

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

AND

IN THE MATTER of an application for regional resource consents and a land use consent under the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NES Soil) in fulfilment of section 88 of the RMA.

**SUPPLEMENTARY EVIDENCE OF CAMPBELL JAMES MCGREGOR
ON BEHALF OF WATERCARE SERVICES LIMITED
Kauri Dieback – Earthworks, and Erosion and Sediment Control
7 April 2021**

1. INTRODUCTION

1.1 My full name is Campbell James McGregor.

1.2 I prepared a statement of evidence dated 4 February 2020 in relation to Watercare Services Limited (**Watercare**)’s application for regional resource consents and a land use consent for the replacement of the existing Huia Water Treatment Plant (**WTP**) (the **Project**). I refer to my qualifications and experience in my original statement of evidence and do not repeat those matters here.

1.3 I have also prepared the following statements of evidence during the course of the hearing for the Project:

- a) A statement of rebuttal and summary evidence dated 24 February 2020 which provided a brief summary of my original evidence and responded to matters in the evidence of Mr David Havell on behalf of the Director-General of Conservation and

Dr Nicholas Waipara¹. I presented this statement of rebuttal and summary evidence at the hearing on 27 February 2020; and

- b) A statement of further rebuttal evidence dated 4 March 2020 which responded to the evidence of Mr Jack Craw² and further evidence by Dr Nicholas Waipara on behalf of Titirangi Protection Group Incorporated.³ I presented this statement of further rebuttal evidence at the Council hearing on 4 March 2020.

1.4 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.

2. SCOPE OF EVIDENCE

2.1 My evidence will cover the following matters:

- a) My involvement in the kauri dieback caucusing and preparation of related documents;
- b) Description of protocols set out in the Kauri Dieback Management Plan (**KDMP**) in relation to earthworks and erosion and sediment control; and
- c) Conclusions.

2.2 In this statement of supplementary evidence, I refer to:

- a) Dr Sarah Flynn's supplementary evidence on ecology which summarises the kauri dieback caucusing, describes the results of the *Phytophthora agathidicida* and *Phytophthora cinnamomi* sampling/testing and describes the KDMP; and

1 On behalf of The Royal Forest and Bird Protection Society of New Zealand Incorporated, Waitakere Ranges Protection Society, The Tree Council and Titirangi Residents and Ratepayers Association Incorporated.

2 On behalf of Save our Kauri Trust, Titirangi Protection Group, The Royal Forest and Bird Protection Society of New Zealand Incorporated, Waitakere Ranges Protection Society, The Tree Council and Titirangi Residents and Ratepayers Association Incorporated.

3 Mr Craw's evidence related to washdown water, while Dr Waipara's evidence related to the scale of earthworks.

- b) Mr Daniel Williams' supplementary evidence which confirms the appropriateness of the protocols proposed in the KDMP in relation to construction methodology.

3. SUMMARY OF EVIDENCE

- 3.1** I attended substantive caucusing regarding the measures proposed as part of the KDMP, in an advisory capacity.
- 3.2** I have assisted in the development of the earthworks construction methodology and staging plans, which in my opinion provide a robust solution to the management and mitigation of surface water runoff, erosion potential and sediment containment.
- 3.3** Additional measures have been proposed within the KDMP to address feedback received as part of the original hearing process, providing more guidance on the mitigation measures, as well as limiting exposed work areas during the vegetation and topsoil disposal phases. We have also introduced the concept of surface run off containment during the topsoil disposal phase, to allow for treatment of surface run off, should a suitable treatment solution be available.
- 3.4** I note the sizing of the sediment controls proposed go beyond what is currently considered best practice under Auckland Council's GD05.
- 3.5** The collection and containment of all surface water run off in rainfall events up to the 1 in 10-year event to my knowledge has not been proposed previously as part of an earthwork application, but is proposed here, in direct response to try reduce the potential spread of Kauri Dieback.
- 3.6** While this approach does place additional constraints on the topsoil disposal phase of the Project in limiting the disturbed catchment area, in consultation with Dr Flynn and Mr Williams, we consider it is a practical way to manage topsoil disposal and reduce the risk of kauri dieback spread.
- 3.7** Therefore in my opinion, the protocols in the KDMP and staging plans in respect of earthworks proposed, and erosion and sediment control measures to be employed are appropriate for managing and minimising the further spread of kauri dieback.

