

**BEFORE THE COMMISSIONERS ON BEHALF OF WHANGAREI DISTRICT
COUNCIL**

UNDER The Resource Management Act 1991 (“the Act”)

and

IN THE MATTER OF Proposed Plan Changes 82A & B, 88 A-J, 109, 115, 136,
143, 144, 145, 147 & 148 to the Whangarei District Plan
 (“the District Plan”)

**STATEMENT OF EVIDENCE OF ANTONY JULIAN BEAUCHAMP FOR THE
DIRECTOR-GENERAL OF CONSERVATION**

Dated 7 November 2019

Department of Conservation

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INTRODUCTION

Qualifications and Experience

1. My name is Antony Julian Beauchamp. I hold the qualification of PhD in Zoology and a post graduate diploma in Environmental Health. I have worked for the Department of Conservation (“the Department”) in Northland since 2001, firstly as Conservancy Advisory Scientist until 2008, and then as the Technical Support Officer Ecology and Environment and latterly as a Technical Advisor Threats.
2. I have worked with the plant pathologists who have worked on Kauri dieback since 2006 before the problem was formally recognised. After kauri dieback was officially declared as an unwanted organism in 2008, I was made a member of the Ministry for Primary Industry’s Technical Advisory Group, and then from 2010 a member of the Planning and Intelligence group. I have presented evidence on kauri dieback to the board of enquiry for the Puhoi-Warkworth highway, and the Thames-Coromandel 12 years plan and environment court hearing. I am involved in the development and the technical implementation of research to resolve issues of detection, vectoring and precautionary management¹. I have written 5 of the guideline documents for that programme, carried out the analysis of the surveillance² and represented the planning and intelligence group at the 7th meeting of the IUFRO³ Phytophthora in forests and natural ecosystems where I presented a poster on *Phytophthora agathidicida* (PA) response⁴.
3. I have read the evidence of Mr Andrew Riddell.

Code of Conduct

¹ The Kauri Dieback Programme is administered by MPI with partner agencies (DOC, regional councils with kauri present in the region, iwi representative) and its structure is described in https://www.facebook.com/pg/TheKauriDiebackManagementProgramme/about/?ref=page_internal. The Planning and Intelligence workgroup includes members of these agencies who plan how the science, funded by the partner agencies, will be delivered and contracts it out on behalf of the kauri dieback partners. From that research, and other independent research, it produces guidelines on behalf the kauri dieback programme. The group undertook three surveillance rounds to perfect the methods used before handing over surveillance to the Operations workgroup that comprises other people from agencies who deal with operational matters on the ground (iwi, landowner consultation, sampling and monitoring of sites, databases etc)

² Beauchamp, A.J. 2013. The relationships between symptomology, detection probability and the detection of *Phytophthora* Taxon Agathis in the second round of surveillance sampling. Report to the Kauri Dieback Joint Agency Response. www.kauridieback.co.nz.

³ The International Union of Forest Research Organisations working party 7-02-09 Phytophthora in forests and natural ecosystems. This group meets every 2 years to exchange information on forest phytophthora science and management throughout the world.

⁴ Beauchamp, A.J.; Waipara, N. 2014. Surveillance and management of kauri dieback in New Zealand. PP 108 IUFRO 7 http://forestphytophthoras.org/sites/default/files/proceedings/IUFRO_Proceedings_2014.pdf

4. I have read and agree to comply with the Code of Conduct for Expert Witnesses produced by the Environment Court (2014). My qualifications as an expert are set out above. Other than those matters identified within my evidence as being from other experts, I confirm that the issues addressed in this brief of evidence are within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

SCOPE OF EVIDENCE

5. I have been asked by the Director-General of Conservation (“the Director-General”) to provide evidence about kauri dieback and rules to stop the spread of the disease through earthworks and vegetation clearance activities.
6. My evidence covers:
 - i. The management of Kauri Dieback
 - ii. Biology and diagnosis of *Phytophthora. agathidicida*;
 - iii. Kauri dieback hosts;
 - iv. The spread of Kauri dieback nationally and in the Whangarei District;
 - v. The methods of vectoring;
 - vi. Good management and the hygiene associated with dieback
 - vii. Assessment of the staff s42a Report responses to the Director’ General’s submission on kauri dieback; and
 - viii. Consequences of no overall controls to the movement of soil in all zones with kauri.

Executive Summary

7. Kauri dieback is a significant threat to the integrity of forests of northern New Zealand. It cannot be removed from infected soil and the only way to prevent further losses of trees is through management of vector in all environments, natural, rural and urban.

8. Kauri dieback is managed via the Biosecurity Act 1993 and the Resource Management Act 1991. The Environment Court has indicated that earthworks provisions to control kauri dieback are the responsibility of local authorities.
9. My overall opinion is that the recommended changes to these proposed plan changes are inadequate and will not protect kauri, even during the subdivision process. Wording has been changed from that sort by the Director-General's submissions and has resulted in a statement I cannot interpret. Kauri dieback provisions have been rejected from urban plan zones leaving them reliant upon voluntary compliance with kauri hygiene movement measures. In addition, the definition of earthworks proposed in the staff report will make kauri dieback management in any zone more difficult.
10. There is no cure to kauri dieback and all effort is needed to stop vectoring to new sites. Voluntary compliance with hygiene processes is unlikely to stop the spread to new sites as there is no process to compel land holders to become dieback aware and engage in hygiene. A management plan approach has the advantage of providing information, and defining access processes for landowners, so they can also work with other accessing the property to protect their properties from dieback contamination. Management plans approaches also allow flexibility in the assessment of where kauri roots are present and where kauri hygiene zones are possible in an often-constrained environment.

THE MANAGEMENT OF KAURI DIEBACK

11. Kauri dieback is the disease that is killing kauri in many parts of Auckland, Northland and Coromandel. It is caused by the fungus-like organism *Phytophthora agathidicida*, from the 'water mould' group. It has been managed by a joint agency programme (Kauri Dieback Programme) between central government (Ministry of Primary Industries and Department of Conservation) and the northern regional councils (Northland Regional Council, Auckland City, Waikato Regional Council, Bay of Plenty Regional Council).
12. *P. agathidicida* is an unwanted organism under the Biosecurity Act 1993. It is partially managed via provisions in the Biosecurity Act; however, aspects like

earthworks are managed by local government via the Resource Management Act 1991 (Mr Riddell's evidence clauses 33-43). Kauri Dieback cannot be moved from a site without permission from the Ministry of Primary Industries.

13. The loss of kauri has already elevated the species threat status to Nationally Vulnerable. The Northland Regional Council have included kauri dieback in their Northland Regional Pest and Marine Pathway Management Plan ⁵ under the Biosecurity Act. They manage dieback as a sustained management disease via two rules. (see Mr Riddell's clauses 39-42). All new dieback in the region must be notified to NRC and they act to test sites and write management plans with the landowners.
14. Currently a consultation process has been completed about a "draft National Pest Management Plan"⁶. I understand that the draft plan has been signed off by the Governance Group, and the Minister of Primary Industries has accepted it in principle but cannot sign it off until there is funding to implement it. Money was not allocated in the budget and MPI is doing more work to cost the plan. This plan includes proposed rules for conservation and rural lands to prevent the movement of kauri dieback. However, these rules do not include all activities in urban areas.
15. It is unknown who will be the controlling management agency of the new plan; a new entity or the Ministry of Primary Industries.

BIOLOGY AND DIAGNOSIS OF *Phytophthora agathidicida*

16. *Phytophthora agathidicida* has a complex life cycle which is completed in the soil and tree roots. The pathogen first colonises kauri feeder roots via an infective swimming zoospore when the soil is wet. The motile zoospores attach onto kauri roots, germinate, and then grow through the roots as mycelia (fungal-like threads).
17. The mycelia then spread within the feeder roots to the main roots, killing the root structure as they progress. Eventually the mycelia reach the base of the trunk, where

⁵ <https://www.nrc.govt.nz/media/10715/northlandregionalpestandmarinepathwaymanagementplan20172027.pdf>

⁶ <https://www.kauridieback.co.nz/more/news-and-updates/2018/accelerating-protection-for-kauri/>

in the larger trees, their presence is indicated by sap bleeding on the leading edge of a lesion expanding up the trunk from the ground. These infections then expand outwards to eventually ring bark the tree at the base of the trunk. As this happens the tree's canopy first thins, then loses branches and dies. Current evidence suggests that most infected kauri of any age will die. The time lag between infection and death differs from weeks for seedlings to years for trees.

18. Mycelia produce at least two spore types as they grow in the tree: *sporangia*, which ultimately release more zoospores; and *oospores*, which encapsulate and become long-term survival structures. As the roots of infected trees rot, oospores are released into the soil where they can live for years. They are triggered by unknown factors and produce sporangia and ultimately zoospores. It is possible for the oospores to outlast any visible sign of a kauri if that tree has fallen and rotted or has been removed from the site to landfill.
19. Oospores are very small (approximately 30 µm diameter) so there could be thousands of spores in any small clod of soil, or root debris, at infected sites. Theoretically, less than cubic millimetre of soil or root material deposited near a kauri tree could cause a new infection.
20. The diagnosis/identification of kauri dieback is often initially on symptomology of the trees, and this is confirmed by soil tests using an extended baiting system to extract and grow the *P. agathidicida*. Testing only assesses a very small amount of soil from under a tree. Molecular detection techniques are under development but are not yet sufficiently rigorous for deployment.

