

# APPENDICES

# APPENDIX A

## INDIGENOUS TREE SPECIES REFERRED TO IN THE STANDARDS AND GUIDELINES

(as defined by group in the Forests Act)

### KAURI AND PODOCARPS

Kauri	<i>Agathis australis</i>
Rimu	<i>Dacrydium cupressinum</i>
Kahikatea	<i>Dacrycarpus dacrydioides</i>
Matai	<i>Prumnopitys taxifolia</i>
Miro	<i>Prumnopitys ferruginea</i>
Totara	<i>Podocarpus totara</i>
Hall's totara	<i>Podocarpus hallii</i>
Silver pine	<i>Manoao colensoi</i>
Kaikawaka	<i>Libocedrus bidwillii</i>

### BROADLEAVED HARDWOODS

(other than beech and including light-demanding hardwoods, e.g. manuka and kanuka)

Tawa	<i>Beilschmiedia tawa</i>
Taraire	<i>Beilschmiedia tarairi</i>
Hinau	<i>Elaeocarpus dentatus</i>
Pokaka	<i>Elaeocarpus hookerianus</i>
Pukatea	<i>Laurelia novae-zelandiae</i>
Northern rata	<i>Metrosideros robusta</i>
Southern rata	<i>Metrosideros umbellata</i>
Rewarewa	<i>Knightia excelsa</i>
Kamaha	<i>Weinmannia racemosa</i>

Towai	<i>Weinmannia silvicola</i>
Quintinia	<i>Quintinia acutifolia</i>
Puriri	<i>Vitex lucens</i>
Maire	<i>Nestegis</i> spp.
Mangeao	<i>Litsea calicaris</i>
Kanuka	<i>Kunzea ericoides</i>
Manuka	<i>Leptospermum scoparium</i>

## **BEECHES**

Red beech	<i>Nothofagus fusca</i>
Silver beech	<i>Nothofagus menziesii</i>
Hard beech	<i>Nothofagus truncata</i>
Black beech	<i>Nothofagus solandri</i>
Mountain beech	<i>Nothofagus solandri</i> var. <i>cliffortioides</i>

# APPENDIX B

## INDIGENOUS AVIFAUNA REFERRED TO IN THE STANDARDS AND GUIDELINES

Kaka	<i>Nestor meridionalis meridionalis</i>
Kakariki	<i>Cyanoramphus</i> spp.
Rifleman	<i>Acanthisitta chloris</i>
Yellowhead	<i>Mohoua ochrocephala</i>
Keruru (pigeon)	<i>Hemiphaga novaeseelandiae novaeseelandiae</i>
Kiwi	<i>Apteryx</i> spp.

# APPENDIX C

## TABLES LINKING MAF STANDARDS TO KEY PROVISIONS IN THE FORESTS ACT 1949

### GENERAL NOTES

1. Clause numbers refer to clauses in the Second Schedule to the Forests Act 1949, while other numbers refer to provisions in the Forests Act, mainly in Part 3A.
2. These tables refer to provisions that are immediately relevant to particular elements of the standard. In a situation where someone queries the application of the element to their particular circumstances, other provisions of the Forests Act may be relevant.
3. Sections 67F(3), 67H(1) and 67J(1) apply to all notes on SFM Plans. Section 67M(7) applies to all notes on SFM Permits. Reference to Clause 9 brings Section 67H(2) into play.

### CRITERION 1

STANDARD ELEMENT	SFM PLANS	SFM PERMITS
Standard 1.1.1.1		Standard 1.1.1.1
1	S2 “landholding” and “owner”, 67F(1), Clauses 1, 7, 8 and 10.	1 S2 “landholding” and “owner”, 67M(1), Clauses 8 and 10
2	Clause 3	2 67M(1)
3	Clause 2	3 67M(2)(b)
4	Clause 4	4 67M(1) and (2)(a)
5	Clause 5	5 67M(1) and (2)(a)
6	Clause 6	6 Clause 8(a)
7	67H(1)(c), Clauses 7 and 8	7 Clause 8(b)
8	Clause 8(a)	
9	Clause 8(b)	

