

Standard Operating Procedure 16A

Measuring Post-fire Forest Recovery (annual monitoring)

Overview

This SOP describes the tasks required to measure post-fire forest recovery. The SOP uses some procedures from other SOPs to install and measure Ground Plots (SOP 13: Measuring a Large Tree Plot, SOP 14: Measuring Small Tree Plot, SOP 15: Measuring Vegetation Quadrats and Small Tree Plot, SOP 16: Measuring Coarse Woody Debris and Stumps, SOP 17: Measuring Soil on Ground Plots). The order of procedures is important. The SOP provides an overall work flow for conducting FPMRIS AND Post-fire Forest Recovery monitoring (years 1 and 6) and for conducting Post-fire Forest Recovery monitoring only (years 2, 3, 4, 5).

Glossary of definitions

Charcoal: Lumps of black woody material visibly burnt by fire, < 10cm in diameter or thickness in two cross-sectional directions, but excluding fine ash of no clear structure and other dark material which does not blacken the fingers when rubbed.

Coarse Woody Debris (CWD): Dead woody material substantially detached from the parent tree and in contact with the ground, and which is ≥ 10 cm in diameter in two cross-sectional directions. Comprises large branches and logs, and includes charred material retaining the above dimensions. It does not include cut or uprooted trees that have been "hung up" on other trees: these will be considered as tree stems.

Diameter at Breast Height (DBH): The stem diameter of a tree measured at breast height. For the purpose of ground plot measurement, diameter at breast height implies diameter measured outside or over bark (dob). On sloping ground breast height is measured on the uphill side of the tree. See SOP13, Appendix 13.3, Figure 3 for the procedure for conducting DBH measurements.

Epicormic Shoots: Shoots emerging from dormant buds along a branch or trunk of a tree usually in response to stress factors such as fire, drought, physical injury.

Field Form: A data collection form for recording measurements and other information. This form may be in one of three formats: Hardcopy paper form; MS Excel form, or MS Access Database.

Fine litter: Organic material that is detached and non-suspended, and which is < 1 cm in diameter or thickness in two cross-sectional directions. Comprises mostly leaf litter, twigs and fine bark, tree/shrub fruit and tree/shrub floral parts, but excludes charcoal. Can also include fibrous peat that is predominantly formed of visible plant material.

Fine litter composition: Indication of the percentage contribution of fine litter types to the fine litter percentage cover.

Juvenile: a plant that is not reproductively mature.

Large Tree Plot (LTP): ~0.04 ha circular plot within which detailed tree data and information is collected. The Centre of the LTP is exactly coincident with the *Sample Point Location* and the Sample Point Location Stake *if* the Stake is NOT off-set from the Sample Point Location.

Life-stage: The series of changes in the growth and development of an organism from its beginning as an independent life form to its mature state in which

offspring are produced. The categories of interest are: juvenile, mature and senescing.

Mature: a plant that is reproductively mature and shows evidence of flowers, fruit or seed.

Medium litter: Organic (usually woody) material that is substantially detached, and is either in contact with the ground or completely suspended, and which is 1 – 10 cm in diameter or thickness in two cross-sectional directions. Comprises material such as small branches, thick bark, tree/shrub fruits and fallen tree fern stems, but excludes charcoal.

Medium litter composition: Indication of the percentage contribution of medium litter types to the medium litter percentage cover.

New recruits: Individual plants, not individual stems.

Post-fire Recovery Sample Point: Sample point on public land forest affected by major wildfire in 2003, 2006, 2007 and 2009.

Post-fire Recovery Control Sample Point: Sample point on public land forest not substantively disturbed by wildfire or other disturbance since 1970, and used as a control for a Post-fire Recovery Sample Point.

Rough bark: All bark with the exception of smooth bark on Eucalypts.

Scorch Height: The maximum height to which the trunk of a tree has been burnt.

Senescing: a plant that is dying. Include plants that are completely dead if they can be identified.

Small tree: For measurement purposes, a tree with an actual size less than 10 cm DBH but greater than 1.3 m in height. This distinction is only for the purposes of differentiating which observers will measure a particular individual plant. It does not correspond with any Plant Growth Form (which is concerned with the potential size of a species).