KAURI DIEBACK HOSTS

21. At present, kauri is the only known significant host of *Phytophthora agathidicida*. The Kauri Dieback programme is looking for kauri that are resistant to the disease but currently there are no substantively resistant kauri detected. The programme currently assumes that the disease will kill any kauri that it infects, and that the time it takes for the disease to kill kauri depends on the size of the tree and the degree of interconnected root structure between trees in stands.

22. Laboratory work has also indicated that kauri dieback is capable of infecting and damaging the tissue of other plants. Work is underway to assess if native plants associated with kauri in the wild, can also host *Phytophthora agathidicida*, and produce viable oospores while appearing to be asymptomatic. If this is possible, then the Kauri Dieback programme may find that kauri is not the only species that is being directly implicated in disease spread. It is also possible that introduced plants could host *Phytophthora agathidicida* either as symptomatic or asymptomatic hosts.
23. In Argentina, a form of dieback caused by *Phytophthora austrocedri* is killing their native *Austrocedrus chilensis*. The *Phytophthora* was brought into the country to an arboretum on a non-symptomatic host or in soil. The same *Phytophthora* has been introduced into Scotland where it kills a totally different host, juniper *Juniperus communis*.⁷

KAURI DIEBACK DISTRIBUTION AND SPREAD INCLUDING THE WHANGAREI REGION

24. Kauri dieback disease is currently widely distributed but not ubiquitous in Auckland and Northland. Waipoua forest is substantially contaminated. Large forests like Puketi and the Hunua Ranges are not known to have contaminated trees. At others like Omahuta, the only known contaminated sites are associated with the margin of the former New Zealand forest Service headquarters where it is assumed that contaminated plants were planted.
25. In other regions, Kauri contamination is not restricted to forests. The area south of the Brynderwyn Ranges have considerable positive sites associated with current and historic farming. Dieback is also found in urban properties in the suburb of Titirangi in Auckland, where kauri is underplanted in gardens.
26. In the Whangarei Region there are at least 12 kauri dieback sites spread over public and private land (some shown in Appendix 1). These include planted forestry sites associated with the former New Zealand Forest Service, areas of former and existing farmland and bush reserves. No sites have yet been identified in urban areas.

⁷ <https://www.cabi.org/isc/datasheet/108927>

27. In the Whangarei district, dieback has been found under trees where there is no symptomology. The tracks in these areas have now been closed.

VECTURING

28. The vectoring of kauri dieback between distant sites requires active human or animal assisted movement, while the movement within a site can also be passive (i.e. slips, water movement or flooding). Key active processes include the movement of contaminated plants; soil on footwear, soil on vehicles & machinery used in kauri areas; and soil movement on domestic stock and feral hoofed animals.

29. Dieback is likely to have been moved to plantations in Glenbervie Forest in contaminated seedlings and soil from a nursery operated by the New Zealand Forest Service at Waipoua in the mid-1950s. Then, staff and equipment used during silviculture contaminated other kauri plantings, including those planted during the 1980s. A similar situation exists in Raetea Forest south of Kaitaia.

30. An assessment of published literature and files had indicated that there were risky nursery activities at Waipoua. These included the growing and storing trees in beds that were prone to flooding from a contaminated catchment, the reuse of growing tubes that may not have been cleaned effectively, the packing of seedling distribution boxes with local soil, and the removal of leaf litter and humus from the forest for use in some seedling growing beds. Later management did not include cleaning equipment like spades.⁸

31. There is also evidence of dieback being moved along tracks in the Waitakere Ranges by walkers. According to Dr Nick Waipara, formerly a Biosecurity Officer at Auckland City, *P. agathidicida* was recovered from the shoes of runners during an event there. Also, Dr Ian Horner, a plant pathologist at Plant and Food Research who has done a lot of kauri dieback work, has recovered *P. agathidicida* from the few grams of scrapings of his footwear removed during cleaning at a site.

⁸ https://www.kauridieback.co.nz/media/1487/2017-52-the-introduction-and-spread-of-kauri-dieback-disease-in-new-zealand_final.pdf

32. Targeted surveillance has also detected *Phytophthora agathidicida* in the roots and soil from isolated kauri in fields on farms, and on stock tracks in kauri remnants⁹. The infected site in the Robert Hastie Conservation Area just south of the Whangarei District Council boarder, was a kauri remnant in farmland in the 1950s. A recent visual inspection in the regenerating forest in the area surrounding the remnant located many hundreds of kauri seedlings and saplings, indicating that vectoring was curtailed after the site was fenced and retired from farming.
33. Feral animals are also implicated as vectors. I have seen considerable pig damage under contaminated trees within some kauri forests. Experiments, and the assessment of gut contents, have shown that pigs could move dieback¹⁰.
34. The relative importance of these various vector pathways is likely to differ at each site. The risk will be proportional to the volume of soil moved, the frequency of such movement and the effort and ability to clean equipment in situ and between sites. It is likely that all the above-mentioned pathways have contributed to the historical spread of kauri dieback in the Whangarei region, but there is no reason to believe that with good management and hygiene practices that these vectoring processes should remain an issue.
35. However, to control kauri dieback, actions must be precautionary.

GOOD MANAGEMENT AND HYGIENE ASSOCIATED WITH DIEBACK

36. There is currently no way of determining whether a stand of kauri is clear of *P. agathidicida*, because there is a multi-year lag phase from initial infection to the expression of any currently known physical symptoms, and at some site we may by chance have not sampled in the right places. Thus, a kauri tree or stand could be infected but not yet be showing symptoms (likely also not sampled) or show symptoms but not yet have a positive test. Soil moved from such sites could

⁹ Beauchamp, A.J. 2013, above note 2

¹⁰ Bassett, I.E.; Horner, I.J.; Hough, E.G.; Wolber, F.M.; Egeter, B.; Stanley, M.C.; Krull, C.R. 2017. Ingestion of infected roots by feral pigs provides a minor vector pathway for kauri dieback disease *Phytophthora agathidicida*. *Forestry: An International Journal of Forest Research* 90: 640–648.

potentially act as a source of inoculum to other sites or contaminate a wider area than just the kauri root zone on the source property.

37. As indicated in clauses 28-33 current evidence indicates that any tools or objects that harbours contaminated soil can potentially move dieback. This includes footwear, machinery like cable drills, diggers, and trucks, as well as small equipment like forks and spades. Some of this equipment will be easier to clean on site than others (i.e. hand saws verses chain saws, some types of diggers are easier than others).
38. Similarly, vegetation cleared from within a kauri root zone could be contaminated if it is felled in such a way that it contacts soil. This applies equally to indigenous vegetation or introduced plants. Any activity that can move soil from within a kauri root zone needs to consider the hygiene practices, and locations for leaving material, or removing it to an approved landfill.
39. Properties with apparently diseased kauri need to be mindful of the long-term nature of dieback oospores in soil, and vectoring processes long after infected kauri are felled and potentially rooted away. Such sites will require long-term application of hygiene practices before entry, during any soil movement activities and upon exit, to ensure that soil that could potentially contain dieback is not moved from or with properties. Properties with dieback are required by NRC rules (see Mr Riddell's evidence clauses 39-42) to have a Kauri dieback management plan which indicates where dieback is present and where contaminated soil is placed. It is my opinion that the extent of Kauri contamination zones needs to be registered on LIM and other reports.

ASSESSMENT OF THE STAFF 42A RESPONSES TO KAURI DIEBACK SUBMISSIONS

40. The Director-General's submissions requested changes to objectives, policies and rules in Proposed Plan Changes 88I & 148 – Urban and Services in relation to kauri dieback. I have considered the response to these changes considering the information about life cycle and vectoring risk above. The staff report rejected all but one of these requested changes.

41. The staff report rejected suggested changes to EARTH 01, EARTH P1, EARTH P2, EARTH P3 AND EARTH R1 and considered that the objectives and policies for stopping the spread of kauri dieback should be a matter covered in chapter 17 of the plan – Indigenous Vegetation and Habitat Objective 17.3.1 and Policy 17.4.4. and dealt with when that chapter is reviewed.
42. This may be possible if objectives and rules were specifically developed for kauri. (see Mr Riddell’s evidence clauses 68-76). As it stands, chapter 17 is about indigenous vegetation and as explained in sections 22-23 above, kauri dieback hygiene requires a wider view of vegetation, covering the range of habitats from a single urban tree to a significant kauri habitat, and all plants (indigenous or exotic) that are in the understory of kauri.
43. The staff report accepted proposed changes to EARTH R1 but then modified wording to “1. Earthworks associated with subdivision do not occur within: c. Three times the radius of the canopy root zone of a New Zealand Kauri tree (*agathis australis*)”. I do not support this change in wording. The word “dripline” (defined as the outermost circumference of the tree’s canopy, from which water drips onto the ground.) has been replaced with the words “canopy root zone”. I do not understand what that means. The proposed wording in the Director-General’s submissions come from the kauri dieback programme guidelines and best practice for dealing with earthworks associated with kauri¹¹ These guidelines include the assumptions and reasoning for the hygiene practices around kauri and the three times the drip line management criteria and its use. It is my opinion that the original wording should be retained and if necessary, the definition of “tree dripline” be included.
44. However, the proposed changes if revised to replace “canopy root zone” with “dripline” in the EARTH section, will still not cover most situations where kauri dieback needs to be considered during land disturbance. Earthworks (land disturbance) that move dieback can be as minor as movement of soil on footwear or tyres, to as major as excavations for house or driveway. For any earthworks rule to be

¹¹ <https://www.kauridieback.co.nz/media/1462/best-practice-guidelines-land-disturbance-activities-around-kauri.pdf>

effective in controlling the movement of kauri dieback then the rule must apply to all earthworks without exception.

