FOREST OWNERS ASSOCIATION

PERMANENT VIEWPOINT METHOD

FIELD MANUAL

VERSION 2.0

(DRAFT)

Produced by

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CONTENTS

1 DISCLAIMER

The CHH Viewpoint Condition Survey has been designed specifically to utilise the skill and expertise of New Zealand Forest Health Assessors (FHAs). The authors insist that Forest Health Condition Assessment, as described in this manual, be carried out only by qualified Forest Health Assessors, as opposed to forestry coordinators, technical crews, or otherwise.

A definition of a qualified FHA, in the authors' view, is described below:

FHAs are qualified by conforming to *both* of the following criteria:

1. Have obtained a current (New Zealand) National Certificate in Forest Health Surveillance.
2. Are being continually trained, coached and updated (in New Zealand) by experienced Forest Health Assessors / Forest Entomologists / Forest Pathologists, as part of their professional development.

The authors insist that no Forest Health Condition assessments, as described in this manual, be undertaken by untrained assessors. No responsibility is taken by the authors, for the incorrect use and application the following Condition Survey methodology.

2 INTRODUCTION

This manual covers the field operations in the establishment, assessment, and reporting on forest condition monitoring carried out under the Viewpoint method. The Condition Survey is a management tool as opposed to a detailed scientific survey. It is intended to flag problem areas and instigate further action, for example more detailed surveys and / or operational response. Further discussion of this approach to forest condition monitoring can be found in Hosking and Anderson 2003[1].

In summary the viewpoint condition monitoring methodology aims to deliver:

- a broad measure of forest condition change over time,
- early warning of increased impact of specific pests and diseases,
- knowledge of estate health status at a forest, regional, and national level,
- improved communication between forest health service providers and forest managers, and
- greater awareness of forest health issues at both a forest and company level.

This manual will cover the following key areas relevant to the field implementation of the strategy:

1. Forest level site allocation
2. Monitoring site establishment
3. Monitoring site assessment
4. Forest level reporting
5. Incursion response.

Equipment requirements are discussed under the relevant sections but assessors will require a GPS unit, a compass, and good quality binoculars to undertake this work.

[1] Hosking G. P. and Anderson S. (In Press). Towards a National Condition Monitoring Strategy. New Zealand Journal of Forestry.

3 VIEWPOINT SITE ALLOCATION

A number of rules have been developed as the basis for deciding the number and location of sites to be established in a specific forest area. These rules are to act as a guide, but input to the number and location of sites is encouraged from the forest managers or owner.

3.1 Number of sites

At an estate level it is proposed to have not less than one viewpoint site per 1,000 ha of forest. Where two or more forests adjoin, the forest manager should be consulted to determine the defining forest or where management unit boundaries occur

No forest will contain less than one site.

All forests greater than 1,000 ha will be included in the Permanent View Point (PVP) monitoring programme.

Forests less than 1,000 ha may be included, but this should be at the specific request of the owner or lessor, outside of the FOA Survey. In such cases, the data should be incorporated with the FOA database for ease of reporting.

3.2 Age class distribution

Establishment should aim to place ~80% of plots in an individual forest in stands aged between 3 and 18 years.

The remaining ~20% of plots should be located in stands aged 19 years and over. Companies that do not intensively sample age 1 and 2 stands during the establishment phase may wish include such stands in the survey.

The above rationale is based on the greater ability to influence tree health through normal forest management practice in the 3 to 18 year age classes.

3.3 Tree species

PVPs can be used for any tree species.

4 VIEWPOINT SITE ESTABLISHMENT

Site establishment is the most critical element in implementing the viewpoint based strategy. The quality of the viewpoint site will determine the quality of the assessment data. However, the quality of sites will vary depending on the geography of specific forest areas, the age of stands etc.

4.1 Site Access

The location of assessment sites will be influenced by site access and proximity to the FOA detection survey route.

Because of the basic principle of time and cost effectiveness of the viewpoint strategy, only in exceptional circumstances will sites be located away from vehicle access. Any such sites should be specifically justified and agreed by the forest manager.

As always, safety is paramount. Sites must not be located in unsafe areas. For example:

- not down washed out roads
- not on precarious ledges
- not up trees
- not in busy operational areas (such as off the edge of a superskid).

4.2 Site selection

Assessment sites should be selected to offer the least obstructed view of between 10 and 40 ha of single age class forest. Suggested prioritised locations are:

- Ridge located skid site
- Ridge located road junction
- Road edge across valley view
- Up-slope view from valley bottom
- Flat site road junction.

