

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

**IN THE MATTER** of the Resource Management Act 1991

**AND** of appeals under clause 14 of the First Schedule of the Act

**BETWEEN** **SOUTHWOOD EXPORT LIMITED, KODANSHA TREE FARM NEW ZEALAND LIMITED AND SOUTHLAND PLANTATION FOREST COMPANY OF NEW ZEALAND LIMITED (ENV-2018-CHC-046)**

**Appellants**

**AND** **SOUTHLAND REGIONAL COUNCIL**

**Respondent**

**AND** **CAMPBELL'S BLOCK S 274 PARTIES**  
(as continued on next page)

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**STATEMENT OF EVIDENCE OF SALLY BARKER STRANG**

**Dated: 4 February 2022**

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AND PETER CHARTRES  
AND DIRECTOR-GENERAL OF CONSERVATION  
AND FEDERATED FARMS OF NEW ZEALAND  
AND ROBERT GRANT  
AND RAYONIER NEW ZEALAND LIMITED  
AND ROYAL FOREST AND BIRD PROTECTION SOCIETY  
OF NEW ZEALAND INCORPORATED  
AND STONEY CREEK STATION  
AND THE TERRACES LIMITED

**Introduction**

- 1 My name is Sally Barker Strang.
- 2 I am employed in the role of Environment Manager by Manulife Forest Management (NZ) Ltd (MFM NZ), which was formerly known as Hancock Forest Management NZ Ltd. MFM NZ manages approximately 219,000 hectares of plantation forest located in the North Island, on behalf of three investor clients.

**Qualifications**

- 3 I hold the following qualification of Bachelor of Civil Engineering. I have worked in the plantation forest industry for 21 years in environmental management roles, working for Carter Holt Harvey Forests and subsequently Hancock Forest Management, now rebranded as Manulife Forest Management. I have been in my current role since December 2006. In my role I am responsible for our environmental management systems, legal compliance, consenting, environmental certification and resource management processes.
- 4 I was a forest manager representative on the working group that developed the National Environmental Standards for Plantation Forestry (NES PF) from the outset in 2009 through until gazettal in 2017. I was also involved in the Stakeholder Implementation Working Group tasked with undertaking the one year review of the NES PF in 2019.
- 5 I was a forestry representative on the Waikato Region Collaborative Stakeholder Working Group that developed Plan Change 1 for the Waikato Region to address water quality issues in the Waikato River catchment. I was a Crown representative on the Waikato River Authority from 2010 to 2013. I am currently Chair of the NZ Forest Owners Association Environment Committee.
- 6 My husband and I own a mixed cropping and drystock farm in the South Waikato which is run by my husband. We undertake cropping (maize and in the past potatoes and onions) and I am therefore familiar with agricultural cultivation techniques.
- 7 Although I am not formally qualified as a planner I have worked extensively with the Resource Management Act 1991 and subsidiary legislation and guidelines. I am familiar with assessing whether a

regulation or policy proposal achieves the desired environmental outcomes.

### **Scope of Evidence**

- 8 I have read the Environment Court's code of conduct and agree to comply with it. I confirm that I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed. I confirm the issues addressed in the statement of evidence are within my area of expertise and experience.
- 9 The ambit of my evidence is to evaluate whether the proposed changes to the PSWLP developed within the joint witness conferencing sessions achieve the objectives and policies of the PSWLP as well as the wider considerations under section 32AA of the Resource Management Act 1991.
- 10 I acknowledge that the provision which has been developed as a result of the Joint Witness Conference is different to the relief sought by SWEL in its notice of appeal and in respect of the section 274 notice filed. However, the result of the joint witness conference was to propose a new form of definition that excludes aerial herbicide spraying and stick raking from the definition of cultivation, and provides a new definition prescribes the meaning of stick raking or slash raking.
- 11 I am satisfied that this revised provision generally meets the purpose of the relief sought by SWEL and my statement of evidence only considers the proposal which has been developed in the course of Joint Witness Conferencing.

### **Assessment under section 32 AA of the Act**

- 12 In making this evaluation, I have compared the version of the definition and rule 25 in the pSLWP as decided by the Regional Council, and the amendments as recommended in the joint witness statement from the planning session.
- 13 I traverse many of the reasons for forming my opinions on the appropriate plan provisions within the Will Say statement that I have prepared for the joint witness conference which is attached as Annex A.