45. The new proposed definition for earthworks recommends the exclusion of gardening, cultivation and digging fence post holes. As indicated in section 29-30, gardening and digging holes (planting) have the potential to contaminate equipment and in the case of gardening and cultivation, entire properties. Any seedling sold or given away from a kauri root zone could move oospores far further.
46. The staff report rejects the need for kauri dieback vegetation clearance rules across the living zones, on the grounds that all planning zones (i.e. rural production zone, rural living zone and the rural (urban expansion) zone) are not covered, so such a rule would be ineffective.
47. I appreciate the reasoning behind these conclusions, but when the process of planning is a “rolling review”, it is my view that changes can start at any point. In terms of protecting kauri from kauri dieback, it is my view that starting this process is urgent because other mechanisms are not yet in place to require kauri dieback hygiene procedures around soil movement from properties where kauri are present, and dieback has not been detected. The rules in the Northland Regional Pest and Marine Pathways Plan, only require management plans for properties where kauri dieback has been detected or is high risk.
48. Consequently, in my view having kauri hygiene rules of some zones that are under consideration in this plan change is better than applying no protection at all. Kauri dieback can move to or from kauri within or between any zone. The equipment that is used for vegetation clearance and earthworks could be working in an urban zone and rural zones on consecutive days. If hygiene objectives and rules were applied to trees in the urban zones, then these trees and properties would have some protection.
49. The staff report also includes other proposed changes to definitions that could affect the movement of kauri dieback, including removal of the proposed definition of “cleanfill” and its replacement with “cleanfill area”. *Phytophthora agathidicida* is not mentioned specifically as an organism that deposited material as cleanfill area must lack, however, it may be captured in “e) Contaminated soil and other contaminated materials”. If this is so then I support this recommended change.

CONSEQUENCES OF NO OVERALL CONTROLS TO THE MOVEMENT OF SOIL ASSOCIATED WITH KAURI

50. Contamination of kauri with *P. agathidicida* requires a vector, contact with a host root system, and the right environment for the host to become infected. Managing any of these connections will reduce the potential for contamination and breaking them will stop the spread. We are unlikely to control the environment, so our options are to control contact with the host, and/or control the key vectors. This can be accomplished with methods to exclude all animals that move soil and making sure that all contact with kauri is only by people and equipment that has been cleaned to be totally free of soil.
51. If there is no intervention, and no actions to separate kauri from activities that can vector kauri dieback, then it is likely that kauri dieback will spread from currently contaminated areas to new areas throughout natural and urban sites. I consider that we will lose kauri from built up areas and there will be changes in kauri's keystone ecological role as part of functioning ecosystem.
52. If there are no regulatory mechanisms to control vectoring in all planning zones in place, we will be dependent on voluntary mechanisms based on the knowledge and buy-in from all landowners, and the services industry. In my view this will be haphazard. Unfortunately, even with knowledge some members of the public still do not use dieback cleaning stations on tracks.¹²
53. In my view, effective buy in also means that some form of regulation is required to ensure that actions are undertaken, and records are maintained. Currently Northland Regional Council is using a 'management plan' approach with landowners of contaminated or at-risk sites. Similar processes could be expanded to deal with kauri at other sites currently not considered to be contaminated. In this way dieback hygiene control could be adapted to sites (i.e. exclude areas where it is clear root systems are not found like under rivers, beyond driveways, within dwellings) or to make the implementation of hygiene on site more appropriate for the landowner.

¹² <https://www.kauridieback.co.nz/media/1388/kauri-dieback-forest-visitor-report-simon-wegner.pdf>

54. Should dieback disease be found then management of those sites will require multi-year actions, and frequently beyond any remaining obvious presence of a kauri at that site. The contamination zone associated with the previous kauri will need to be known so the site can be managed. I do not know exactly how long any contamination may last, but testing done on stored contaminated soils has extracted kauri dieback after 6 years. I consider that it is prudent to assume that a contaminated site lacking live hosts, may remain contaminated with viable oospores for 20 years.
55. The introduction of kauri dieback to a site is irreversible. Any mechanism that ensures that the people undertaking work near kauri understand the issues, have considered the best ways to avoid, or where necessary mitigate their actions, is a welcome addition to preventing the spread of kauri dieback.
56. Mr Riddell has proposed mechanisms that could be used to address the need for interim and more permanent earthworks and hygiene controls in the Whangarei District Plan (Mr Riddell's evidence clauses 84-143).

CONCLUSION

57. Kauri dieback is not ubiquitous and there is still time to save large areas of kauri forest and to protect trees in all zones including urban areas.
58. The environment court has recognised that some national regulatory processes will be carried out under the Biosecurity Act, while others are covered under the RMA by district rules on earthworks¹³.
59. Current knowledge is that PA kills all kauri it infects. Urban sites can be contaminated by any process that moves soil, and then these sites become a source of contamination. Hygiene processes are required in all planning zones regardless of the amount of kauri within them.
60. Stopping long range spread is required to maintain kauri forests. All interventions whether they be based on regulatory or voluntary mechanisms, or both, need to be designed and carried out so they are effective, as one mistake can be irreversible.

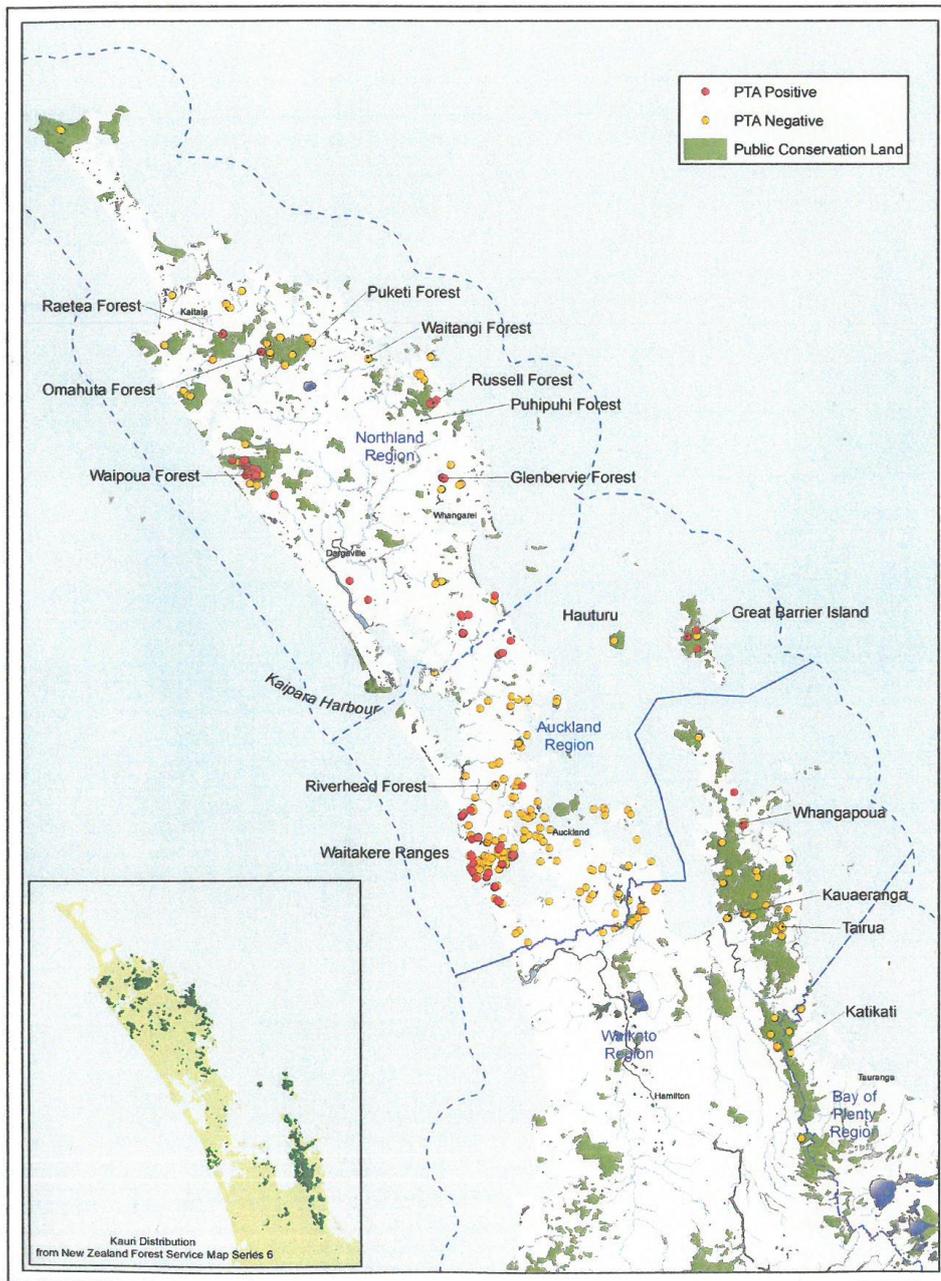
¹³ [2019] NZEnvC 044 Director-general of Conservation v Thames Coromandel District Council.

A handwritten signature in black ink, appearing to read 'Antony Julian Beauchamp', with a long, sweeping horizontal line extending to the right.