Each site will view only one age class of trees.

It is recognised there will be variation in site quality, however it is expected 75% of sites will provide good overview for canopy assessment purposes.

4.3 Site identification

The primary site identification character will be its geographic position derived from a GPS reading. The positional error of such a reading from a late model GPS, such as a Garmin 12XL, is expected to be less than 5m and will mostly be less than 2m.

The following GPS setup is required:

- datum to be WGS 84
- position format Latitude / Longitude

- Lat. / Long. Recorded as degrees/minutes/decimal minutes

The site position would appear as: S 38 24.350
E 176 30.420 (for example)

The rationale for this format is the future standard NZ Geodetic Datum 2000 which is for practical purposes the same as WES 84.

The site will also be located on a 1:25,000 forest map (for implementation purposes), and also in more detail on a 1:10,000 map (for future reference), both illustrating the view centre.

4.4 View centre

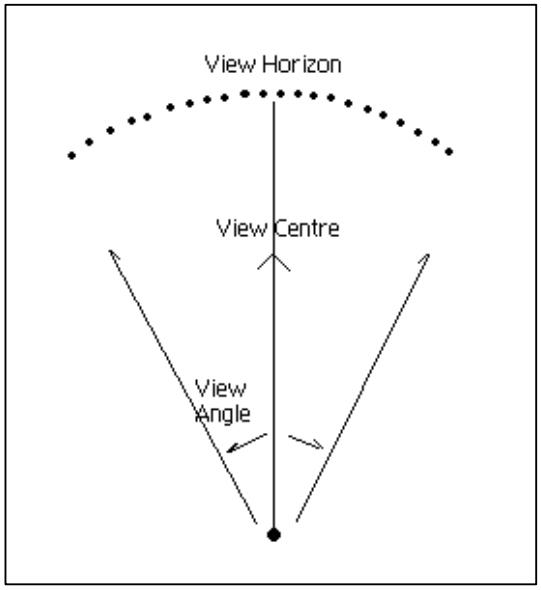
The area to be assessed is defined as the view (Figure 1). For any site there will be a single view encompassing a single age class as defined by establishment date. The view centre is a magnetic compass bearing from the viewpoint through the centre of the stand being assessed.

The view centre will be defined by:

- a magnetic compass bearing
- a direction arrow on the forest map (1:25,000 and / or 1:10,000 scale)
- a direction arrow on the assessment sheet line sketch.

The GPS position, forest maps and compass bearing should, for practical purposes, ensure the same area of forest is assessed at each individual assessment.

4.4.1 Figure 1. View Area



4.5 Site deletion or repositioning

Sites will be deleted over time and new sites added to accommodate the desired age class distribution.

Sites might also be moved to better positions at any time due to access or loss of view from surrounding tree growth. Full establishment data must be collected for the new site and the database must be up-dated.

All site repositioning should be done in consultation with the Forest Manager. This should not be an onerous process. If they are unable to attend in person in the field, it is likely that the Forest Manager will accept the assessor's new location without question.

5 VIEWPOINT SITE ASSESSMENT

The assessment of Viewpoint monitoring sites involves three phases:

- Pre-field visit preparation
- Field assessment
- Submission of data

5.1 Pre-field visit preparation

Prior to undertaking site assessments service providers need to:

- be in contact with the Forest Manager / Forest Supervisor, particularly to ensure all OSH / Company Work Rules (including radio requirements) will be adhered to
- obtain the appropriate forest maps which have been used at site establishment
- obtain copies of assessment forms for all sites to be visited showing all site and location data
- ensure GPS unit is set on datum WGS 84 and formatted as degrees/minutes/decimal minutes
- ensure compass and binoculars are available.

5.2 Field assessment

5.2.1 Equipment required

The following equipment is necessary for undertaking field assessments:

- Compass
- GPS unit and spare batteries
- Binoculars
- Camera
- Assessment site sheets (plot sheets)
- Sample collection equipment
- Forest maps
- Stand maps.

5.2.2 Site identification

The first objective of the field assessment of any site is to confirm its position. For most sites this should be obvious, but if there is any doubt a live GPS position should be checked against the site data.

5.2.3 View

Once the assessment position has been confirmed the view centre should be established by identifying the compass bearing given in the site data. The view area will normally be around 45º either side of this centre line and a comfortable distance forward, approximately 500m. The

1:10,000 site map should give an indication of where the view centre terminates. In many cases the line will start some way out, and will always pick out one age class only.