Small Tree Plot (STP): 0.005 ha circular plot within which detailed small tree data and information is collected. The Centre of the STP is exactly coincident with the *Sample Point Location* and the Sample Point Location Stake *if* the Stake is NOT off-set from the Sample Point Location.

Tree: Any species with its Plant Growth Form listed in the Flora Information System (FIS) as LT (Large Tree), T (Large Shrub to Medium Tree) or MT (Mallee Tree). These Growth Form categories are based on potential size, not actual. Note that tree ferns are not considered

to be 'trees' in this classification. See SOP 14, Appendix 14.2 for list of all tree species.

Tree recruit: Any tree species less than 10 cm Diameter at Breast Height and less than 1.3 m in height.

Woody Species: A plant with a lignified stem.

Equipment list

Binoculars
 Calculator
 Compass (1), preferably a sighting type
 Clinometer
 Clip board and pens
 Diameter tape (1)
 GPS
 Field First Aid Kit
 Field Forms
 Field Notebook
 Hand Lens (x 10 magnification)
 Hypsometer
 Knife, trowel or other digging tool
 List of species classed as trees (= FIS codes LT, MT or T, see Appendix 15.1)
 Marking tape
 Measuring tape (50m)
 Minimum of 12 marker pegs (> 0.5 m long) to delineate plot perimeter
 Personal Protection Equipment (PPE)
 Pig-tail stakes (4)
 Plant identification aids
 Plastic bags of various sizes, incl. zip-lock bags for plant samples
 Ruler
 Sample Point Location Maps, Aerial Photos, location instructions and slope adjustment data
 Site species list (if site has been assessed before)
 Species list for area or region
 Spherical canopy densiometer
 Square quadrat frame (1 m x 1 m internal) that can be pulled apart for placement
 Tape measure or a height pole extended horizontally to 3.99 m
 Telescopic height measuring pole, capable of minimum 5 m extension
 Tent peg or similar for securing tape measure
 Tree tags
 Wooden height pole 1.3 m in length

Procedures

The order of procedures is important and they have been prioritised in order to minimise disturbance to any plot prior to measurement. This SOP refers to procedures from other SOPs to measure Ground Plots – however, all

measurement data and information should be recorded in the Post-fire Recovery Form. Procedures that are *additional to or modifications of*, those described in another SOP are marked with an asterisk.

The Procedures in this SOP are divided into two sections. Section 1 procedures should be used for installing and/or measuring Post-fire Recovery Sample Points (and associated Post-fire Recovery Control Sample Points), plots and quadrat attributes in measurement years 1 and 6 only. Section 2 procedures should be used for measuring Post-fire recovery attributes in years 2, 3, 4 and 5.

Procedures Section 1 – Measurement Years 1 & 6

Small Tree Plot

Record all data and information associated with these procedures in the Post-fire Recovery Form (**not** the Small Tree Plot Form)

Establish and measure Small Tree Plot: Follow all procedures in SOP14: Measuring a Small Tree Plot to establish and measure a Small Tree Plot. SOP 14 procedures: *Mark out Small Tree Plot, Checking Borderline trees, Identify and count each tree.*

Vegetation Quadrats

Procedures which are *additional to or modifications of* those described in SOP15: Measuring Vegetation Quadrats, are marked with an asterisk.

Record all data and information associated with these procedures in the Post-fire Recovery Form (**not** the Vegetation Quadrat Form)

Set out and place vegetation Quadrats: Follow the procedures in SOP15: Measuring Vegetation Quadrats to set and place vegetation quadrats (SOP 15 procedures: *Set out quadrat marker points, Setting up when line-of-sight is blocked, Applying safety precautions, Placing a quadrat in the correct position*)

* *Measure the maximum tree or shrub height:* For each quadrat, measure the maximum height of the tallest living tree or shrub (if there are no trees) species < 10 cm DBH, rooted within or overhanging the quadrat.

* *Estimate the total projected foliage cover and woody species cover:* Estimate the proportion of each quadrat covered by total projected foliage cover of all live vascular plants < 1.3m in height, and the proportion of each quadrat covered by live woody species (trees and shrubs) < 1.3m in height.

Identify and record all understorey species within each quadrat: Follow the procedure in SOP15: Measuring Vegetation Quadrats to identify and record all understorey species in each quadrat (SOP 15 procedure: *Identify and record all understorey species within quadrat*).