## CRITERION 2

STANDARD ELEMENT	SFM PLANS	SFM PERMITS
Standard 2.1.1.1	67N and Clause 10(2)(a), Clause 8(b)	67N and Clause 10(2)(a), Clause 8(b)
Standard 2.1.2.1	67N, Clauses 8, 9 and 10(2)(a), 67H(2)(c)	67N, Clauses 8, 9 and 10(2)(a), 67H(2)(c)
Standard 2.1.2.2	67N, Clauses 8, 9 and 10(2)(a), 67H(2)(c)	67N, Clauses 8, 9 and 10(2)(a), 67H(2)(c)
Standard 2.1.3.1	Clauses 7, 8, 10(1), (2)(b), (c) and (d)	Clauses 8, 10(1), (2)(b), (c) and (d)
Standard 2.1.4.1	Clauses 7, 8(a) and (b), 10, 67O (for beech), 67H(1)(e) and 67H(2)(b)	Clauses 8(a) and (b), 10, 67O (for beech), 67H(2)(b)
Standard 2.2.1.1	Clause 10(2)(b)	Clause 10(2)(b)
Standard 2.2.1.2	Clause 10(2)(b)	Clause 10(2)(b)
Standard 2.2.1.3	67H(2)(b), 67T(e), Clauses 8, 9(2)(e), 9(3)(b) and (c), and 10(2)(b)	67H(2)(b), 67T(e), Clauses 8, 9(2)(e), 9(3)(b) and (c), and 10(2)(b)
Standard 2.2.1.4	67V, Clauses 4, 8, 9(3)(b) and (c), and 10(2)(b)	67V, Clauses 8, 9(3)(b) and (c), and 10(2)(b)
Standard 2.2.1.5	67H(2)(c), Clauses 9(2) and 10(1) and (2)(b)	67H(2)(c), Clauses 9(2) and 10(1) and (2)(b)
Standard 2.2.1.6	Clauses 8(b), 9(2), 10(1) and (2)(b), 67H(2)(c)	Clauses 8(b), 9(2), 10(1) and (2)(b), 67H(2)(c)
Standard 2.2.1.7	Clause 10(2)(d)	Clause 10(2)(d)
Standard 2.2.1.8	Clause 10(2)(d)	Clause 10(2)(d)
Standard 2.2.1.9	67H(2)(b), 67T(e), Clauses 8, 9(3)(b), (c), and (e), 10(2)(d)	67H(2)(b), 67T(e), Clauses 8, 9(3)(b), (c), and (e), 10(2)(d)
Standard 2.2.1.10	Clause 10(2)(d)	Clause 10(2)(d)
Standard 2.2.1.11	Clause 10(2)(c)	Clause 10(2)(c)
Standard 2.2.1.12	67O(2) to (4)	67O(2) to (4)
Standard 2.2.1.13	Clause 10(3)	Clause 10(3)
Standard 2.2.2.1	Clause 10(2)(e)	Clause 10(2)(e)
Standard 2.2.2.2	Clause 10(2)(e)	Clause 10(2)(e)
Standard 2.2.3.1	Clauses 8(a) and 10(2)(f)	Clauses 8(a) and 10(2)(f)
Standard 2.2.3.2	Clauses 7 and 10(2)(f)	Clause 10(2)(f), although there are no specific requirements on planting density
Standard 2.2.3.3	Clause 10(2)(f)	Clause 10(2)(f)
Standard 2.3.1.1	67N(b), Clauses 8 and 10(2)	67N(b), Clauses 8 and 10(2)
Standard 2.3.1.2	67T(d) and Clause 10(2)(a)	67T(d) and Clause 10(2)(a)
Standard 2.3.1.3	67H(1)(a), Clauses 1 and 10(2)(a)	67M(2)(b) and Clause 10(2)(a)
Standard 2.4.1.1	Clauses 7 and 8	Clause 8
Standard 2.4.1.2	Clauses 7 and 8	Clause 8
Standard 2.4.1.3	67F(2) and (3), 67H(1)(f), Clauses 7 and 8	67F(2), Clause 8
Standard 2.4.2.1	67B, 67H(1)(f), Clauses 7 and 8	
Standard 2.4.3.1	Clauses 7 and 8	