Antony Julian Beauchamp

7 November 2019

Appendix 1. Surveillance sites, kauri dieback contamination sites



Map showing PTA status of sites/forests assessed during kauri dieback surveillance, along with regional boundaries. The insert map shows the location of the remaining large areas of kauri forest in northern New Zealand in 1954.

**BEFORE THE COMMISSIONERS ON BEHALF OF WHANGAREI
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**STATEMENT OF EVIDENCE OF JOHN ANDREW RIDDELL FOR
THE DIRECTOR-GENERAL OF CONSERVATION**

Dated 7 November 2019

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INTRODUCTION

1. My name is John Andrew Riddell. I have been practising as a resource management planner on a part-time basis since 1989 and a full-time basis since 1993. Until November 1998 I was self-employed, although I did work for Nugent Consultants Limited on a part time basis from 1993 until 1996. Between November 1998 and June 2013 I was employed by the Department of Conservation). I am currently self-employed, operating under the company name CEP Services Matauwhi Limited. I hold the qualification of Bachelor of Resource and Environmental Planning with First Class Honours. I am a member of the New Zealand Planning Institute.

Experience

2. A significant portion of my resource management work has involved assessing draft and proposed regional policy statements and regional and district plans, preparing submissions and giving evidence on policy statement and plan content, participating in mediation on appeals over proposed policy statements and plans, and giving evidence to the Environment Court on provisions of policy statements and plans.
3. In the last five years I have given advice and/or evidence and/or participated in mediation and expert caucusing on the following proposed policy statements and plans:
 - Auckland Unitary Plan;
 - Proposed Thames-Coromandel District Plan;
 - Bay of Plenty Coastal Environment Plan;
 - Draft Gisborne Water and Soil Plan;
 - Northland Regional Policy Statement;
 - Whangarei District Plan Changes;¹
 - Draft Far North District Plan; and
 - Regional Coastal Plan – Kermadec and Subantarctic Islands.

¹Being the rural plan change package which was made operative on 6 March 2019 following resolution of appeals, and earlier plan changes relating to management plans and to the Ruakaka Equine Environment.

4. I gave planning advice to the Director-General of Conservation (“the Director-General”) and participated in mediation in relation to appeals on the kauri dieback earthworks rule in the Auckland Unitary Plan. This rule has a permitted activity standard requiring hygiene standards to be followed when undertaking earthworks in the vicinity of kauri,
5. I was the planning witness for the Director-General’s appeal seeking a kauri dieback earthworks rule in the proposed Thames-Coromandel District Plan. I developed the initial draft of the restricted discretionary activity earthworks rule that the Environment Court has accepted. This rule requires a detailed management plan for earthworks in the vicinity of kauri.
6. A comprehensive list of the policy statements and plans I have been involved in (comments, submissions, evidence, mediation, and/or appeals) since 1998 is given in the footnote.²
7. In addition to this policy statement and plan work I have experience in preparing, assessing, submitting and giving evidence on resource consents.³ This includes evidence to the Environment Court on applications for coastal subdivision, tidal power generation, the taking of groundwater, and mangrove removal. I have processed resource consent applications for Far North District Council.

Code of Conduct

8. I have read and agree to comply with the Code of Conduct for Expert Witnesses produced by the Environment Court (2014). My

² I have prepared reports on financial contributions that were part of the preparation of the Far North District Plan and the Waitakere City District Plan. I have provided evidence on, and/or provided planning advice for appeal negotiations and mediation on: the Auckland City District Plan - Isthmus section, Far North District Plan, Bay of Islands District Scheme (which included a coastal plan component), Whangarei District Plan (including several plan changes), Kaipara District Plan, Kaikoura District Plan, Northland Regional Policy Statements (there have been two), Regional Water and Soil Plan for Northland, Regional Coastal Plan for Northland and plan changes to that plan, the draft Gisborne Water and Soil Plan, the Auckland Unitary Plan, the proposed Thames-Coromandel District Plan, the Regional Coastal Plan – Kermadec and Subantarctic Islands, and the Bay of Plenty Coastal Environment Plan. I was one of co-authors of the *Sustainable Development Plan for Kororipo-Kerikeri Basin*, October 2005. This was a management plan prepared under the Reserves Act for the combined reserve land at Kororipo-Kerikeri Basin administered by the Department of Conservation and the Far North District Council.

³ Applications that I have prepared include applications for a mangrove boardwalk, discharges from fish processing facilities, indigenous vegetation clearance, earthworks, boat ramp, jetties, boat slip, buildings in the coastal marine area, houses in flood hazard areas, aerial pest control (1080 and brodifacoum), medical centre, restaurant, huts on public conservation land, and several houses and other structures.

qualifications and experience as an expert are set out above. Other than those matters identified within my evidence as being from other experts, I confirm that the issues addressed in this brief of evidence are within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

Involvement in preparation of the Director-General's submission and further submission on the proposed Plan

9. I have been asked by the Director-General to provide evidence in regard to the Director-General's submissions and further submissions on
 - (a) Proposed Plan Change 881 – Living Zones,
 - (b) Proposed Plan Change 115 – Open Space Zones,
 - (c) Proposed Plan Change 147 – Earthworks, and
 - (d) Proposed Plan Change 148 – Strategic Direction and Subdivision.
10. I was only recently engaged on this matter. I was not involved in the preparation of the Director-General's submission and further submission on the proposed Plan Changes.

APPROACH TAKEN IN EVIDENCE

11. This evidence covers two resource issues – (i) biosecurity and indigenous biodiversity, in particular the risk from kauri dieback disease with earthworks; and (ii) strategic direction on natural hazards.
12. In reaching the opinions I express in this statement I rely on the evidence of Dr Antony Julian Beauchamp (“Dr Beauchamp”) on kauri dieback disease, including causes and symptoms, disease distribution and spread and vectors, adverse effects, and likely outcomes with and without various avoid and/or mitigate strategies.
13. I have read the relevant sections of the reports prepared under section 42A of the Act.

14. Before considering the submissions on each of the two resource issues I address I first discuss relevant policy directives applying from Part 2 of the Act, national policy statements and the Regional Policy Statement for Northland (“Regional Policy Statement”).

PLANNING CONTEXT FOR KAURI DIEBACK DISEASE CONSIDERATION

15. In this section I set out what I consider to be the directly relevant provisions from Part 2 of the Act, the New Zealand Coastal Policy Statement 2010 (“Coastal Policy Statement”), and Regional Policy Statement. I also comment on the functions of territorial authorities and the contents of a district plan. I briefly discuss the draft National Pest Management Plan and the Northland Regional Pest Management Strategy on kauri dieback disease.

Part 2 of the Act

16. The purpose of the Act is to promote the sustainable management of natural and historic resources.
17. ‘Sustainable management’ is defined in section 5(2) of the Act. In essence sustainable management is managing the use, development and protection of resources to contemporaneously achieve four objectives covering:
- enabling people and communities to provide for their wellbeing,
 - meeting the reasonably foreseeable needs to future generations,
 - safeguarding life supporting capacity of ecosystems, and
 - avoiding, remedying or mitigating adverse effects.
18. In my opinion safeguarding the life-supporting capacity of ecosystems⁴ is directly relevant to the consideration of the effect of kauri dieback disease on kauri-dominated ecosystems.⁵

⁴See section 5(2)(b) of the Act

⁵That future generations should be able to experience kauri is another important consideration from section 5(2) of the Act.

19. The rest of Part 2 sets out matters of national importance, other matters and the principle of Te Tiriti o Waitangi.
20. Matters of national importance, set out in section 6 of the Act, must be recognised and provided for in the proposed plan changes, to the extent that these are relevant.
21. Of particular relevance to the issue of kauri dieback disease is the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna.
22. In the northern half of the North Island, significant indigenous vegetation includes kauri. The evidence of Dr Beauchamp is that there is a real risk that kauri dieback disease will spread from currently contaminated areas⁶ into new areas of significant indigenous vegetation from contaminated sites outside such areas. Stopping long range spread of the disease is required to maintain kauri forests.⁷
23. Other matters of some relevance from section 7 of the Act are the following matters to which particular regard must be had:
 - (a) kaitiakitanga:
 - (aa) the ethic of stewardship:
 - (d) intrinsic values of ecosystems:
24. Māori values Kauri are a taonga. Iwi and hapu have kaitiakitanga responsibilities towards kauri. Several parts of Part 2 of the Act are directly relevant to this consideration:
 - the relationship of Māori and their culture and traditions with their ancestral lands ... and other taonga must be recognised and provided for as a matter of national importance, section 6(e) of the Act;
 - particular regard must be had to kaitiakitanga. section 7(a) of the Act; and

⁶Given the time it takes for symptoms of kauri dieback to show, it may not be realised that an area is contaminated for years or even decades. Dr Beauchamp also points out that sites may remain contaminated well after any surface evidence of kauri has been removed, paragraphs 18, 36, 39 and 54 of his evidence.

⁷See paragraphs 51 and 60 of Dr Beauchamp's evidence.

- relevant principles of Te Tiriti o Waitangi must be taken into account, section 8 of the Act. This would include the principle of active protection.