- * *Estimate the percentage cover of ground:* Follow the procedures in SOP15: Measuring Vegetation Quadrats to estimate the proportion of each quadrat covered by each ground cover parameter, including fine litter and charcoal.
- * *Assess the composition of fine and medium litter:* In each quadrat, after estimating the percentage cover of fine litter in the quadrat, make a visual assessment and estimate the composition of that fine litter cover by recording the proportion of the fine litter that is composed of leaf litter, twigs, bark etc (to the nearest 10% and summing to 100% of fine litter cover). Repeat for medium litter components.
- * *Measure the fine litter depth:* In each quadrat, at a point 45° and 30cm from each corner, use a steel ruler to measure the maximum depth (in cm and to the nearest cm) from the soil surface to the top of the fine litter.
- * *Identify and count the number of stems of new recruits of woody species in the quadrat:* In each quadrat, for each woody species present, identify and count the number of stems of new and live woody species (trees and shrubs) recruits in the quadrat. Identify and count only those woody species rooted within the quadrat and not overhanging woody species recruits.
- * *Assess the life-stage of woody plants:* In each quadrat for each woody species present, record its life-stage using one or more of the following classes: juvenile (J) – a plant that is not reproductively mature; mature (M) a plant that is reproductively mature and shows evidence of flowers fruit or seed; and, senescing (S) – a plant that is senescing or dying, including plants that are completely dead if they can be identified.

Large Tree Plot

Procedures which are *additional to* or *modifications of* those described in SOP13: Measuring a Large Tree Plot, are marked with an asterisk.

Record all data and information associated with these procedures in the Post-fire Recovery Form (**not** the Large Tree Plot Form)

Establish and measure Large Tree Plot: Follow the procedures in SOP13: Measuring a Large Tree Plot to establish and measure a Large Tree Plot. SOP13 procedures: *Mark out Large Tree Plot, Temporarily Tag Trees, Check Borderline Trees, Assign Tree Status, Assign Tree Species, Assign Tree Death Cause, Assign Tree Crown Class, Assign Tree Characteristics, Measure DBH, Measure Tree Height, Measure the Heights of 5 other Trees across a range of diameters, Set up for measuring Canopy Cover, Measure Canopy Cover, Calculate Canopy Cover, Tree canopy health, Define Assessable Crown, Assess Epicormic Shoots, Assess tree crown defoliation and dieback, Assess crown foliage density*

and clumping, Assess foliage discolouration, Assess Crown position.

- * *Identify the presence of stem scorch:* For all tagged trees, identify the presence of any visible stem scorching > 0.5 m in height.
- * *Measure maximum rough bark height:* For the 8 tree height trees, measure the maximum height that the rough bark extends up the stem of the tree. Refer to the procedures in SOP13: Measure Tree Height to measure the rough bark height.
- * *Measure maximum stem scorch height:* For the 8 tree height trees, measure the maximum height that scorching extends up the stem of the tree. This can be equal to the full tree height or the maximum rough bark height. Refer to the procedures in SOP13: Measure Tree Height to measure stem scorch height.

Coarse Woody Debris (CWD) and Stumps

Procedures which are *additional to* or *modifications of* those described in SOP16: Measuring Coarse Woody Debris and Stumps, are marked with an asterisk.

Record all data and information associated with these procedures in the Post-fire Recovery Form (**not** the Coarse Woody Debris and Stumps form)

Measure Coarse Woody Debris, Slash Piles and Stumps: Follow all procedures in SOP16: Measuring Coarse Woody Debris and Stumps.

- * *Measure the length and estimate the proportion of charring of CWD:* For each piece of coarse woody debris in the large tree plot, measure the length and, corresponding to the relevant level of decay or structural change, assign one of the following three classifications for proportion of charring:
 1. None. 0% of surface area subject to charring;
 2. Moderate. 1-50% of surface area subject to charring;
 3. Severe. >50% of surface area subject to charring.

See Appendix 16A.1 for figures demonstrating the possible combinations of level of decay and/ or structural change and proportion of charring.

Soil

For Post-fire recovery Sample Points that are being *installed* (i.e. Plot location, large tree plot, small tree plot etc. are being established and measured for the **first time**) – follow all procedures in SOP17: Measuring Soil under Tier 1 (and if necessary Tier 2) soil sampling. Record all data and information in the Soil Sampling field Form.