## CRITERION 3

STANDARD ELEMENT	SFM PLANS	SFM PERMITS
Standard 3.1.1.1	Clauses 2(a) and 6	67M, 67H(2)(c) and Clause 9(1)
Standard 3.1.1.2	67H(1)(c), and Clauses 1, 2, 6, 7 and 8, 67F(3)	Clause 8
Standard 3.1.1.3	Clauses 6(c), 7, and 8	Clause 8
Standard 3.1.1.4	67H(1)(c), and Clauses 6(c), 7 and 8	Clause 8
Standard 3.1.1.5	Clauses 6, 7 and 8	Clause 8
Standard 3.1.1.6	Clauses 6, 7 and 8	Clause 8
Standard 3.1.1.7	67N, Clauses 6, 7 and 8	Clause 8
Standard 3.1.1.8	67H(1)(c), and Clause 6	MAF Responsibility where required re Section 67(M)(3) & (4)
Standard 3.1.2.1	Clause 6(c)	MAF Responsibility where required re Section 67(M)(3) & (4)
Standard 3.1.2.2	67H(1)(b), Clauses 6(c) and 10(1)	MAF Responsibility where required re Section 67(M)(3) & (4)
Standard 3.1.3.1	67H(1)(b), Clauses 6(c) and 10(1)	
Standard 3.1.3.2	67H(1)(b), Clauses 6(c) and 10(1)	
Standard 3.2.1.1	67H(1)(b), Clauses 6, 7, and 10(1)	67M(3) and (4), Clause 10(1)
Standard 3.2.1.2	67H(1)(b) and (d), 67H(2)(b) and (c), Clauses 7, 8, and 10(1) and (2)	
Standard 3.2.1.3	67H(1)(c), 67T(d), Clause 7	67T(d), Clause 9(3)
Standard 3.2.2.1	S2 “timber”, 67D(1)(a) On “natural values” – Clauses 7, 8, 9, 10(1)	S2 “timber”, 67D(1)(a), On “natural values” – Clauses 8, 9, 10(1)
Standard 3.3.1.1	67H(1A) and (2)(b), Clause 9	67H(1A) and (2)(b), Clause 9
Standard 3.3.1.2	67H(2)(b), Clause 9(2)	67M(2)(a) and (b), and Clause 9(2)
Standard 3.3.1.3	Clause 9(2)	Clause 9(2)
Standard 3.3.1.4	67T(d) or (f)	67T(d) or (f)
Standard 3.4.1.1	67I(1)(b), (2) and (5)	67I(1)(b), (2) and (5)
Standard 3.4.2.1	67I(1)(b), (2) and (5)	
Standard 3.4.2.2	67H(1)(c), 67I(1)(b), (2) and (5), 67R, Clauses 7, 8 (Re penalty provisions) 67T	(Re penalty provisions) 67T
Standard 3.4.3.1	67I(2) and (5)	
Standard 3.4.3.2	67I(1)(b) and (2)	
Standard 3.4.3.3	67I(1), (2) and (5); S 13 Interpretation Act 1999 may also be relevant where “over-cutting” is caused by an error or omission; e.g. wrong information when applying for approval	

**CRITERION 4**

<b>STANDARD ELEMENT</b>	<b>SFM PLANS</b>	<b>SFM PERMITS</b>
Standard 4.1.1.1	Clauses 4, 7, 8(b) and 9	Clause 8(b) and 9
Standard 4.1.1.2	67V, Clauses 4, 7, 8(b) and 9(3)	67V and Clauses 8(b), 9(3)
Standard 4.1.1.3	67V, and Clauses 4, 7, 8(b), and 9(3)	67V and Clauses 8(b), 9(3)
Standard 4.2.1.1	67T(d), 67V, Clause 4	67T(d), 67V
Standard 4.2.1.2	67V, Clauses 4, 7 and 8	67V, Clause 8
Standard 4.2.1.3	67V, Clauses 4, 8 and 9	67V, Clauses 8 and 9
Standard 4.3.1.1	Clauses 8 and 9	Clauses 8 and 9

**CRITERION 5**

<b>STANDARD ELEMENT</b>	<b>SFM PLANS</b>	<b>SFM PERMITS</b>
Standard 5.1.1.1	67B, 67H(1)(c) and Clause 8	Clause 8
Standard 5.1.1.2	67B, 67H(1)(c) and Clause 8	67B and Clause 8
Standard 5.1.1.3	67B and Clause 8	67B and Clause 8
Standard 5.1.1.4	67B and Clause 8	67B and Clause 8
Standard 5.2.1.1	Clauses 7 and 8	Clause 8
Standard 5.2.1.2	67H(2)(c), Clauses 7, 8, 9(2), 9(3)(b) and (d)	67H(2)(c), Clauses 8, 9(2), 9(3)(b) and (d)
Standard 5.2.1.3	67B, Clauses 7 and 8	67B and Clause 8
Standard 5.2.1.4	67B, Clauses 7 and 8	
Standard 5.3.1.1	Clause 8(a)	Clause 8(a)