4. MY INVOLVEMENT IN CAUCUSING AND PREPARATION OF KDMP

- 4.1** A summary of the initial and substantive caucusing is detailed in Dr Flynn's supplementary evidence. I attended the substantive caucusing (not the initial caucusing) on 15 December 2020 and provided feedback on the Joint Witness Statement on 16 December 2020.
- 4.2** My input into the substantive caucusing was supplementary in nature, providing engineering advice and answering technical queries with regard to the KDMP works methodology and earthworks staging plans, which as I describe below were developed as part of the revised draft KDMP issued in advance of caucusing process.
- 4.3** I was heavily involved in the preparation of the earthworks methodology and KDMP staging plans, working with both Dr Flynn and Mr Williams to develop a revised and more comprehensive solution that detailed how the earthworks might be carried out across the development footprint in a manner that would reduce the likelihood of kauri dieback spread.
- 4.4** Our methodology was developed in the absence of the testing data (the testing was still being undertaken at the time), but on the original premise that kauri dieback was potentially present throughout the development site area. In response to feedback through the hearing process we worked to introduce more detail and rigour to the KDMP and the earthworks methodology outlined in the staging plans and explanatory notes that form Appendix 1 to the KDMP.
- 4.5** As is detailed in Dr Flynn's evidence, the test results received from BioSense Limited's testing have confirmed kauri dieback is present in several areas across the site but also within the surrounding land, and within the immediate surface water flow paths and downstream waterways.
- 4.6** As our proposed methodology took the conservative view that assumed the potential presence of kauri dieback, in my opinion the confirmation obtained from the testing that kauri dieback is present within the site and the surrounding area, does not warrant changes to the proposed methodology. It already assumed that would be the case and so is robust in that respect.
- 4.7** However, the proposed methodology does warrant particular attention to how topsoil disposal will be managed due to the presence of kauri dieback. I consider what is proposed in the draft KDMP provides adequate detail of the measures to be employed to minimise the spread of kauri dieback. This has been developed in consultation with Mr Williams to ensure that the proposed controls are practical and will be able to be implemented by the contractor.

5. DESCRIPTION OF PROTOCOLS IN KDMP IN RELATION TO EARTHWORKS AND EROSION AND SEDIMENT CONTROL

5.1 The KDMP and the staging plans attached to it detail the protocols in place to minimise the spread of kauri dieback (attached as Appendix 1 to Dr Flynn’s supplementary evidence). My evidence comments on the earthworks and construction methodology proposed, and erosion and sediment control measures to be employed in more detail below.

5.2 While my previous evidence has focused on providing appropriate controls in line with GD05, in consultation with Dr Flynn and Mr Williams, we have developed as part of the KDMP a more specific earthworks staging process to illustrate how we envisage the works should be managed. We have also proposed some specific additional controls to reduce the potential risk of spreading kauri dieback which I outline later in my evidence. I understand that the proposed conditions of consent require that the final KDMP be prepared in accordance with this draft KDMP.

5.3 The KDMP outlines several proposed activities at different works phases across the development site areas. These phases correlate to those outlined in my original evidence being:

- a) Vegetation Clearance;
- b) Topsoil Disposal (referred to as surface soil removal in the KDMP); and
- c) Bulk Earthworks.

5.4 For clarity we have also included two additional work phases for the tasks that would be undertaken:

- a) Prior to the siteworks commencing (described in the KDMP as “Prior to Site Works/General”).
- b) For the carrying out of geotechnical assessments. Geotechnical assessments will require soil disturbance to provide access tracks and for the extraction of soil samples for testing.

- 5.5** The staging plans included in the KDMP have been developed to illustrate a systematic approach in the removal of vegetation and topsoil. This has been done intentionally to manage and minimise the risk of kauri dieback spread, before moving to the more common practice bulk earthworks activities and associated erosion and sediment controls.
- 5.6** We have considered the topography and existing catchments and subcatchments within each site area (main Huia WTP site, Reservoir 1 site or Reservoir 2 site) and developed our earthworks methodology to illustrate a potential order by which surface water runoff can be effectively managed. This will ensure surface runoff flows from the topsoil disposal phase can be controlled and collected separately from flow off undisturbed catchment areas or from areas in the Bulk Earthworks phase. i.e. post topsoil disposal phase. Surface flows from the site will continue to ultimately discharge to the same downstream environment.
- 5.7** Earthworks controls established under each works phase would need to be accepted as compliant (by a Council Compliance Officer) with the requirements of both the Erosion and Sediment Control Plan (**ESCP**) and the KDMP before proceeding with the works.
- 5.8** While the principles of what was outlined in my original evidence remain, Dr Flynn, Mr Williams and Mr Kenneth Scarlett (Watercare's arboriculture expert) and I have agreed on additional requirements which have been included in the KDMP and staging plans. Those relevant to erosion and sediment control measures are summarised below. I note that these measures are in addition to the measures that were described in my previous evidence i.e. specific additional measures over and above those considered best practice under Auckland Council's GD05 guidance.