- 14 I do not intend to repeat those points and I have confined this statement to issues arising from the proposed drafting of alternative provisions developed during the expert witness conferences.
- 15 I confirm that I agree with the expert opinions presented by Rayonier's experts, including the conclusions of Jerome Wyeth who states that it is both effective and efficient to adopt the provision as developed in the joint witness conference.
- 16 I have limited my assessment to comparing two alternative options being either the inclusion or exclusion of stick raking and herbicide spraying activities in the definition of the activity of "cultivation". I have also separately assessed whether a new definition for the term stick raking or slash raking is necessary for inclusion in the plan provisions.
- 17 I have undertaken this assessment at a level of detail which I consider is proportional to and corresponds with the scale and significance of the proposed change, as required by section 32AA(1)(c) of the Act.

**Express exclusion of herbicide spraying and stick raking or slash raking activities from the definition of cultivation.**

- 18 The decisions version of the PSWLP states in its provisions for definitions that the term "cultivation" includes aerial herbicide spraying. I set out in my Will say statement why I don't consider the inclusion of that activity is appropriate within the definition. It is my opinion that it is more appropriate to exclude aerial herbicide spraying because that activity is unrelated to the disturbance of soil, and therefore conflicts with the plain and ordinary meaning of the term "cultivation". Additionally, this is an activity which has minimal risk of causing erosion and therefore should not be captured within the scope of Rule 25 of the PSWLP.
- 19 For similar reasons I consider that the exclusion of stick or slash raking activities from the definition of cultivation is appropriate. This activity as described in the plan is restricted to those elements that do not break up the soil profile. I consider that the manner in which this has been described in the regional plan is a more appropriate, effective and efficient way of attaining the objectives and purpose of the PSW LP than the decisions version. That is because there is greater clarity provided for the activities which are captured by the provisions of Rule 25, and the scope of Rule 25 is no longer intended to apply to activities that do not result in soil disturbance.

**Inclusion of new definition for stick raking and slash raking**

- 20 It is my assessment that inserting a new definition for stick raking or slash raking can be appropriate as it will assist in the interpretation of the scope of the activities captured by Rule 25. While these terms are readily understood by people who work within the forestry industry and who are familiar with the industry terminology, I accept that this term may not be familiar to people without that background. On the basis that the new definition assists with the understanding of what activities Rule 25 will apply to, I support the inclusion of that provision as it does clarify the scope of activities Rule 25 is intended to apply to.
- 21 It is appropriate to exclude these activities from the ambit of the cultivation definition and Rule 25 because the decisions version of these provisions has resulted in imposing a significant additional compliance requirement. I do not consider that additional compliance burden is appropriate for an activity which is occurring in a region already defined by the NES-plantation forestry as being at a low risk of experiencing soil erosion. The proposed amendment will result in some cost reductions for planned forest reestablishment as the amended provisions mean that it will not be necessary to obtain a resource consent for an activity already defined as a permitted activity under the NES-plantation forestry.
- 22 Because the Southland region is defined under the NES-Plantation Forestry as a region with low erosion risk stick raking and slash raking are defined as permitted activities pursuant to the National Environmental Standard plantation forestry.
- 23 In my opinion, the proposed amended provisions are therefore consistent with the National Environmental Standard-Plantation forestry and therefore no conflict arises if the amended provisions are inserted into the pSWLP as proposed.
- 24 I support the proposed amendment to the definition of "cultivation" as I consider that doing so better achieves the purpose and objectives of the pSWLP. I set out the reasons why the decisions version of the pSWLP does not meet the purpose and objectives of the pSWLP in my Will Say statement. I don't consider it is necessary to undertake any further

assessments under section 32(2)(c) of the RMA given the content and detail of the joint witness statement for this topic.

### **Conclusion**

- 25 The amended provisions permit activities to occur that have a low risk of causing erosion and provides for them to be carried out in a safe manner and in accordance with industry best practice.
- 26 I therefore consider that the proposed amendments developed during the joint witness conference are more appropriate, effective and efficient for achieving the objectives of the PSWLP particularly as the Southland region is defined as an area which is at low risk of soil erosion.
- 27 For the reasons set out above and in my Will Say statement, I support the proposal to amend the provisions of the regional plan as described in the joint witness statement.