**CRITERION 6**

<b>STANDARD ELEMENT</b>	<b>SFM PLANS</b>	<b>SFM PERMITS</b>
Standard 6.1.1.1	67B, 67H(1), 67I(1)(b)(i), 67V, Clauses 4, 7 and 9(3)	67B, 67I(1)(b)(i), 67V, Clause 9(3)
Standard 6.2.1.1	67B, 67H(1), 67I(1)(b)(i), 67V, Clauses 4, 7 and 9(3)	67B, 67I(1)(b)(i), 67V, Clause 9(3)
Standard 6.2.1.2	67B, Clauses 7, 9 and 10(2)(c)	67B, Clauses 9 and 10(2)(c)
Standard 6.2.1.3	67B, Clauses 7, 8, 9 and 10(2)(c)	67B, Clauses 8, 9 and 10(2)(c)
Standard 6.2.1.4	67B, Clause 9(3)(b) and (c)	67B, Clause 9(3)(b) and (c)

## CRITERION 7

STANDARD ELEMENT	SFM PLANS	SFM PERMITS
Standard 7.1.1.1	Owner inspection – 67H(1)(c) and (f), 67F(3), Clauses 7, 8(b) and 10(2)(b). MAF inspection – 67I(2) and (5), 67R, 71B	Owner inspection – Clauses 8(b) and 10(2)(b). MAF inspection – 67I(2) and (5), 67R, 71B
Standard 7.1.2.1	Owner inspection – 67H(1)(c) and (f), 67F(3), Clauses 7 and 10(2)(B). MAF inspection – 67I(2) and (5), 67R, 71B	Owner inspection – Clause 10(2)(b). MAF inspection – 67I(2) and (5), 67R, 71B
Standard 7.1.3.1	Owner inspection – 67H(1)(c) and (f), 67F(3), Clauses 7 and 8(b). MAF inspection – 67I(2) and (5), 67R, 71B	Owner inspection – 67M(7), Clause 8(b). MAF inspection – 67I(2) and (5), 67R, 71B
Standard 7.2.1.1	Owner inspection – 67H(1)(c) and (f), 67F(3), clauses 7 and 10(2)(b). MAF inspection – 67I(2) and (5), 67R, 71B “Amenity values” 2	
Standard 7.3.1.1	67B, 67H(1)(c), 67I(1)(b)(i), (2), and (5), Clauses 7 and 8	
Standard 7.3.1.2	67B, 67H(1)(c), 67I(1)(b)(i), (2), and (5), Clauses 7 and 8	
Standard 7.4.1.1	67H(1)(c), 67I(2) and (5), 67T(d), Clauses 7, 8, 9(3)(a), and 10(1), (2)(e) and (f)	67I(2) and (5), 67T(d), Clauses 8, 9(3)(a) and 10(1), (2)(e) and (f)
Standard 7.5.1.1	67H(1)(c), 67I(2) and (5), 67T(d), Clauses 7, 8, and 10(2)(e) and (f)	67I(2) and (5), 67T(d), Clauses 8, 10(2)(e) and (f)
Standard 7.5.1.2	67H(1)(c), 67I(2) and (5), 67T(d), Clauses 7, 8, and 10(1), (2)(e) and (f)	67I(2) and (5), 67T(d), Clauses 8, 10(1), (2)(e) and (f)
Standard 7.5.2.1	67H(1)(c), Clauses 7, 8, 10(2)(e) and (f)	Clauses 8, 10(2)(e) and (f)
Standard 7.5.3.1	67H(1)(c), Clauses 7, 8, 10(2)(e) and (f)	
Standard 7.5.4.1	67H(1)(c), Clauses 7, 8, 10(1), (2)(e) and (f)	Clauses 8, 10(1), (2)(e) and (f)
Standard 7.5.4.2	67H(1)(c), 67H(2)(c), 67T(d), Clauses 6(a), 7, 9(2) and 9(3)	67H(2)(c), 67T(d), Clauses 9(2) and 9(3)
Standard 7.5.4.3	67H(1)(c), Clauses 7, 8, and 9	Clause 8(b) and 10(1)
Standard 7.5.5.1	67H(1)(c), 67Q(2) (but not at present for actual form of record), 67T(d), Clauses 7 and 10(1)	67T(d), 67Q(2) (but not at present for actual form of record), Clause 10(1)