Prior to Site Works/General

- 5.9** Stabilised Entrances (Stabilised Entry Points under GD05) will be required to have shaker ramps or similar approved truck wash facilities to ensure water collection can be achieved. Once that water is collected it will be contained until it can be appropriately disposed of. While similar stabilised entry methods are utilised on other construction sites, they have been specifically referred to here to achieve the water containment required, but also to ensure a good level of washdown for any vehicles leaving the site and the potential tracking of contaminants from the site.

Vegetation Clearance

- 5.10** Vegetation Clearance Areas shall be limited to maximum exposed area up to 0.2ha. This is to minimise the quantum of surface run off and length of surface flow path created through the vegetation clearance process. Controlling the exposed area limits surface run off velocities and erosion potential.

Topsoil Disposal

- 5.11** Any open catchment area shall be limited to a maximum disturbed area of 3000m² during the topsoil disposal phase within any single catchment. This maximum area has been chosen as it aligns with the maximum area considered appropriate by GD05 for a Decanting Earth Bunds (**DEB**), but also provides a practical work area within which earthworks can be carried out. The depth of excavation shall be established by visual inspection by a qualified arborist.
- 5.12** A “treatment train” approach shall be utilised providing the DEBs for the open catchment area, with discharge from the DEB then piped to a containment pond. I provide further detail of this approach at paragraphs 5.16 – 5.23 below.
- 5.13** Sediment collected within devices post completion of the topsoil disposal phase shall be excavated, and removed from site and disposed of.

Bulk Earthworks

- 5.14** As outlined by the earthworks staging plans, once topsoil disposal is complete within a particular catchment area, clean and dirty water bunds shall be maintained to ensure cross contamination with catchments where topsoil removal is still being undertaken is avoided.
- 5.15** It is anticipated bulk earthworks will then continue within multiple catchment areas once the topsoil disposal stage has been completed in that location with standard ESCP practices in accordance with Auckland Council's GD05.

DEB & Containment Pond

- 5.16** The DEB shall be sized to provide additional storage utilising a volume equivalent to 3% (as opposed to 2% recommended by Auckland Council's GD05) of the contributing catchment area.

- 5.17** This DEB approach goes beyond what is currently considered best practice under Auckland Council's GD05, providing for additional live and dead storage capacity to increase the runoff residence time (time allowing sediment to settle within surface runoff) within the DEB, while also providing additional dead storage increasing the available sediment storage.
- 5.18** The inclusion of a stormwater containment pond has been proposed as a specific additional control in response to the risk of Kauri Dieback spread through surface water runoff. This will not only act as an additional sediment distilling area (for any particulates not collected by upstream DEB), but will also allow for treatment of all surface water runoff from the active topsoil disposal catchment area (3000m²) prior to discharge from the site.
- 5.19** The surface water containment pond shall be sized to contain the full 10-year rainfall event from a 3000m² area.
- 5.20** I have assessed the runoff received from the catchment in an earthworks state. These calculations have utilised the previously stated development 24hr rainfall depth for the 10-year storm event (without climate change) of 123.2mm. For context, a comparison with rainfall data sourced from www.en.climate-data.org shows monthly average rainfall between October and April (earthworks season) ranges from 75mm to 95mm.
- 5.21** It is proposed that an outlet structure shall be constructed to allow for discharge of the pond volume over a 24hr period, but this shall only occur as a result of the opening of a penstock (or similar) valve to release water from the pond. An emergency overflow weir will still be required should a storm event exceed the intended design storm.
- 5.22** While I understand no known treatment method for all Kauri Dieback pathogens is available at present, the containment and collection of surface water in my opinion does at least afford an opportunity for treatment options and does provide additional security in the capture of sediment beyond that provided by the DEB.
- 5.23** On the main Huia WTP site, the proposed construction process will also reduce the quantum of current surface water runoff which discharges to properties which contain Kauri, directly below the site. This will occur due to the physical works collecting and conveying surface flows east to the tributary of Yorke Stream or west to the discharge location under Manuka Road and to Armstrong Stream.

Monitoring

5.24 Regular inspections of all controls will be required to ensure the effectiveness of the controls and maintenance of appropriate erosion control measures for the active phase of works.

5.25 These controls are outlined in section 10 of the KDMP.

6. CONCLUSION

6.1 Overall, I consider the outlined approach is robust in mitigating the effects of the proposed earthworks and that the developed KDMP clearly sets out the required objectives of each phase of the works.

6.2 The proposed controls exceed what is considered current best practice in the management of erosion and sediment collection, recognising the additional potential risk of kauri dieback spread, resulting from earth disturbances. This includes increased storage within the proposed sediment management devices (DEBs) and a proposed surface water containment pond to control and potentially treat surface water runoff from the active topsoil disposal catchment.

6.3 In my opinion the proposed controls are both rigorous but practically achievable in carrying out the proposed works. Mr Williams will address the construction practicalities and implementation further in his supplementary evidence.

Campbell James McGregor

7 April 2021