Procedures Section 2 – Measurement Years 2, 3, 4 and 5

Small Tree Plot

Record all data and information associated with these procedures in the Post-fire Recovery Form (**not** the Small Tree Plot Form)

Establish and measure Small Tree Plot: Follow the procedures in SOP14: Measuring a Small Tree Plot to establish and measure a Small Tree Plot. SOP 14 procedures: *Mark out Small Tree Plot, Checking Borderline trees, Identify and count each tree.*

Measuring Vegetation Quadrats

Procedures which are *additional to* or *modifications of* those described in SOP15: Measuring Vegetation Quadrats, are marked with an asterisk.

Record all data and information associated with these procedures in the Post-fire Recovery Form (**not** the Vegetation Quadrat Form)

Set out and place vegetation Quadrats: Follow the procedures in SOP15: Measuring Vegetation Quadrats to set and place vegetation quadrats (SOP 15 procedures: *Set out quadrat marker points, Setting up when line-of-sight is blocked, Applying safety precautions, Placing a quadrat in the correct position*)

- * *Measure the maximum tree or shrub height:* For each quadrat, measure the maximum height of the tallest living tree or shrub (if there are no trees) species < 10 cm DBH, rooted within or overhanging the quadrat.
- * *Estimate the total projected foliage cover and woody species cover:* Estimate the proportion of each quadrat covered by total projected foliage cover of all live vascular plants < 1.3m in height, and the proportion of each quadrat covered by live woody species (trees and shrubs) < 1.3m in height.

Record all understorey species in each quadrat: Follow the procedure in SOP15: Measuring Vegetation Quadrats to identify and record all understorey species in each quadrat (SOP 15 procedure: *Identify and record all understorey species within quadrat*).

- * *Estimate the percentage cover of ground:* Follow the procedures in SOP15: Measuring Vegetation Quadrats to estimate the proportion of each quadrat covered by each ground cover parameter, including fine litter and charcoal.
- * *Assess the composition of fine and medium litter:* In each quadrat, after estimating the percentage cover of fine litter in the quadrat, make a visual assessment and estimate the composition of that fine litter cover by recording the proportion of the fine litter that is composed of leaf litter, twigs, bark etc (to the nearest 10% and summing to 100% of fine litter cover). Repeat for medium litter components.
- * *Measure the fine litter depth:* In each quadrat, at a point 45° and 30cm from each corner, use a steel ruler to measure the maximum depth (in cm and to the nearest cm) from the soil surface to the top of the fine litter.

* *Count the number of stems of new recruits of woody species in the quadrat:* For each quadrat, identify and count the number of new and live tree and shrub (woody species) recruits in the quadrat. Identify and count only those woody species rooted within the quadrat and not overhanging woody species recruits.

* *Assess the life-stage of woody plants:* In each quadrat for each woody species present, record its life-stage using one or more of the following classes: juvenile (J) – a plant that is not reproductively mature; mature (M) a plant that is reproductively mature and shows evidence of flowers fruit or seed; and, senescing (S) – a plant that is senescing or dying, including plants that are completely dead if they can be identified.

Large Tree Plot

Procedures which are *additional to* or *modifications of* those described in SOP13: Measuring a Large Tree Plot, are marked with an asterisk.

Record all data and information associated with these procedures in the Post-fire Recovery Form (**not** the Large Tree Plot Form)

* *Establish and measure Large Tree Plot:* Follow selected procedures in SOP13: Measuring a Large Tree Plot to establish and measure a Large Tree Plot. SOP 13 procedures: *Mark out Large Tree Plot, Temporarily Tag Trees, Check Borderline Trees, Assign Tree Status, Measure DBH, Measure Tree Height, Measure the Heights of 5 other Trees across a range of diameters, Set up for measuring Canopy Cover, Measure Canopy Cover, Calculate Canopy Cover, Assess Epicormic Shoots.*

Coarse Woody Debris (CWD) without stumps

Procedures which are *additional to* or *modifications of* those described in SOP16: Measuring Coarse Woody Debris and Stumps, are marked with an asterisk.