Functions of territorial authorities and contents of district plans⁸

25. Section 31 of the Act sets out the functions of territorial authorities.
26. Directly relevant to the management of the risk of kauri dieback disease is the following extract from section 31 of the Act:

31(1) Every territorial authority shall have the following functions for the purpose of giving effect to this Act in its district:

- (b) the control of any actual and potential effects of the use, development, or protection of land, including for the purpose of—
 - (iia) the prevention or mitigation of any adverse effects of the use, development or protection of contaminated land:
 - (iii) the maintenance of indigenous biological diversity:

27. Section 74(1) of the Act states that a territorial authority must prepare and change its district plan in accordance with seven specified factors, including its functions under section 31 of the Act, the provisions of Part 2 of the Act, and any national policy statement.
28. Section 75 of the Act sets out the required and optional contents of a district plan. Subsection (3) states

75(3) A district plan must give effect to—

- (a) any national policy statement; and
- (b) any New Zealand coastal policy statement; and
- (ba) a national planning standard; and
- (c) any regional policy statement.

New Zealand Coastal Policy Statement 2010

29. In my opinion, the principal national policy statement of relevance to kauri dieback disease is the Coastal Policy Statement, which must be given effect to within the coastal environment of the Whangārei District.
30. Policy 11(a)(i) of the Coastal Policy Statement requires the avoidance of adverse effects of activities on indigenous taxa that are listed as threatened or at risk.

⁸See also discussion on the functions of territorial authorities and the contents of district plans and kauri dieback disease at paragraphs 43 to 55 of *Director-General of Conservation v Thames-Coromandel District Council*, first interim decision, [2018] NZEnvC 133.

31. Kauri is classified as Threatened – Nationally Vulnerable.

Regional Policy Statement for Northland

32. The Regional Policy Statement must also be given effect to with these proposed Plan Changes. A significant difference to the Coastal Policy Statement is that the Regional Policy Statement provides resource management guidance with respect to indigenous biodiversity and biosecurity across all of Whangārei District, not just the coastal environment.
33. The most relevant policy in the Regional Policy Statement is policy 4.4.1. For threatened species such as kauri, it repeats the same ‘avoid adverse effects’ directive for the coastal environment, and adds a ‘no more than minor adverse effects’ directive outside the coastal environment.

Policy 4.4.1 Policy – Maintaining and protecting significant ecological areas and habitats

(1) In the coastal environment, avoid adverse effects, and outside the coastal environment avoid, remedy or mitigate adverse effects of subdivision, use and development so they are no more than minor on:

- (a) Indigenous taxa that are listed as threatened or at risk in the New Zealand Threat Classification System lists;
- (b) Areas of indigenous vegetation and habitats of indigenous fauna, that are significant using the criteria in Appendix 5;
- (c) Areas set aside for full or partial protection of indigenous biodiversity under other legislation.⁹

Regional plans

34. District Plans cannot be inconsistent with regional plans.¹⁰
35. There are two regional plans to consider.
36. The first is the Regional Water and Soil Plan. This plan includes rules relating to earthworks. However, those rules are concerned with the management of natural hazards, including erosion. The rules provide for between 1,000 and 5,000 cubic metres of earthworks in any 12 month period as a permitted activity, and do not seek to manage the

⁹There are four further sub-sections of this policy. These are not, in my opinion, particularly relevant to the discussion on kauri dieback disease.

¹⁰See section 75(4) of the Act.

effects of earthworks with respect to the spread of kauri dieback disease.

37. The second is the proposed Regional Plan for Northland. It does not include any rule controlling earthworks in the vicinity of kauri.
38. There would, then, be no issue of inconsistency with regional plans if the Whangarei District Plan was to include rules controlling earthworks in the vicinity of kauri.

Regional Pest Management and Marine Pathways Plan for Northland 2017-2027

39. It is possible to have rules relating to biosecurity in the plan prepared under the Resource Management Act and rules relating to biosecurity prepared under the Biosecurity Act.¹¹
40. The Regional Pest Management and Marine Pathways Plan for Northland includes, in section 8, Sustained Control Diseases for kauri dieback, objectives, aims, and rules relating to kauri dieback disease.
41. The relevant objective and aims are stated as:

Objective

For the duration of the Pest Plan, prevent the spread of kauri dieback to reduce impacts on biodiversity, cultural and economic values in Northland.

Aims

- To maintain a complete record of the full distribution and severity of kauri dieback in Northland.
- To increase public knowledge and skills, and encourage people to take action to help reduce the spread of kauri dieback.

42. The primary rule, rule 8.1.1, states

1. Authorised persons will determine whether a property is “high risk” having regard to:

- Site status – is it a confirmed or likely positive site?
- Site location – is it within proximity to known kauri dieback site(s)?
- Vectors – is there a high likelihood of spread to or from the site?
- Any other relevant factor.

¹¹See paragraphs 60 to 66 of Director-General of Conservation v Thames-Coromandel District Council, first interim decision, [2018] NZEnvC 133.

2. Where the property is identified as "high risk", an approved kauri dieback management plan shall be prepared by the authorised person in consultation with the occupier / owner / manager / user (as relevant).
 3. The minimum criteria for an approved Kauri Dieback Management Plan are contained at Appendix 3 of the Northland Regional Pest and Marine Pathway Management Plan 2017 – 2027.
 4. Land owners / occupiers / managers / users (as relevant) within Northland must implement the approved management plan to reduce risk of kauri dieback spreading.
43. In my opinion areas, likely to be identified as high risk would be where kauri dieback disease is known to occur and sites in that vicinity. This rule is not likely to be applied in any area where there is an undetected occurrence of kauri dieback disease, as the trigger for the rule is “where an authorised person identifies a property as high risk.”
 44. By contrast, the district plan rules discussed in this evidence take a precautionary approach and assume all areas are contaminated.
 45. A further issue with a rule in a pest management strategy compared to a district plan is that a district plan and its provisions are more widely known and understood. In my opinion, people are much more likely to be aware of district plan provisions than pest management strategy provisions.
 46. Notwithstanding these limitations of the biosecurity rule compared to a rule in a district plan, I consider that the rules complement each other, as the biosecurity rule is likely to be more responsive where kauri dieback disease is detected. In such a case a management plan would be required whether any activity occurs that also triggers a district plan rule or not.

Draft National Pest Management Plan

47. For completeness, I briefly discuss the draft National Pest Management Plan for kauri dieback. The third round of public consultation on this draft plan was conducted in early 2019. No decision has yet been announced on the final version of this plan.

48. The draft National Pest Management Plan is prepared under the Biosecurity Act to provide a consistent biosecurity management approach to kauri dieback across the four regions that are affected.¹²
49. The management approach to be taken is not settled – the third round of consultation asked about two approaches. Both of the approaches propose an approach using rules for high risk areas; one also proposes a generally applying earthworks rule similar to that in the proposed Thames-Coromandel District Plan.
50. In my opinion, the draft National Pest Management Plan is not sufficiently certain to consider further.

Policy direction summary

51. Minimising the risk of the spread of kauri dieback disease by way of provisions in a district plan is consistent with the provisions of the Act on the functions of territorial authorities and the contents of district plans.
52. When providing for provisions (objectives, policies, rules) in a district plan to address kauri dieback disease those provisions must:
 - (a) safeguard the life-supporting capacity of (kauri) ecosystems;
 - (b) recognise and provide for the protection of areas of significant indigenous vegetation (kauri);
 - (c) recognise and provide for the relationship of Māori and their culture and traditions with their ancestral lands, sites and other taonga;
 - (d) have particular regard to kaitiakitanga, the exercise of stewardship and the intrinsic values of (kauri) ecosystems;
 - (e) take into account the principles of Te Tiriti o Waitangi, including active protection;
 - (f) avoid adverse effects of subdivision, use and development on kauri from kauri dieback disease in the coastal environment;and

¹²Northland, Auckland, Waikato and Bay of Plenty.

(g) ensure no more than minor adverse effects of subdivision, use and development on kauri from kauri dieback disease outside the coastal environment.

53. District plan provisions can complement the kauri dieback disease provisions in the Regional Pest Management and Marine Pathways Plan for Northland 2017 – 2027.

SUBMISSION BY THE DIRECTOR-GENERAL OF CONSERVATION

54. The submission by the Director-General of Conservation seeks amendments to the objectives, policies and rules to include consideration of kauri dieback as part of plan changes 88I, 115¹³ and 147.

55. In summary the following relief is sought:

Plan Change 147

- (a) new objective and revised or new policies on kauri dieback in the proposed Earthworks chapter;
- (b) retention of rule EARTH R1 restricted discretionary earthworks rule;
- (c) the insertion of a restriction on earthworks in the vicinity of kauri in rule EARTH R1, this has the effect of making earthworks within 3 times the radius of the dripline of a kauri a discretionary activity; and
- (d) the insertion of a further matter of discretion in restricted discretionary activity rule EARTH R1 relation to preventing the spread of plant pathogens and unwanted organisms.

Plan Change 88I

- (a) the amendment of existing objectives or the insertion of a further objective about avoiding the spread of plant pathogens including kauri dieback disease in the Low Density Residential, Residential, Medium Density Residential, and High Density Residential Zones;

¹³In the cover letter and the submission Plan Change 115 is mis-identified as 155.

- (b) the amendment of existing policies or the insertion of a new policy about addressing the spread of kauri dieback disease in the Low Density Residential, Residential, Medium Density Residential, and High Density Residential Zones by “effectively managing vegetation clearance and other works around Kauri”;
- (c) the addition of a restriction on indigenous vegetation clearance in permitted activity rules LDR-R7 and RES-R10 which has the effect of making clearance of indigenous vegetation within three times the radius of the dripline of a kauri a discretionary activity; and
- (d) the inclusion of a new rule in the Medium Density Residential Zone and the High Density Residential Zone to prohibit vegetation clearance within the Kauri Hygiene zone of the Kauri tree.