5.2.4 Assessment principles

The assessment is carried out by scanning the tree crowns and overall canopy using binoculars looking for specific pest and disease symptoms as well as damage from unknown causes. The key principles of this assessment are:

- keep it simple – do not try to record every minor influence. The objective is to identify significant forest health impacts.
- ask the question, is this observation relevant to forest management and the needs of the forest manager?
- write only relevant comments, this is not a test of how many agents can be detected.
- score health impacts using a single % figure based on the number of trees affected in the stand and a single number on the 5 point severity scale.

5.2.5 Data to be recorded on the Plot Sheet (refer to Appendix 3)

At site establishment the following data will be recorded on a paper version of a Microsoft Access Form, codes for each field are listed in brackets:

- Forest being assessed (name)
- Road from which site is accessed (name - if on located a stub rd, list main road name / stub road , eg Galaxy rd / Stub C)
- Site number (beginning at 1 for each forest)
- Region (name, as defined by the forest manager)
- Compartment (number, if required)
- Date of site establishment (dd/mm/year)
- Person undertaking site establishment (Surname then first initial, eg Anderson S)
- GPS position in Lat./Long (in WGS 84 datum).
- Compass bearing of view centre (degrees - magnetic)
- Land form (Face / Gully / Ridge / Flat / or Road-edge)
- Slope (Flat / Rolling / Steep)
- Aspect (N / S / W / E / NW / NE / SW / SE)
- Drainage (Good / Fair / Poor)
- Exposure (Sheltered / Medium / Exposed)
- Species (P.radiata / E. nitens / E. fastigata / D fir / S.sempervirens)
- Establishment year (year)
- Silviculture (Juvenile Age 1-5, Thinned, Pruned, Thinned and Pruned, Untended)
- Sample Coll Ref (if a sample is taken record Forest Health Collection form number)
- Photo (yes / no)
- Photo ref (number the photo in some way – either in notebook, on back of photo. Alternatively record a reference number in the filename of the jpeg, if a digital photo is taken)
- Health impacts (score incidence/severity as per key written next to ‘Health Impacts’)
- List Major Deficiency (name of major deficient element)

- Key Impact (if you have scored the site as a 3,4, or 5 you MUST list the major forest health impact in this box – if you score it a 1 or 2 then you should NOT list a 'Key Impact')
- Stand Health Rating (list you overall impression of stand health, from 1-5, based on the key below this box)
- Comments (list any comments or explanations you deem relevant to this site)

- Line sketch map of site location (not recorded on the Plot sheet – see 'Mapping Requirements' below)

5.2.6 Mapping requirements

During site establishment, view centres will be recorded on 1:25000 maps for practical reasons. These lines need to be very accurately recorded, as they will be translated on to 1:10000 maps and used for subsequent surveys. Now refer to Appendix 4 - the view centre should be a narrow straight line, starting at the point GPSed, and terminating where vision is interrupted by contour, or a new age class. An arrow head should indicate the direction of the plot. If the immediate foreground is not surveyed (eg viewing over grass, scrub, or an unwanted age class), then this should be represented on the map by a dotted line – then becoming a solid line where the view begins.

5.2.7 Additional information

A physical inspection of the stand should only be made if there is good cause, and might involve individual tree inspection and/or collection of a sample. If the latter, note the collection number on the assessment form and follow normal protocols of documentation in forwarding samples for diagnosis. If a photo has been taken (digital photos preferred) at any point it should be identified on the assessment sheet. Comments should be strictly limited to what is relevant from a forest manager's perspective. Photos should really only be taken to highlight a very significant impact.

5.2.8 Stand health rating

A single figure stand health rating should be given based on a forest health professional's knowledge of what a perfectly healthy stand in that particular forest area should look like i.e. a 1. 'Key Impacts' must be recorded in a severity score of 3 or greater in the Health Impacts table.

5.2.9 Completing Forest Level Summary information

A blank Forest Level Summary sheet should also be provided by the FOA administartor. The assessor must consider all plots measured in each forest, and complete the fields under the following headings the on the Summary sheet:

- **Average Condition Score:** Add all the plot scores and divide by the number of plots

- **Action Required:** In any part of the forest, do you think the forest manager should take some form of action, be it more intensive monitoring, pest control, foliar sampling for deficiencies etc. If so, then record 'Yes.' If not, record a 'No.'

- **Brief Description of Action Required:** Note the action required in 50 words or less (eg 'Monitor the age class represented by plot 4 for possum damage, in the greater Pinedale area'). Note only 255 characters are allocated within the database field for this description – hence the '50 words or less' requirement.