Record all data and information associated with these procedures in the Post-fire Recovery Form (**not** the Coarse Woody Debris and Stumps Form)

* *Measure Coarse Woody Debris:* Follow procedures *relevant* only to Coarse Woody Debris (and excluding stumps) in SOP16: Measuring Coarse Woody Debris and Stumps. SOP 16 Procedures: *Identify all individual pieces of CWD in the plot, Measure diameter of each piece of CWD, Estimate the level of decay of each piece of CWD, Measure the length of each piece.*

Data and information recording

The steps in this section of the SOP describe how and where to record data and information using a hardcopy (paper) format of the relevant forms. Digital (i.e. MS Excel and MS Access) formats will allow Contractor Field Crews to record information more efficiently, using drop down lists and combination boxes under fields. These instructions apply to both hardcopy and electronic versions of the Form.

The order of the instructions for data and information recording is divided into two sections as with the Procedures. Section 1 instructions for recording measurements are for plots and quadrat attributes for year 1 and 6 only. Section 2 instructions for recording measurements are for years 2, 3, 4 and 5.

The Post-Fire Recording Form is made up of individual pages which correspond to the relevant SOP. Each page is composed of a number of sections made up of tables which contain a range of fields under which the data entries are made.

Post-Fire Recovery Form Section 1 – Recording Measurements for Years 1 & 6

Plot Identification

Complete the Identification section at the top of each page in the Post-Fire Recovery Form. Fill in the Sample Point Identification Code, Bioregion, Date, the SOP version number, Contractor Company Name and the Names of each Contractor Field Crew member present, in the <Sample Point ID>, <Bioregion>, <Date>, <SOP version> and <Contractor Company> fields. Against each <Field Crew Member #> fill in the Contractor Field Crew member surname in the <Contractor Field Crew Member Surname> field and first name in the <Contractor Field Crew Member First Name> field. The Contractor Field Crew Leader should be the first name recorded in the Identification section of each page in the form. The crew member who enters information on the form (i.e. the scribe) should check the box <Scribe> next to their name.

Small Tree Plot

Record all tree species. In the Small Tree Count section of the Small Tree Plot page in the Post-Fire Recovery Form, record the name of each live species and dead species in the <Species Name> field.

Unidentifiable species should be given a descriptive name and recorded in <Tree Species>. Check the <Temporary Name> box to mark this record as an unidentified species that is temporarily named. The temporary name can be re-used on the form each time the same unknown plant is detected. Follow the procedures outlined in SOP 20A: Plant Specimen Collection and Identification Procedures to record

further information about this species on the Plant Specimen Collection Form.

Record the number of all tree species. In the Small Tree Count section, record the frequency of living and dead trees in the <Live Count> and <Dead Count> fields. Add the number of living and dead trees for each species and record in the <Total> field.

If there are no small trees within the Small Tree Plot, check the box in the <No small trees present> field so that an audit of the data will not confuse an absence of data for a failure to assess the parameter.

Record any comments. Record any additional information relating to the plot in the <Comments> field.

Complete the Field Form Check section at the bottom of the page: The Contractor Field Crew Leader initials the <Team Leader Initials> field, enters the date <Date checked> and writes down any comments about data verification in the <Comments> field.

Complete the Data Entry Check section at the bottom of the page: The Field Crew member who enters the data into the Working Database writes their surname in the <Contractor Surname> field and the date data entry was completed for the form in <Date entered>.

Vegetation Quadrats

Record the maximum tree or shrub height. In the Height and Total Projected Foliage and Woody Species Cover section of the Vegetation Quadrat page in the Post-Fire Recovery Form, record the maximum height (in cm, to the nearest cm) of the tallest living tree or shrub species for each quadrat in the <Height of the tallest tree> field.

Record total projected foliage cover and woody species cover. For each quadrat, record the total projected foliage cover in the <% Total projected foliage cover> field and woody species cover in the <% Woody species cover> field.

Record all understorey species. In the Understorey Species Count section, record the scientific binomial name of every vascular (non-tree) and every tree species less than 1.3 m in height for each quadrat in the <Species name> field and the frequency of each tree species corresponding to the relevant species name. Understorey species in quadrats do not include small trees being counted as recruits.

Unidentifiable species should be given a descriptive name and recorded in <Species Name>. Check the <Temp Name> box to mark this record as an unidentified species that is temporarily named.

Record the percentage cover of ground parameters: In the Ground Cover section, record the percentage ground cover to the nearest 1% for each quadrat.