## CRITERION 8

STANDARD ELEMENT	SFM PLANS	SFM PERMITS
Standard 8.1.1.1	Where possible should interpret Forests Act provisions in a manner consistent with all the other legislation, but see below.	Where possible should interpret Forests Act provisions in a manner consistent with all the other legislation, but see below.
Standard 8.1.1.2	67V and Clause 4	67V, Clause 8
Standard 8.1.1.3	67V, Clauses 4, 7, and 8	Where possible should interpret Forests Act provisions in a manner consistent with all the other legislation.
Standard 8.1.1.4	+ Where possible should <b>interpret Forests Act provisions</b> in a manner consistent with all the other legislation. While it seems logical that HSE and Rural Fires regimes take precedence over SFM plans and permits, it is by no means black-and-white. There is a need to consider each situation on its particular facts.	See +
Standard 8.1.1.5	See +	See +

# APPENDIX D

## GLOSSARY OF TERMS

The definitions give meaning to terms applied to SFM pursuant to the Forests Act. Words enclosed in quotation marks are taken from the Forests Act or are terms used in the body of these standards and defined in this glossary.

<b>Accuracy</b>	How close a sample estimate of a population (e.g. sample estimate of “stand” volume) is to the true population value. The true value is not usually known; sample accuracy is normally judged from sample “precision”.
<b>Adaptive management</b>	A systematic process for continually improving management policies and practices by learning from the outcomes of operational programmes.
<b>Advanced growth</b>	Young trees that have become established naturally before any harvesting of older trees is undertaken. For the purpose of this standard, advanced growth is defined as “seedlings”, “saplings” and “poles”.
<b>Adventive weeds</b>	Undesirable plants, both herbaceous and woody, that appear outside their usual habitat.
<b>Allowable harvest</b>	The quantity of timber that may be harvested annually, usually expressed as species per unit area (e.g. “m <sup>3</sup> /ha of red beech”) or as a total annual quantity for the forest area as a whole. In the case of an SFM Permit, the allowable harvest is the volume

of timber (by species) available for harvest over the term of the permit.

- Amenity values/Amenities** “Those natural or physical qualities and characteristics of an area that contribute to people’s appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes.”
- Anthropogenic** Caused by human activity (e.g. modification of a forest by harvesting or burning trees).
- Appraisal (of forest)** An informed judgement of forest type status and condition by way of an estimate of standing volume, size-class distribution and regeneration by species, and a description of forest type attributes including flora and fauna, soil and water, and amenity values.
- Basal area** The area of the cross section of the stem of a tree at breast height (1.4 metres above ground level) including bark. Basal area is often used to provide a measure of site occupancy of a species or group of species, expressed as “m<sup>2</sup>/ha”.
- Bole** A stem with one or more leaders.
- Bias** A systematic error (of measurement) that affects all measurements the same way. A sample mean may be precise but biased; that is, the sample measurements are clustered closely about their mean but do not represent the true value.

- Biodiversity** The numbers and distribution of all flora and fauna from time to time existing on the land.
- Broadleaved** Used in the Forests Act in the terms “shade-tolerant and/or exposure-sensitive broadleaved hardwood species”. A term applied to angiosperms: trees and shrubs that reproduce by producing seeds in an ovary and having leaves of relatively large area. Distinguished in the Forests Act from (small-leaved) “light-demanding hardwoods” (also angiosperms) such as beech.
- Centre girth diameter** Centre girth diameter means the diameter (outside bark) of a log at a point equidistant from each end, where diameter is determined from measured circumference using the formula  $\text{circumference}/\pi = \text{diameter}$ . In the case of toplogs in standing trees where circumference cannot be measured manually, centre girth diameter is determined by visual estimate or by use of an appropriate measuring device (e.g. Spiegel relaskop).
- Canopy gap** A space on the forest floor created by the felling, death or toppling of a tree or trees. The area is defined by the vertical projection to the ground of the edges of the crowns of standing trees surrounding the canopy gap. Canopy gap area may diminish rapidly as the crowns of edge trees grow to occupy the gap, referred to as “gap infilling”. For this reason, “expanded gap” area is a more repeatable measure over time.