**DATED** 4 February 2022



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Sally Barker Strang

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**WILL SAY OF SALLY BARKER STRANG**

**Dated: 25 November 2021**

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### **Scope of Statement**

- 7 The ambit of my statement is to comment on the relief sought by Southwood Export Limited in its appeal of the Proposed Southland Water and Land Plan. I have read the document titled "Expert Conference – Planning – Joint Witness Statement #4" including the planning questions to forestry experts. I respond to the issues raised in those questions with

a particular focus on the techniques and management methods for plantation forestry which minimise or avoid soil erosion.

- 8 I have read the Regional Council's tracked change provisions proposed in response to parties' relief sought for the issues relevant to this appeal:
- (a) the definition of "cultivation" and
  - (b) rule 25
- 9 I discuss the practical effect of a scope of plan provisions that are stricter than the National Environment Standard – Plantation Forest and also comment on the scope of those proposed provisions by contrasting it with Regional Plan provisions that I am familiar with.
- 10 I have reviewed the "Will Say" statements of the following experts:
- (a) Christopher John Phillips, dated 29 October 2021
  - (b) Hamish John Fitzgerald, dated 29 October 2021
  - (c) Jerome Geoffrey Wyeth, dated 29 October 2021
  - (d) Graeme Manley, dated 25 November 2021.
- 11 Unless I expressly state otherwise, I agree with the information, opinions and statements provided in those statements and do not intend to repeat that information in this statement.
- 12 I do not provide comment on the aerial spraying topic as I have been instructed that the proposed provisions resolve SWEL's appeal point on this issue.
- 13 I confirm that the issues addressed in this "Will-Say" statement are within my area of expertise.
- 14 I have read the Environment Court's code of conduct and agree to comply with it. I confirm that I have not omitted to consider material facts known to me that might alter or detract from the opinions expressed.

#### **Development of the NES PF**

- 15 As I have noted above, I was involved in the working group that developed the NES PF regulations over a 9 year period. The working group involved representatives from a range of stakeholders including regional and district councils, Forest and Bird, Fish and Game, Scion and three

Ministries (Ministry for the Environment, Department of Conservation and Ministry for Primary Industries).

- 16 The NES PF contains regulations governing four core forestry activities, along with associated effects. A key tool underpinning the NES PF is the use of the Erosion Susceptibility Classification which was developed by Canterbury University and refined by Landcare Research. The ESC is based on the NZ Land Resource Inventory data. In simple terms each Land Use Capability (LUC) unit was considered by experts in terms of its erosion susceptibility under plantation forestry cover for the specific purpose of assigning that LUC unit to a risk category when undertaking plantation forestry activities.
- 17 The ESC contains four risk categories (low, medium, high and very high) also referred to by a traffic light system of colours from green (low) to red (very high). The status for each under the NES PF is underpinned by the ESC classifications, with most activities in low or moderate risk ESC terrain being permitted and consents generally required in higher ESC risk areas.
- 18 The table below shows an analysis carried out by Ministry for Primary Industries using the Landcover Database to estimate the area of plantation forest in each region that is in of the four Erosion Susceptibility Classifications under the NES PF. As can be seen from the table, the majority of plantation forestry in the Southland Region falls into the low and moderate ESC classifications, due to the stable geology relative to other regions in New Zealand.

Region	NES PF Erosion Susceptibility Classification (ESC)			
	Low (Green)	Moderate (Yellow)	High (Orange)	Very High (Red)
Auckland	7,252	20,580	12,738	7,880
Bay Of Plenty	95,136	78,802	62,636	5,180
Canterbury	62,350	47,463	7,755	3,614
Gisborne	4,621	48,799	40,502	65,978
Hawke's Bay	49,287	59,811	17,908	18,699
Manawatu-Wanganui	62,118	41,057	35,742	5,228
Marlborough	5,305	24,314	39,553	7,287
Nelson	269	2,411	7,263	73
Northland	23,892	38,042	75,596	37,138

Otago	52,907	70,101	3,473	829
Southland	43,895	39,659	2,611	541
Taranaki	6,460	9,366	9,089	1,259
Tasman	7,654	25,265	54,665	3,955
Waikato	105,152	110,180	78,583	4,601
Wellington	22,083	23,644	16,327	7,887
West Coast	24,107	6,559	10,056	96

**Table 1: Area of plantation forest in each NES PF Erosion Susceptibility Classification by Region (Source MPI: estimated by intersecting the ESC with the Land Cover Database V3)**