- **Signed:** Signature of Assessor

- **Date:** Date Summary Report was completed (should be same day of last plot surveyed)

5.3 Submission of data

A centralised system of data management will be used with the service provider's responsibility ending with fully completed assessment sheets, grouped by forest, being forwarded to a designated forest manager or co-ordinator. Completed sheets should not be forwarded until forest level summary reporting has been completed.

6 CONDITION STATEMENT DATA - FOREST LEVEL

As discussed, the Condition Statement at the "Forest Level" involves the summary of assessments from all sites within a single forest. The "Condition Statement - Forest Level" is designed to focus on significant impacts and eliminate all extraneous information. It is specifically designed to inform the forest manager of the overall health of the forest and draw attention to any specific problems. The Report has three hierarchical components:

1) Forest Level summary report (refer to Appendix 1):

- Average Condition Score (average of individual plots within the forest)
- Action required ('Yes' or 'No')
- Brief description of any action required
- Assessor sign off and date.

2) Summary of plot information (refer to Appendix 2):

- List of individual plot scores and 'Key Impacts.'

3) Detailed plot information (refer to Appendix 3):

- Contains individual plot sheets and 1:10000 location maps.

The three components are stapled together and form the Forest Level report. The database is capable of producing further summaries by management unit as required.

6.1 Hardware and Software – a Standard Database Platform

Personal Computers (hardware) and Microsoft Access (software) were chosen as the standard platform to support the management of Condition Survey data, for the following reasons:

- Ease of access to PCs and MS Access for all involved
- Low cost
- Sufficient data storage and reporting capability
- To encourage common reporting among industry.

The intention of the FOA is to migrate to mapping of view centre lines to shape-files embedded in GIS layers.

6.2 Feedback from forest manager

The Forest Manager / Forest Leader may wish to contact you for further discussion, or may wish to revisit the problem area that has been highlighted.

7 INCURSION RESPONSE

It is possible that the assessor may encounter a health condition which requires an urgent response. Such action might result from a significant impact which cannot be explained or serious outbreak of a known exotic pest or disease. Assessors should be familiar with protocol surrounding potential incursions. Refer to the Biosecurity Act 1993, Ministry of Agriculture and Forestry (MAF), and / or Forest Research for further information. A broad outline of protocol is described below.

Immediate action will involve:

- description of impact
- documentation of site
- collection of samples
- notification of forest manager and authorities.

7.1 Description of impact

The damage should be described in detail, including extent within the stand, apparent impact on the tree, and its visual characterization.

7.2 Documentation of site

A sketch map of the stand showing the location and extent of damage relative to the assessment point, should be made. If necessary a GPS location may be established within the stand and related to the affected area.

7.3 Collection of samples

Normal sample collection protocols should be followed and samples forwarded for diagnosis without delay packaged to ensure good condition on arrival. Quarantine packaging and other measures may be required.

7.4 Notification to forest manager and authorities

The forest manager should be notified directly of the event and all necessary information forwarded without delay. This notification should be both verbal and written, to avoid messages being lost or missed.

Under Section 44 (General Duty to Inform) of the Biosecurity Act 1993:

"Every person is under a duty to inform the Ministry, as soon as practicable in the circumstances, of the presence of what appears to be an organism not normally seen or otherwise detected in New Zealand."

In practice this means it is likely that trained assessors will also be reporting any unusual findings to MAF.

8 TRAINING AND DEVELOPMENT

While the application of this methodology has been field tested across a number of sites in New Zealand, we recognise further training and development may be required to suit various estates or forest owners. Please contact the authors at the addresses below, if you have any queries regarding the Viewpoint method:

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RD 2 Tikitere

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9 APPENDIX 1 – EXAMPLE OF CONDITION SURVEY FOREST SUMMARY REPORT

CHH Forest Health Condition Report

Forest:	Riverhead
Average Stand Health Rating:	1.89
Action Required?	**Yes**

Brief Description of Action Required:

The ageclass represented by plots 1, 2 and 8 is beginning to show the effects of increased possum populations. Suggest a further survey of this ageclass to gauge how widespread the damage is. Possum control should be considered in the Browns Rd vicinity.