Plan Change 115

- (a) the amendment of existing objectives or the insertion of a further objective about avoiding the spread of plant pathogens including kauri dieback disease in the Open Space and Conservation Zones;
- (b) the amendment of existing policies or the insertion of a new policy about addressing the spread of kauri dieback disease in the Open Space and Conservation Zones by “effectively managing vegetation clearance and other works around Kauri”; and
- (c) the addition of a restriction on indigenous vegetation clearance in permitted activity rules OS-R7 and CON-R7 which has the effect of making clearance of indigenous vegetation within three times the radius of the dripline of a kauri a discretionary activity.

56. These relief are assessed in the section 42A reports with recommendations that the submission points all be rejected except one relating to adding a further restriction to the earthworks rule EARTH-R1. I consider this assessment and recommendations in detail below.

57. Generally, I consider that there is a more efficient and comprehensive way to introduce controls in these plan changes. This relies on another relief sought by the Director-General at paragraph 11b) of the submission:

Such other relief as may be necessary or appropriate to address my concerns.

58. This is supported by the following extract from paragraph 4 of the Director-General's submission:

... I also seek additional, or amendments to the proposed, objective, policies and activity rules to ensure effective management of kauri dieback disease, especially for any works in the kauri hygiene zone.

59. Before commenting further on the relief seeking amended or new objectives and policies and rules I consider kauri dieback as a resource management issue, its means of spread, the over-arching policy directives relating to it, and set out a strategic approach that I consider should be followed in these plan changes.

KAURI DIEBACK AS A RESOURCE MANAGEMENT ISSUE

60. This brief analysis of kauri dieback disease as a resource management issue relies on the evidence of Dr Beauchamp.¹⁴
61. Kauri dieback disease is a disease that is fatal to kauri. There is no known cure for the disease.
62. The disease spreads to kauri via minute disease spores in the soil entering the kauri root system. There is no effective method to establish whether or not spores are present in soil around a kauri. Kauri can have the disease without the symptoms showing for years to decades, depending on the size of the particular tree.¹⁵
63. Those spores are spread by activities and processes that disturb and spread soil with spores in them.
64. A natural process for spread is via the movement of water through soil. This spread tends to be over a very short distance.

¹⁴Particularly paragraphs 16 to 20 and 28 to 39 of his evidence.

¹⁵See paragraph 17 of Dr Beauchamp's evidence.

65. However, the main way the disease is spread is via the movement of contaminated soil. This can be a long distance when the soil is moved by human activity.
66. This can occur in a variety of ways, ranging from natural processes such as soil erosion and spread by animals to disturbance of contaminated soil in the vicinity of kauri leading to contaminated soil residues on equipment and/or clothing being taken into or from the vicinity of a kauri tree.¹⁶
67. This implies that any controls in a district plan to address the risk of spread of kauri dieback disease is one of a suite of measures that are needed; a district plan rule cannot encompass all activities and vectors that have a risk of spreading kauri dieback disease.
68. Notwithstanding that, it is my opinion that the control of the disturbance of soil – primarily the control of earthworks – in the vicinity of kauri through district plan rules is an important measure to reduce the risk of the spread of kauri dieback disease.

What a rule needs to address

69. There are three important propositions that inform the design and timing of any earthworks rule¹⁷ intended to reduce the risk of the spread of kauri dieback disease:
 - (a) Addressing kauri dieback disease is an urgent resource management issue; given the directives from Part 2 of the Act to recognise and provide for the protection of significant natural areas, and the ‘avoid adverse effects’/‘no more than minor adverse effects’ on indigenous biodiversity directives from the Coastal Policy Statement and the Regional Policy Statement.
 - (b) It is not possible to say whether soil around any kauri is contaminated with kauri dieback spores or not unless the kauri is showing symptoms; it is necessary therefore to assume all soil around a kauri is contaminated, and that any rule should

¹⁶The risk area is assessed by Dr Beauchamp as being within three times the maximum radius of the dripline of a kauri.

¹⁷And any supporting rules such a rules on vegetation clearance.

apply to all kauri, regardless of the underlying zoning of the land it is on.¹⁸

(c) The emphasis in any earthworks rule¹⁹ needs to be on preventing the spread of (potentially) contaminated soil from around one kauri to another; this requires

- (i) machinery, tools and clothing to be clean of all soil before entering the risk area around a kauri tree to undertake earthworks or other activities that could disturb the soil;
- (ii) machinery, tools and clothing to be cleaned of all soil before leaving the risk area after the earthworks or other activity that could disturb the soil;
- (iii) soil is left within the risk area around the kauri tree, or disposed of to a safe disposal site;
- (iv) The risk area around a kauri tree is three times the radius of the dripline of the tree.²⁰

70. It follows from the above discussion that an earthworks rule needs to be directed at controlling the risk of the spread via the vector of the spread of contaminated soil on earthmoving equipment, tools or clothing; it needs to apply across all of the district; and needs to apply to all subdivision and land use earthworks.²¹

71. Generally, the approach taken in these proposed Plan Changes is that earthworks and other activities that could disturb soil are a discretionary activity.

72. The two other plans that have kauri dieback rules use either rely on a permitted activity standard or require a management plan.

¹⁸See paragraph 36 of Dr Beauchamp's evidence.

¹⁹Or any other rule about activities that could disturb soil in the vicinity of kauri.

²⁰The Environment Court's final decision on a kauri dieback earthworks rule in the proposed Thames-Coromandel District Plan included the following definition: "Kauri Hygiene Zone is an area three times the maximum radius of the canopy dripline of New Zealand kauri trees in the area the subject of proposed earthworks." [2019] NZEnvC 044 Director-General of Conservation v Thames Coromandel District Council, page 16 of decision.

²¹One of the recommendations in the relevant section 42A report is that the 'earthworks' definition in the District Plan be replaced by the 'earthworks' definition in the National Planning Standards. That definition includes three exceptions: gardening, cultivation, and fence post holes. If the recommendation is accepted and the 'earthworks' definition replaced with the one from the National Planning Standards, it would be necessary, in my opinion, to extend any land use earthworks rule directed at preventing the spread of kauri dieback to be extended to explicitly include gardening, cultivation and the digging of holes for fence posts with the risk area around any kauri.

73. The Auckland Unitary Plan uses a permitted activity standard approach; where a permitted activity standard sets out hygiene requirements to be followed within three times the radius of the dripline of any kauri. This has a significant enforcement issue associated with it. A second difficulty with such a rule is that the hygiene requirements need to be detailed in terms of what steps must be followed, yet also be certain. A further difficulty with this particular rule is that it explicitly does not apply to earthworks that are ancillary to farming and forestry.
74. The second approach, in the proposed Thames-Coromandel District Plan, is to require a management plan to be approved prior to any earthworks in the vicinity of kauri.
75. The particular restricted discretionary activity rule in the proposed Thames-Coromandel District Plan sets out in considerable detail the information required in a management plan.
76. There are advantages in a management plan approach where earthworks occur in the vicinity of more than one kauri, where the earthworks/disturbance of soil activity is on-going, and potentially in urban settings.
77. As mentioned above, the approach taken in the proposed Plan Changes is that earthworks associated in the vicinity of kauri would be a discretionary activity. A management plan approach would be possible in such a regime, although if such an approach was to be encouraged the proposed Plan Changes really should set out in details what a management plan should cover.
78. The rolling review process adopted for the Whangarei District Plan does make it more difficult to urgently address the risk of the spread of kauri dieback disease, as the notification of a new indigenous biodiversity chapter has been delayed.
79. In my opinion, reducing the risk of the spread of kauri dieback is an urgent resource management issue that needs, at a minimum, interim measures (particularly policies and rules) which could then be overtaken by policies and rules in a further plan change on indigenous biodiversity.

OBJECTIVE ON KAURI DIEBACK

80. I now turn to the Director-General's submissions in the order objectives, policies, then rules.
81. The Director-General seeks essentially the same objective in several zones of avoiding the spread of plant pathogens including *Phytophthora agathidicida*.
82. In my opinion, given that the District Plan provisions are read as a whole, it would be more efficient to have one relevant objective(s) applying to all zones.
83. Further, objectives do not, by their nature, need to be as detailed as policies. Rather the policies set out how the objective will be achieved.
84. An objective in chapter 17 of the District Plan²² is
- Objective 17.3.1 Maintenance and enhancement of the life-supporting capacity of ecosystems and the biodiversity of the District.
85. There is also a relevant proposed objective to consider in the proposed Strategic Direction chapter:²³
- SD-O6 – Indigenous Biodiversity. Identify and protect the values and attributes of indigenous biological diversity (Significant Natural Areas) and maintain the extent and diversity of other indigenous biodiversity.
86. The two objectives are about protecting indigenous biodiversity, which would include protection from the threat of kauri dieback disease. These objectives apply to all zones in the District Plan and proposed Plan Changes.
87. In my opinion these two objectives are sufficient to lead to policies and rules specific to avoiding the risk of plant pathogens.
88. I do have a residual concern that objective SD-O6 is straying into policy and a specific mapping result with the inclusion of the words "(Significant Natural Areas)". This could be corrected as follows:
- SD-O6 – Indigenous Biodiversity. Identify and protect the values and attributes of significant indigenous biological diversity

²²This chapter is titled "Indigenous Vegetation and Habitat".

²³Discussed at paragraphs 123 to 128 of the section 42A report Strategic Direction and Subdivision Plan Change 148.

(Significant Natural Areas) and maintain the extent and diversity of other indigenous biodiversity.