- 19 Each of the regulations in the NES PF was developed by the working group and included consideration of all of the existing regional and district council rule sets for forestry at that time, with the working group aiming to develop best practice rules to control environmental impacts. Somewhat inevitably this approach meant that the NES PF resulted in an increase in the level of regulation of forestry activities across the country as compared to the previous regional plan rules. The industry was prepared to accept the ramping up of regulation in order to achieve consistency and to encourage good environmental outcomes in our industry. The scale of forestry company's activities, often spanning multiple districts and regions, means there is significant benefit for us in having one consistent set of rules across the country.
- 20 The Mechanical Land Preparation rules were developed by the group with consideration of land preparation activity rules in Regional Plans where they existed. At that time only eight regions had rules, with permitted activity conditions generally relating to slope thresholds, riparian setbacks and requirements to follow the contour for activities involving actual cultivation of the soil (v-blading, humping and hollowing).
- 21 There are a range of pre-plant land preparation activities in forestry that fall within the description of 'mechanical land preparation' including soil cultivation (ripping, mounding, spot cultivation), mechanical raking, wind rowing, blading and in some instances, roller crushing. Wind rowing (also referred to as stick raking) is the lowest risk of these activities, given that the goal of well executed stick raking is to leave the soil and surface duff layer undisturbed as far as is practical. It is simply to clear away slash hindrance from the previous crop to enable the planters safe access for planting.

- 22 The regulations that the group developed took consideration of the existing rules. Through that process it was determined that due to the low risk associated with mechanical land preparation, permitted activity status was appropriate on all ESC classes, subject to a range of conditions, including a slope limit for mechanical land preparation activities that affect the subsoil.
- 23 The issue of mechanical land preparation following the contour was specifically considered and it was recognised that in some instances practicality and safety considerations mean that this cannot be achieved. On steeper slopes it is simply not safe to drive across the slope in a machine. For this reason, regulation 74 contains an exception to the requirement for mechanical land preparation to follow the land topography and permits windrows perpendicular to the contour of the land so that safety for machine drivers is maintained.
- 24 This is typically carried out by placing a wind row along the top of the slope which generally creates a very effective sediment barrier, should there be any sediment loss from the slope.

**Regional Plan provisions for mechanical land preparation in regions with high erosion susceptibility**

- 25 The company that I work for manages forests over six regions – Northland, Auckland, Waikato, Bay of Plenty, Hawkes Bay and Horizons. As can be seen from Table 1, all of those regions have considerably higher areas of plantation forest in high and very high ESC classes compared to Southland.
- 26 In all of these regions mechanical land preparation is carried out under the NES PF regulations.
- 27 I personally am not aware of any significant environmental incidents or compliance issues arising from mechanical land preparation activities in plantation forestry, either before the NES PF or since.
- 28 I consider it is not necessary for me to comment more specifically on issues of land stability, as Christopher John Phillips who has provided a statement has carried out most of the research that I would rely on. I confirm that I agree with the conclusions of that research and the content of his statement in this regard.

**Questions in the document 'Expert Conference – Planning - Joint Witness Statement #4'**

29 I have considered the questions in the document 'Expert Conference = Planning – Joint Witness Statement #4' and have included my responses below.

***Cultivation definition***

1. *What are the practical and operational implications associated with having to undertaking windrowing parallel to contour when the slope is greater than 10 degrees? In what situations may this be unsafe?*

30 The key limitation is safety. To windrow across the slope requires the machine to drive across the slope which is clearly more hazardous and unstable on steeper slopes. For this reason it is necessary to drive the machine up and down the slope on steeper contours.

***Stick raking/windrowing***

2. *Is stick raking/windrowing any different in terms of risk of sediment loss to other cultivation or slopes above 20 degrees?*

31 Under any land cover, including pasture, the risk of sediment loss increases with slope.

32 By comparison to other forms of cultivation windrowing is one of the lowest risk plantation forestry activities, and significant lower risk than actual cultivation of the soil, due to the fact that it does not cause deep soil disturbance.

33 The goal of well executed windrowing is to leave the soil layer undisturbed as far as practical. By comparison agricultural cultivation is deliberately aimed at loosening and breaking up the soil to improve crop growth, but in doing so fully destabilises the soil structure to the depth of cultivation.

34 As I explain above, the windrows themselves can be used to control sediment by placing them in strategic locations across the slope, creating a barrier which effectively traps any mobilised sediment.