<b>Composition</b>	The variety of species present within an area of forest.
<b>Confidence limits</b>	The statistical way of indicating the reliability of an estimate calculated from (preferably) a random sample. Usually expressed as a value above and below the sample mean within which the true mean will lie, at a specified probability level for sampling. For example, the volume of rimu in a forest may be estimated, on the basis of a sample measurement of trees, to be 100 cubic metres per hectare (“m <sup>3</sup> /ha”) ± 10 m <sup>3</sup> /ha at 95 percent probability level of sampling. The 95 percent lower and upper confidence limits are thus 90 m <sup>3</sup> /ha and 110 m <sup>3</sup> /ha and this range is the 95 percent “confidence interval”. This means that the mean stand volume is between 90 m <sup>3</sup> /ha and 110 m <sup>3</sup> /ha unless a one in twenty chance has occurred in sampling the forest. The wider the confidence limits, the less reliable the estimate is deemed to be.
<b>Coupe</b>	An area of clear-cut (felled) forest where all trees are felled in the designated area.
<b>Crown</b>	Point of a tree at which, owing to heavy branching, no further utilisation is considered possible i.e., beyond which there is no timber (excepting any toplogs) capable of being milled.
<b>Density</b>	The number of stems per unit area, usually expressed as stems per hectare (sph).

<b>Diameter at breast height (dbh)</b>	The forestry standard height at which diameter of standing trees is measured for inventory purposes (e.g. calculation of standing volume, basal area, determination of size class for individual stems). In New Zealand this is 1.4 m above ground level. For trees on sloping ground, dbh is measured from ground level on the uphill side of the stem.
<b>Directional felling</b>	Felling a tree in a pre-determined direction, usually with the aim of minimising damage to adjacent trees or advanced growth.
<b>Disturbance history</b>	Past events, both natural and anthropogenic, that have influenced the “composition” and “structure” of a forest.
<b>Domestic stock</b>	Referred in the Forests Act as “stock”. Taken to include, but not confined to, sheep, cattle, pigs, goats, deer and horses.
<b>Estimate</b>	Usually derived from a measured sample (forest “inventory”). Used to quantify a characteristic of a population (e.g. stand volume). In respect of SFM Permits “estimate” also includes predictions based on documented information pertaining to a similar forest or group of forests, or from a subjective assessment based on the knowledge and experience of the assessor, or both. In the latter two circumstances the estimate will therefore not be accompanied by confidence intervals and its reliability cannot be expressed in statistical terms.

<b>Expanded gap</b>	The area calculated from measurement between the trunks of trees nearest to and surrounding the “canopy gap”.
<b>Exposure-sensitive</b>	Tree species that are susceptible to damage to their foliage resulting from increased exposure to wind or frost (e.g. tawa on some sites).
<b>Felling cycle</b>	The interval between successive harvests in a forest area.
<b>Forest area</b>	The area within which harvesting will be undertaken, defined on a map attached to a registered SFM Plan or Permit.
<b>Forest type</b>	A class of forest vegetation that is sufficiently distinct to require different management from other forest types.
<b>Frass</b>	The excrement of insects. In the case of wood-boring insects, frass is otherwise known as borer dust.
<b>Growth rate</b>	The annual or periodic increase in the dimensions of a forest variable or parameter (e.g. diameter and height or basal area and volume, respectively).
<b>Harvest(ing)</b>	The process of felling and transporting logs within the forest area.
<b>Harvest rate</b>	The annual or periodic allowable harvest. May be expressed as m <sup>3</sup> /ha/annum, or m <sup>3</sup> /annum, or m <sup>3</sup> /period for the “forest area”. Defined in a registered

	<p>SFM Plan as the annual allowable harvest from the “forest area”. Defined in a registered SFM Permit as the volume of timber available for harvest over the term of the permit.</p>
<b>Harvest regulation</b>	<p>The technical and administrative aspects of controlling the quantity of timber harvested from the forest so that the “allowable harvest” is not exceeded.</p>
<b>Indicator</b>	<p>A quantitative or qualitative variable that can be measured or described which, when observed periodically, demonstrates trends (e.g. the change in distribution or density of a plant or animal species).</p>
<b>Indigenous</b>	<p>A species of flora or fauna that occurs naturally in New Zealand or arrived in New Zealand without human assistance.</p>
<b>Indigenous forest land</b>	<p>“Land wholly or predominantly under the cover of indigenous flora.”</p>
<b>Industrial wood</b>	<p>Applied to wood that is not of “sawlog” quality. Usually refers to wood suitable for production of pulp or other reconstituted wood products.</p>
<b>Ingrowth</b>	<p>Stems attaining a predetermined size during a measurement period (e.g. poles growing into the tree size class (diameter of 30 cm or more) between two measurements).</p>