POLICIES ON KAURI DIEBACK

89. The Director-General is also seeking:
- Addition of a new policy, or an amendment to the existing policy, which promotes the avoidance of the spread of *Phytophthora Agathidicida* (kauri dieback disease) by controlling earthworks and other works around Kauri.²⁴
90. There are policies in the chapter 17 of the District Plan, the Indigenous Vegetation and Habitat chapter, specific to environmental pests, notably:
- Policy 17.4.5A To avoid the introduction of plant and animal pests where practicable.
91. There are no biodiversity policies in the proposed Strategic Directions chapter, notwithstanding the biodiversity objective there.
92. The proposed Earthworks chapter does not include any biodiversity or biosecurity policies, despite including a generally applying subdivision earthworks rule.
93. In my opinion, the policy direction in the District Plan and in the proposed Plan Changes is significantly deficient with respect to kauri dieback considering the avoid adverse effects/no more than minor adverse effects directives, and the lack of policy guidance to would-be applicants and decision-makers on preparing and granting consents for earthworks within the risk area around a kauri.²⁵
94. I am also of the opinion that, similar to the objectives discussed above, any policies on kauri dieback should apply to all zones, not just the zones in these proposed Plan Changes.

²⁴This is relief sought for the Earthworks chapter. The same relief is sought in relation to policies in the Living Zones and the Open Space and Conservation Zones, except that in these cases the relief seeking a kauri dieback policy generally refers to controlling “vegetation clearance and other works around Kauri”.

²⁵One relief sought by the Director-General is to amend rule EARTH R-1 so that any earthworks within three times the radius of the dripline of a kauri would require consent as a discretionary activity, not a restricted discretionary activity. The recommendation is to grant this submission. There is currently no policy guidance in the proposed Plan Changes for decision-makers on what measures are necessary to ensure earthworks within this kauri hygiene area would avoid the risk of the spread of kauri dieback disease.

95. I understand that the Council's position is that this policy deficiency will be addressed when the indigenous biodiversity plan change is notified, sometime in the future.
96. I consider that addressing kauri dieback disease is an urgent resource management matter that there needs to be, at a minimum, interim kauri dieback policies in the proposed Strategic Directions chapter.
97. Locating a further policy there would ensure that the policy would apply within all zones, and would give effect to Strategic Directions objective SD-O6.
98. The matters that a policy needs to address and identify are, in my opinion:
 - (a) the overarching policy directive of avoiding adverse effects/no more than minor adverse effects from plant pathogens, including kauri dieback disease;
 - (b) the existence of a risk area around each kauri;
 - (c) the need to treat all soil around a kauri as potentially contaminated;
 - (d) the need to ensure equipment, machinery and clothing is clean of soil before entering the risk area around a kauri for any activity that would disturb the soil;
 - (e) the need to ensure equipment, machinery and clothing is clean of soil on exiting the risk area around a kauri for any activity that would disturb the soil;
 - (f) the need to either retain soil in the risk area around a kauri or to dispose of it at an approved location for the disposal of potentially contaminated soil;
 - (g) where vegetation clearance occurs in the vicinity of kauri to ensure all equipment is clean before and after, that care is taken to minimise disturbance of soil, and that vegetation cuttings either remain in the vicinity of the kauri or are disposed of to a secure facility;

- (h) where kauri are pruned or removed, all wood and sawdust is either left within the risk area around the kauri or collected and disposed of at a secure facility; and
 - (i) the circumstances when a management plan approach is to be encouraged (more than one kauri, on-going or large scale earthworks, potentially in urban areas) an outline of what needs to be addressed in a management plan.
99. An appropriate location for such a policy would be immediately after policy SD-P3.²⁶
100. In my opinion, the addition of a policy as proposed is within the scope of paragraphs 4 and 11(b) of the Director-General's submission.

KAURI DIEBACK RULES

101. The third component of a district plan strategy on kauri dieback is adequate and effective rules.
102. The matter that rules need to control is the risk of the movement of contaminated soil to and/or from the vicinity of a kauri.
103. The Director-General's submission seeks two types of rule provisions. In the proposed Earthworks chapter, he seeks that (subdivision) earthworks within the risk area around a kauri be a discretionary activity, not a restricted discretionary activity.
104. In other proposed zones that the Director-General has submitted on, he is seeking a limit on indigenous vegetation clearance in order to control the spread of kauri dieback disease.
105. I discuss each of these in turn.

Rule EARTH-R1

106. Currently proposed restricted discretionary activity rule EARTH-R1 applies to subdivision earthworks that do not change natural water levels or the natural ecosystem in any indigenous wetland²⁷ or that

²⁶Management plan details themselves may be best located in an appendix.

²⁷A recommendation in the section 42A report is that the reference to indigenous wetlands be deleted from this rule.

occur within Sites of Significance to Māori or within 10 metres of any archaeological site.

107. Subdivision earthworks that do change natural water levels or natural ecosystems of indigenous wetlands, or are within Sites of Significance to Māori or within 10 metres of any archaeological site are provided for in this rule as a discretionary activity.
108. The Director-General is seeking the addition of a further limitation in the restricted discretionary activity rule:

Inclusion of an addition to the provisions [of EARTH-R1] as follows:

Where

1. Earthworks do not:

Occur within three times of the radius of the canopy dripline ("the kauri hygiene zone") of a New Zealand Kauri tree.

109. The recommendation in the section 42A report²⁸ is that a provision be added to the rule as sought by the Director-General, but modified to align with a parallel provision in the proposed Notable and Public Trees chapter.
110. It is noted in the report that the issue of managing the risk of the spread of kauri dieback disease may be considered again as part of a future indigenous biodiversity plan change, and that the recommendation is for an interim amendment to the rule similar to that sought by the Director-General of Conservation.
111. The recommended wording is
- EARTH-R1 1.c. Three times the radius of the canopy root zone of a New Zealand Kauri tree (agathis australis).
112. There are two flaws with this recommended reading. As explained in the evidence of Dr Beauchamp, the phrase "canopy root zone" is not the right phrase to use in this rule. He explains why the phrase "canopy dripline" has to be used for the rule to make any sense.²⁹
113. I also consider that the 'dripline' reference is to be preferred as it is easier to ascertain the extent of the dripline on site without disturbing

²⁸Paragraph 509 of the section 42A report on Services.

²⁹Paragraph 43 of his evidence.

the ground, as appears to be necessary when identifying the extent of a root zone.

114. There was also further refinement made by the Environment Court in relation to similar wording in a rule in the proposed Thames-Coromandel District Plan in order to make the application of the rule certain. This was to make it clear that the maximum radius of the dripline be used.

115. With these two changes the amended recommended wording would be:

EARTH-R1 1.c. Three times the maximum radius of the canopy root zone dripline of a New Zealand Kauri tree (*Agathis australis*).

116. The report also notes that three alternatives were assessed leading to this recommendation. The three alternatives were no provisions relating to kauri dieback, the recommended amendment to rule EARTH-R1, and a new objective, policy and rule relating to kauri dieback.³⁰

117. The assessment is that the later two options have the most environmental, social and cultural benefit and are assessed as being equally effective in managing the spread of plant pathogens, including kauri dieback disease.

118. In terms of efficiency, the assessment is that the option of modifying rule EARTH-R1 is more efficient than the third option because it avoids duplication of objectives and policies, instead relying on the Indigenous Vegetation and Habitats chapter, chapter 17, for providing the objective/policy framework. The report notes that this objective/policy framework in chapter 17 of the District Plan is likely to be reviewed under a future plan change under the rolling review process.

119. In my opinion, the option with the most benefit, effectiveness in managing kauri dieback disease, and efficiency is a variant on the option of a new objective/policy framework and a new rule.

³⁰These options are set out in an assessment table on page 94 of the Services section 42A report (Attachment 1 to that report).

120. Comprehensively addressing the risk of the spread of kauri dieback disease is an urgent matter. It cannot wait, in my opinion, for a plan change sometime in the future.
121. There is a need for interim provisions, including a policy of the type I have outlined above, the amendment of subdivision earthworks rule, and as I go on to explain now, the addition of a further kauri dieback rule for land use earthworks, supplemented by vegetation clearance controls.
122. I disagree that this approach would set up a duplication of objectives and policies, in parallel with the objectives and policies in chapter 17, because I do not consider the policies, in particular, in chapter 17 are detailed enough to adequately address the kauri dieback disease resource management issue.

Land use earthworks

123. Rule EARTH-R1 only applies to earthworks associated with subdivision.
124. Other earthworks, associated with land use, are equally risky with respect to the spread of kauri dieback disease. However, there is no earthworks rule in the District Plan addressing kauri dieback disease with earthworks associated with land uses.
125. This is, in my opinion, a significant gap and inconsistency in the District Plan.
126. The absence of a land use rule on earthworks and kauri dieback disease means the District Plan is failing to recognise and provide for matter of national importance 6(c) of the Act, and is failing to give effect to policy 11(a) of the Coastal Policy Statement and policy 4.4.1(1) of the Regional Policy Statement.
127. In my opinion, there should a further rule added to the Earthworks Chapter providing that any land use related earthworks within three times the maximum radius of the canopy dripline on a kauri requires a resource consent, either as a discretionary activity as would occur for subdivision earthworks in the same area; or as a restricted

discretionary activity rule requiring a management plan for such earthworks similar to the rule approved by the Environment Court in relation to the proposed Thames-Coromandel District Plan.³¹

128. If the recommended 'earthworks' definition from the National Planning Standard is accepted, then it would be necessary to make any such land use rule apply as well to gardening, cultivation, and the disturbance of land for the installation of fence posts. These would otherwise be excluded from any earthworks rule, notwithstanding that the same risk of spread of kauri dieback disease can arise with these activities as with other earthworks.
129. As I have mentioned earlier, introducing a land use earthworks rule of the type described above is consistent with paragraphs 4 and 11(b) of the Director-General's submission.

