,8-dimethylflavanone; and 5-Hydroxy-7-methoxy-6-methylflavanone) that were isolated from *Kunzea robusta* (kānuka) inhibit *Phytophthora agathidicida* zoospore germination and motility. The measured effective concentrations (half maximal inhibitory concentration, IC50) were in the range of ~1-7 µg/mL. The three flavanones showed only weak inhibition of mycelial growth at the highest concentration tested (100 µg/mL).
- 5.2 We note that the bioactive compounds were chemically extracted using solvent (methanol). To date, we have no evidence that these compounds would leach naturally from kānuka bundles and enter into the surrounding environment (e.g. soil, water). We have no data on the impact of kānuka mulch on *Phytophthora agathidicida*.
- 5.3. We also note that in our published study, the active flavanone concentrations varied ~10-fold among foliage extracts from the four individual *Kunzea robusta* (kānuka) plants tested. *Kunzea* is a genus of plants in the family Myrtaceae. Geographic and seasonal variations in chemical composition and antimicrobial activity are known to occur in the plants of the Myrtaceae family. More samples are needed to determine potential geographic and/or temporal differences in the production of compounds. The level of bioactive compounds may be dependent on the individual plant and/or the time (season) of harvest.

## 6. CONCLUSION

- 6.1. There is no data on the impact of kānuka mulch on *Phytophthora agathidicida*. We also have no evidence that these compounds would leach naturally from kānuka bundles and enter into the surrounding environment (e.g. soil, water).
- 6.2. Therefore, in my opinion, it is not prudent or responsible to suggest that kānuka bundles can be used to mitigate the spread or movement of Kauri Dieback.