3. *What are the risks from sediment runoff from stick raking? How significant are these risks compared to other forestry and cultivation activities?*

35 As described above, in my experience the risk of sediment mobilisation from stick raking/windrowing is significant lower than true soil cultivation which disturbs the soil. I have personally experienced the relative risks of windrowed plantation forestry cutover compared to conventional agricultural cultivation. Through the period 2000 to 2008 I observed the

impacts of forest to farm conversions in the Central North Island where I am based. As part of the conversion process the new landowners ripped out the former plantation forest stumps and cultivated the soils to form a smooth bed for pasture. During this time a number of significant erosion events occurred on the new farmland during heavy rainfall events, resulting in activation of large scale gully erosion and sediment loss on land that had been stable under two and in some instances three rotations of plantation forestry. Cutover directly adjacent to the damaged farmland remained fully intact in the same events. This provided a graphic illustration of the relative stability of windrowed cutover as compared to cultivated soil, due to the cutover having an undisturbed soil profile, the stabilising effect of the old stumps and roots, and also the rough ground and presence of slash in cutover, which acts to slow down run off and encourage infiltration, further reducing the erosive effect of runoff.

- 36 As noted above, I am not aware of any significant environmental incidents arising from windrowing.

*4. What are the most effective measures to mitigate the risk of sediment runoff from stick raking?*

- 37 The most effective measure is to execute the windrowing well, so as to minimise disturbance of the underlying soil profile. If this is undertaken well there should be minimal sediment loss occur, until full revegetation of the site occurs. Where there is risk of sediment loss the most effective measure is to place a row of windrowing across the contour at the base of the slope.

- 38 Due to the disperse nature of windrowing and the low risk of sediment loss it is not typical to use other methods of sediment control such as sediment traps or ponds.

*5. Are the NES-PF controls for mechanical land preparation (including stick raking) considered to be effective in reducing the risks from sediment runoff?*

- 39 In my opinion yes. Over my 21 years of working in plantation forestry I am not aware of mechanical land preparation having resulted in any significant sediment loss issues. By comparison I have seen large scale sediment loss from land that was stable under plantation forest cover, when it was converted to farmland and cultivated for agriculture.



*6. Are there circumstances in the Southland region that justify a more stringent approach than the NES-PF in relation to stick raking?*

40 Being based in the North Island, I am personally not familiar with the Southland Region. However based on the Erosion Susceptibility Classification of the forestry land in the region I would question the justification for needing more stringent rules.

*7. Will application of the control in the NES-PF result in a reduction in sediment loss during stick raking/windrowing relative to what would occur under controls in Rule 25?*

41 The control in rule 25 (to follow the contour) cannot practically be complied with. It will effectively require a consent for windrowing in a direction that is perpendicular to the contour, which in all likelihood will end up with the same or similar conditions as the NES PF.

***Critical source areas and setbacks***

*8. What are the likely practical implications and costs associated with identifying 'critical source areas' within a plantation forest?*

42 I am not familiar with the use of critical source areas in a regulatory sense given this is a Southland region approach. I do however understand the thinking behind identifying overland flow paths as source of nutrient and sediment loss, particularly for intensive farming such as cropping and winter grazing. In production forestry the key issue is to avoid excessive disturbance in gully bottoms during harvesting, that could lead to sediment loss. I do not consider this is a particularly material issue for windrowing, given that the goal of windrowing is to minimise ground disturbance and the area will rapidly regenerate vegetation cover following establishment of the new crop.

*9. How effective are the following measures likely to be in terms of mitigating the risks from erosion and sediment runoff: a. Establishing sediment detention when stick raking is undertaken in identified critical source areas<sup>4</sup>?*

43 In my opinion constructing sediment detention ponds below areas of wind rowing is impractical based on the widely dispersed nature of the activity and unnecessary given the risk it poses. Construction of the number of ponds that would be required to capture runoff from the entire area would

in itself create more earthworks and soil disturbance, and potentially greater risk of sediment loss than the wind rowing.

*b. Graduated setbacks for all water bodies based on slopes?*

44 This seems to be overcomplicating the situation for a very low risk activity. The NES PF specifies standard setbacks of 5m and 10m.

*10. What are the likely practical and operational implications associated with:  
a. Establishing sediment detention when stick raking is undertaken in identified critical source areas?*

*b. Graduated setbacks for all water bodies based on slope?>*

45 Refer answers above.

### **Conclusion**

46 For the reasons set out above, it is my opinion that the effects of windrowing can be effectively managed when undertaken in accordance with the NES PF and good industry practice.

47 I am not aware of any evidence to justify a more stringent approach than the NES PF for the activity of windrowing in the Southland Region.

Dated 25 November 2021



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Sally Barker Strang