Vegetation clearance rules

130. The Director-General is seeking that rules that limit vegetation clearance in the risk area around a kauri tree in the Low Density Residential, Residential, Medium Density Residential, High Density Residential, Open Space and Conservation zones.
131. The recommendation in the section 42A reports is to reject all of these submissions.
132. The concern about vegetation clearance and the risk of the spread of kauri dieback disease is from the potential for the activity of vegetation clearance to disturb soil, for cleared vegetation to retain traces of soil, equipment and clothing to not be clean of soil, and the specific issue of managing and disposing of any kauri pruning or tree removal in a safe manner.
133. In my opinion, it is unlikely that any disturbance of soil associated with vegetation clearance³² would be 'earthworks', yet it is a relatively common activity that has an associated risk of spread of kauri die back

³¹The final version of this rule is set out in Director-General of Conservation v Thames-Coromandel District Council, final decision, [2019] NZEnvC 244/

³²The definition of vegetation clearance in the District Plan is means any activity that results in the cutting, disturbance, removal or destruction of indigenous vegetation.

disease.³³ Rules on vegetation clearance in the vicinity of kauri would supplement the subdivision and earthworks rules already discussed.

134. There are existing indigenous vegetation rules in the Low Density Residential, Residential, Medium Density Residential, Open Space and Conservation zones, all of which follow the same layout. The addition of the same further clause to the vegetation clearance rule similar to that sought by the Director-General is possible.

135. However, I have concerns about limitations in just inserting the clause sought by the Director-General. It would only apply to the clearance of indigenous vegetation, and it is likely that the exemptions to the indigenous vegetation clearance rule set out in the rule would apply.

136. My preference would be for a new vegetation clearance rule of this sort:

The cutting, disturbance, removal or destruction of indigenous or exotic vegetation within three times the maximum radius of the dripline of a New Zealand kauri is a discretionary activity.³⁴

137. Such a rule could also be inserted in the Medium and High Density Zones, which currently do not have any vegetation clearance rule.

138. The remaining deficiency with such a rule is that it would not apply to all the zones. This can be addressed by future plan changes, potentially the biodiversity plan change.

139. In the discussion leading to this recommendation, comment is made that there are provisions in the Notable and Public Trees chapter concerning kauri dieback. In my opinion, these provisions are limited in their effect because they only apply to notable and protected trees.

140. Another issue with the rule in the Notable and Public Trees chapter is the use of the term 'canopy root zone'. This is discussed elsewhere in my evidence and in the evidence of Dr Beauchamp.

³³See paragraph 38 of Dr Beauchamp's evidence.

³⁴It is necessary to use "cutting, disturbance, removal or destruction" instead of the term 'vegetation clearance' because the definition of 'vegetation clearance' in the District Plan limits the activity of vegetation clearance to indigenous vegetation only.

Overlap with Pest Management Strategy Rule

141. I describe the kauri dieback disease rule in the Regional Pest Management Strategy at paragraph 42 of this evidence.
142. While there is some overlap between the earthworks rule regime I have described in my evidence and the Pest Management Strategy rule, I consider that the earthworks rule regime would apply much more widely than the Pest Management Strategy rule.
143. The trigger for the application of the Pest Management Strategy rule is that “an authorised person identifies the property at high risk” in terms of kauri dieback spreading.
144. The earthworks rules, as proposed in this evidence, would apply to all properties at all times. It is a much more precautionary and comprehensive approach to managing the risk of the spread of kauri dieback disease. In my opinion that is appropriate given the consequences of the spread of kauri dieback disease and urgency with which this resource management issue needs to be addressed.
145. Not having rules on earthworks and kauri dieback in the District Plan, and, instead, just relying on the rule in the Pest Management Strategy, would, in my opinion, not give effect to the policy directives I have identified earlier as applying to this resource management issue.

NATURAL HAZARDS AND STRATEGIC DIRECTION

Further Submissions by the Director-General of Conservation in support of submissions 264/7, 264/9 and 264/10 by the Northland Regional Council on proposed Plan Change 148, Strategic Direction.

See section 42A report on Strategic Direction and Subdivision paragraphs 134, 136, 226, 230 to 232, 348 and 350.

146. The Director-General is supporting three submissions by the Northland Regional Council seeking further detail in objective SD-O10 and policies SD-P3 and SD-P18 on the identification and management of natural hazards.
147. The recommendations in the Section 42A report is to reject these three submissions, with alternate wording suggested for policy SD-P3 if the reject recommendation is not accepted.
148. The main reason for the recommendation is because there is going to be Hazards plan change some time in the future where these matters can be considered and addressed in more detail.

Overarching policy directives

149. A matter of national importance that must be recognised and provided for in these plan changes is the management of significant risks from natural hazards.³⁵
150. There are four relatively directive natural hazard policies in the Coastal Policy Statement.³⁶ These policies cover:
 - identifying areas in the coastal environment potentially affected by coastal hazards, especially high risk areas, looking over at least the next 100 years;
 - avoiding increasing the risk of harm from coastal hazards, avoiding redevelopment and land use changes that would increase the risk, encourage redevelopment and infrastructure being relocated away from coastal hazards, and discouraging hard protection structures;
 - provide for natural defences against coastal hazards; and

³⁵Section 6(h) of the Act.

³⁶Policies 24 to 27, inclusive.

- setting out risk reduction strategies for protecting significant existing development.
151. The Regional Policy Statement includes an objective and policies about natural hazards, including those inland on the coastal environment.
 152. The general risk management approach set out in the Regional Policy Statement is managing subdivision, use and development of land to minimise the risks from natural hazards. For coastal hazards the Regional Policy Statement follows the Coastal Policy Statement.
 153. The operative District Plan includes a chapter on Natural Hazards. This was prepared giving effect to the previous (1994) Coastal Policy Statement and the previous Regional Policy Statement.
 154. Notwithstanding this, the stated objectives are avoid adverse effects of natural hazards as far as practicable and to protect and enhance natural buffers against natural hazards.
 155. The policies cover not increasing the risk from natural hazards, avoiding locating in natural hazard areas where the natural hazard is likely to have adverse impacts maintaining and enhancing existing natural protection processes and features, avoiding the effects of sea level rise, avoiding the need for coastal hazard protection works with new development, ensuring mitigation measures work and do not cause adverse effects, not obstruct flood flow paths and address fire risk.
 156. Section 55(2D) of the Act requires councils to amend their plans to give effect to national policy statements as soon as practical, where the national policy statement does not set a different timeframe.

Objective SD-10

157. Objective SD-10 is about minimising the risks and impacts of natural hazards on people, property and infrastructure.
158. The Regional Council seeks the addition of the need to identify areas potentially affected by natural hazards to the objective.

159. This is clearly an action required by policy 24 of the Coastal Policy Statement for coastal hazards. In my opinion it is best practice to identify natural hazard areas inland of the coastal environment.
160. Identifying natural hazard areas is not covered explicitly in the operative District Plans natural hazard objectives and policies.
161. In my opinion, including the addition sought by the Regional Council on identifying areas affected by natural hazards in objective SD-O10 would help give effect to the Coastal Policy Statement. It would not result in duplicate objectives in the District Plan.

Policy SD-P3

162. Policy SD-P3 sets out how it is intended to avoid increasing the risk of natural hazards on people and property. Essentially the approach is to avoid locating more intensive development and regionally significant and critical infrastructure within identified hazard areas. It is silent on other types or intensities of development and use within identified hazard areas.
163. The Regional Council is seeking to add a general statement to the policy:

Redevelopment and changes in land use do not increase the risk or vulnerability to natural hazards.
164. There are several other submitters seeking amendments to this policy. However, this is only submission that seeks to extend the policy to address more than natural hazards more intense development and significant infrastructure.
165. Policy SD-P3 is the only explicit natural hazard policy in the proposed Strategic Direction chapter.
166. In my opinion, the addition sought by the Regional Council gives effect to the do not increase risk/minimising the risk approach to managing natural hazards approach from the Coastal Policy Statement and the Regional Policy Statement.
167. It applies to a much wider range of circumstances than the limited cases currently set out in the policy.

168. In my opinion, it would be appropriate, and would give better effect to the Coastal Policy Statement and the Regional Policy Statement, to add the words sought by the Regional Council to policy SD-P3.

Policy SD-P18

169. Policy SD-P18 is a policy on the identification and protection of special areas such as outstanding natural landscapes and heritage features.
170. The Regional Council submission is seeking to extend the ambit of the policy to also cover the identification of potential hazard areas, and applying rules to minimise potential hazard risks:

To identify areas that are potentially affected by natural hazards and apply rules on subdivision and land use to ensure activities are managed to minimise the potential risks of current and future natural hazards and to avoid increasing risks to people, property and infrastructure.

171. The section 42A report recommendation is that extra wording sought by the Regional Council would be better located in a Natural Hazards chapter, and not in the Strategic Direction chapter.
172. In my opinion, what is being sought by the Regional Council is, effectively, a stand alone policy that would be appropriate to include in the Strategic Direction chapter as a second natural hazard policy, or to include in the specific Natural Hazard chapter.



Andrew Riddell

7 November 2019