<b>Inventory</b>	A survey of a forest area to provide information on forest species including, but not limited to, information on the quantity of timber of commercial tree species present and their growth rates.
<b>Landholding</b>	“An estate, right, title, or interest of any kind in or over an area of land by or under which indigenous timber may be harvested; but does not include an interest by way of charge or security.”
<b>Light-demanding</b>	Refers to tree species requiring relatively high levels of light for seedling survival, growth and recruitment into the forest canopy e.g. some beech species and “seral” species such as manuka and kanuka.
<b>Low-impact techniques</b>	The management of forests in such a way that the impacts on the forest from conducting “silvicultural” operations are minimal (e.g. the use of low ground-pressure tractors to minimise soil compaction).
<b>Merchantable</b>	That quantity of a tree assessed to contain timber “capable of being volume milled”.
<b>Micro-organism</b>	Includes algae, bacteria, fungi and viruses.
<b>Milled (capable of being)</b>	Timber having been subjected to an operation or process involving a sawmill. Capable of being milled (millable) means timber of sufficient dimension (including defect) to enable production of sawn timber.

<b>Modified forest</b>	Forest that as a result of previous harvesting or other human interference displays characteristics that differ from unmodified forest of the same type.
<b>Natural values</b>	The attributes of the individual and interrelated biological and physical components, and processes of an area (this is further discussed under Criterion 2).
<b>Near-natural</b>	Forest management under silvicultural systems that aim to approximate the natural dynamics of similar stands not under management, while economically and safely maintaining (or where appropriate improving) stand and ecosystem health and quality; and where the impacts of forest management are within the range of naturally occurring changes in the forest.
<b>Owner (landowner)</b>	“Any person who owns a ‘landholding’ and includes the owners of any landholding where it is owned by two or more persons and a group of owners of landholdings who are operating under the same Sustainable Management Plan.”
<b>Periodic harvest</b>	The maximum “allowable harvest” permitted for a given period, expressed either on a per hectare basis or for the forest area as a whole (e.g. m <sup>3</sup> /ten year period).
<b>Periodic mean annual increment</b>	The average annual increase or decline in, for example, merchantable stand volume (m <sup>3</sup> /ha) over a measurement period, including, in uneven-aged forest, average annual ingrowth, mortality, harvests and survivor growth over the measurement period.

- Permanent sample plot (PSP)** A permanently marked area within which the tree species and other forest variables are marked and measured at periodic intervals to provide estimates of forest growth and other forest change.
- Pest** While not defined in the Forests Act, pests are taken to include wild animals (pursuant to the Wild Animal Control Act 1977) including feral deer, possums, goats and pigs, where they are in sufficient numbers to seriously impact on natural values and forest regeneration. Other significant pests include the mustelids (ferrets, stoats and weasels), rats and insects such as wasps.
- Podocarp** Conifers (cone-bearers) belonging to the Podocarpaceae family, often referred to as softwood tree species. Of these, rimu is the most important timber-producing podocarp and is one of the most widespread tree species in New Zealand .
- Pole** Refer “size class”, and “advanced growth”.
- Precision** The degree of agreement of a series of measurements. Usually expressed as the standard error of the mean (a statistical term) or as confidence intervals, sample precision describes the size of the deviation of the of sample values about their own mean.
- Predators** Pest species that predate (kill and feed on) fauna including native birds and invertebrate species. Includes possums, mustelids, rats and wasps.

<b>Probable limits of error (PLE)</b>	Confidence limit expressed as a percentage of the sample “estimate”, i.e. mean. A term only used in New Zealand.
<b>Recruitment</b>	Trees that enter a particular size class or classes in a given time period (e.g. poles growing into the 30–39 centimetre tree size class in a given time or “recruitment” period.
<b>Representative species</b>	Synonymous with “indicator” species.
<b>Riparian</b>	In relation to vegetation, growing in close proximity to a watercourse, lake, swamp or spring, and often dependent on its roots reaching the water table.
<b>Sample</b>	A part of a population consisting of one or more sampling units selected and measured as representative of the whole.
<b>Sapling</b>	Refer “size class” and “advanced growth”.
<b>Scarification</b>	Disturbing the forest floor and exposing bare mineral soil to provide suitable conditions for the germination of natural seedfall.
<b>Seedling</b>	Refer “size class” and “advanced growth”.
<b>Senesce(nt)</b>	Trees that are becoming old and have passed the period of maximum growth.