Signed (FH Assessor): Simon Anderson Date: 17/11/03

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10 APPENDIX 2 – EXAMPLE OF CONDITION SURVEY FOREST PLOT SUMMARY REPORT

031117 - Riverhead Condition Survey - Plot Summary

Forest	Date	Site No	Stand Health Rating	Key Impact
Riverhead	17/11/20	1	3.0	Possums
Riverhead	17/11/20	2	3.0	Possums
Riverhead	17/11/20	3	1.0	
Riverhead	17/11/20	4	2.0	
Riverhead	17/11/20	5	2.0	
Riverhead	17/11/20	6	1.0	
Riverhead	17/11/20	7	2.0	
Riverhead	17/11/20	8	2.0	
Riverhead	17/11/20	9	1.0	

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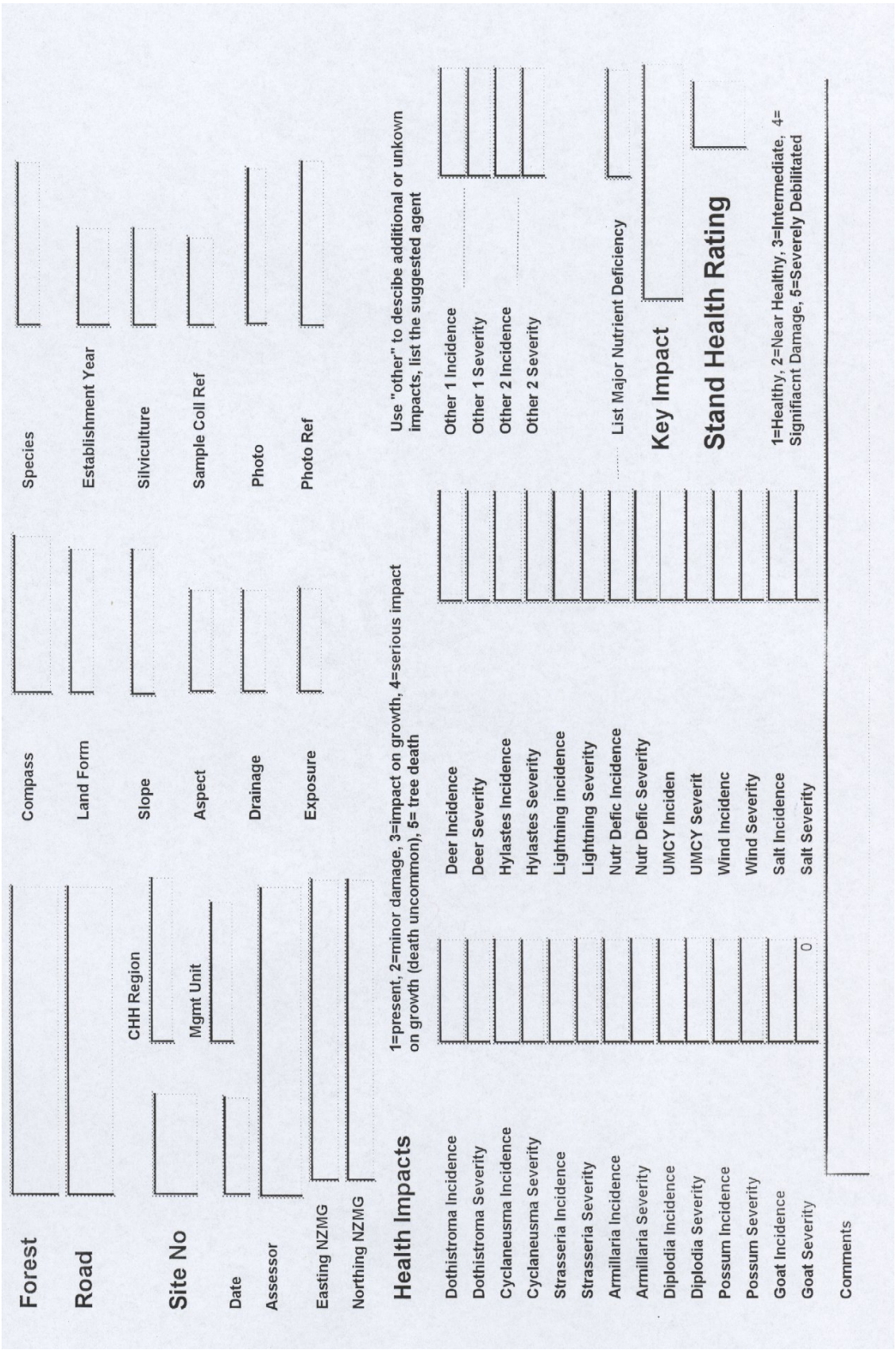
11 APPENDIX 3 – EXAMPLE OF CONDITION SURVEY PLOT SHEET



12 APPENDIX 4 – EXAMPLE OF A 'VIEW CENTRE' MAP

NB: Also referred to as 'Plot Map.'

NB: This is a fictitious plot, serving as an example.