- Seral** Part of a sequence of vegetation succession. Usually applied to forest species that colonise disturbed sites (e.g. resulting from natural events causing canopy gaps, or forest harvesting, fire, etc) and are succeeded by other, usually taller species that germinate and grow under the shelter of the seral species (e.g. manuka and kanuka).
- Shade-tolerant** Tree species that display the ability to regenerate and grow in shaded conditions (e.g. tawa is one of New Zealand's most shade-tolerant tree species).
- Silviculture (silvicultural)** The management of trees to provide timber (includes planting, pruning, thinning, and harvesting).
- Size class** Usually diameter classes used to describe stand structure and the merchantable element of the forest (e.g. seedling – 30 centimetres to 1.4 metres high; sapling – 1.4 metres high to 9.9 centimetres dbh; pole – 10 to 19.9 centimetres dbh; small tree – 20 to 29.9 centimetres dbh; tree – 30 to 39.9 centimetres dbh, 40 to 49.9 centimetres dbh etc.). N.B. Above “tree” size class categories are examples commonly used for forest descriptive purposes – for legal definition refer “Trees”.
- Smallwood** A term applied to roundwood too small to be milled and often utilised for posts, poles or firewood.

<b>Stand</b>	A community, particularly of trees, displaying sufficient uniformity as regards composition, spatial distribution and structure as to be distinguishable from adjacent communities (e.g. a forest area may consist of a number of differently aged stands of trees). Often loosely applied to the trees within a forest type.
<b>Stand composition (forest composition)</b>	The variety of tree species present in a stand (or within a given forest type).
<b>Standing volume</b>	The volume of the bole of a tree, obtained before the tree is felled, by the measurement of “dbh” and height to the point where the bole branches into the crown of the tree, or to a minimum diameter of 15 centimetres ( <b>whichever occurs first</b> ), with deductions only for visible abnormality or defect that renders any section of the bole not capable of being milled, and includes large branches (toplogs) contained within the crown of the tree that have a minimum small end diameter of 15 centimetres, a 20 centimetres <b>centre girth diameter and a</b> minimum length of 2.5 metres and are capable of being milled. Diameter (at a point where centre girth would be measured) and length dimensions of any toplogs in standing trees may be estimated. The volume of any tree that has been felled or has fallen naturally is measured in the same fashion. These measurements are usually used in conjunction with either a volume table or volume equation to determine standing volume (generally inside bark).

<b>Stand structure (forest structure)</b>	The manner in which the tree species are arranged within a stand (or forest type) on a three-dimensional basis (e.g. the presence and numbers of tree species in a range of height tiers (classes)). The “reconnaissance” forest description methodology provides for the recording of all plant species along with an indication of their relative abundance within predetermined height tiers (refer Criterion 3 Standard 3.1.1.2).
<b>Supplementary planting /restocking</b>	Planting of seedlings in the event that advanced growth (of kauri, podocarp and shade-tolerant or exposure-sensitive broadleaved hardwood species) is judged to be insufficient, or where there is a failure of regeneration in beech or light-demanding hardwood forest.
<b>Timber</b>	“Trees (excluding cuttings, suckers and shoots), woody plants able to be milled, and includes branches, roots, and stumps of trees and other woody plants able to be milled, logs, woodchips, wood products, veneer, tree ferns and tree fern fibre.”
<b>Trees</b>	“Not only timber trees but also all kinds of other trees, shrubs, and bushes, seedlings, cuttings, suckers and shoots of every description.”

<b>Toplog</b>	A length of stem or branch capable of being milled and occurring as one or more large branches from the bole section and/or in the crown of a tree – i.e. not contained within the bole. Minimum toplog dimensions are taken to be 15 centimetres small end diameter with 20 centimetres centre girth diameter, and 2.5 metres long.
<b>Units of measure</b>	<b>mm</b> – millimetre(s) <b>cm</b> – centimetre(s) <b>m</b> – metre(s) <b>ha</b> – hectare(s) <b>dbh</b> – diameter at breast height (1.4 m above ground level) <b>m<sup>2</sup>/ha</b> – square metres per hectare <b>m<sup>3</sup>/ha</b> – cubic metres per hectare <b>sph</b> – stems per hectare
<b>Volume</b>	The volume of a tree or log, expressed as cubic metres.
<b>Volume control</b>	Controlling the harvest from a forest by monitoring the standing volume of timber selected and harvested.
<b>Volume equation (and volume tables)</b>	A mathematically derived relationship permitting the calculation (or reading from a table) of the volume of the bole (usually inside-bark) from the measurement of variables such as dbh and height.
<b>Weed</b>	Undesirable vegetation, often comprising herbaceous plants, shrubs and ferns that have the potential to suppress forest regeneration.
<b>Wild animal</b>	Refer “pest.”

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