Record the percentage cover of bare ground in <% Bare ground>. Record the percentage cover of rock in <% Rock>. Record the percentage cover of mosses and liverworts in <% Mosses & liverworts>. Record the percentage cover of lichen in <% Lichen>. Record the percentage cover of fine litter in <% Fine litter>. Record the percentage cover of medium litter in <% Medium litter>. Record the percentage cover of charcoal in <% Charcoal>. Record the percentage cover of other parameters in <% Other> and describe the parameter in the <Other description> field.

Record the composition of medium and fine litter: In the Medium and Fine Litter Composition section, record the percentage of both medium and fine litter composed of the corresponding class of component in the <Component Class> field.

Record the depth of fine litter: In the Fine Litter Depth section, record the four measurements taken for depth of fine litter (to the nearest cm).

Record the number of stems of new recruits of woody species: In the Woody Species New Recruit section, record the scientific binomial name of every new recruit of woody species for each quadrat in the <Species name> field and note the number of stems of new recruits of woody species adjacent to the relevant species name. Record stem count for those woody species rooted within the quadrat only and not overhanging woody species recruits.

Unidentifiable species should be given a descriptive name and recorded in <Species Name>. Check the <Temp Name> box to mark this record as an unidentified species that is temporarily named.

Record the life-stage of woody species: In the Woody Species Life-Stages section, record the scientific binomial name of all woody species for each quadrat in the <Species Name> field, and record the life-stage of each *individual* woody species using (J) for juvenile plants, (M) for reproductively mature plants, and (S) for senescing or dying plants adjacent to the relevant species name.

Unidentifiable species should be given a descriptive name and recorded in <Species Name>. Check the <Temp Name> box to mark this record as an unidentified species that is temporarily named.

Record any site related comments: Record any additional information relating to the plot in the <Comments> field.

Complete the Field Form Check section at the bottom of the page: The Contractor Field Crew Leader initials the <Team Leader Initials> field, enters the date <Date checked> and writes down any comments about data verification in the <Comments> field.

Complete the Data Entry Check section at the bottom of the page: The Field Crew member who enters the data into the Working Database writes their surname in the <Contractor Surname> field

and the date data entry was completed for the form in <Date entered>.

Large Tree Plot

Record LTP slope adjusted radius: On the Large Tree Plot page in the Post-Fire Recovery Form, record the slope adjusted LTP radius in the <Slope Adjustment LTP Radius> field.

Tree Mensuration:

Enter the number of tagged trees in each quadrant: In the Tree Mensuration section of the Large Tree Plot page in the Post-Fire Recovery Form, after marking out quadrants and tagging trees, record the tag codes of all tagged trees under the <Tree Tag Code> field. Record the tree tag codes in ascending order, starting with NE01...NE02 etc. followed by SE, SW and NW tree tag codes.

Record the Tree Status of each tagged tree: In the Tree Mensuration section, against the relevant tree tag code, record each tree as either LS (Live Standing), LF (Live Fallen) or DS (Dead Standing) in the <Tree Status> field.

Record Tree Death: In the Tree Mensuration section, against tagged trees recorded as *Dead Standing* (under <Tree Status>), record the probable cause of death in the <Tree Death> field.

Record Tree Species: In the Tree Mensuration section, against the relevant tree tag code, record the tree species in the <Tree Species> field.

Unidentifiable species should be given a descriptive name and recorded in <Tree Species>. Check the <Temporary Name> box to mark this record as an unidentified species that is temporarily named.

Record Tree Crown Class: In the Tree Mensuration section, against the relevant tree tag code, record the crown class in the <Crown Class> field.

Record Tree Characteristics: In the Tree Mensuration section, against the relevant tree tag code, check one of more tree characteristics (e.g. bent over, near dead, head out etc.) which best characterise and describe the tagged tree and may be useful for identifying the tree in the future.

Record the DBH of each tagged tree: In the Tree Mensuration section, against the relevant tree tag code (recorded above) record the diameter (in cm, to the nearest 0.1 cm) in the <DBH> field. Calculate averages around branches and swellings prior to recording the DBH.

Rank the DBH of each Live Standing tagged tree: In the Tree Mensuration section, rank the DBH in the <DBH Rank> field of each Live Standing (under <Tree Status>) tagged tree.

Record the height of the three largest DBH tagged trees: In the Tree Mensuration section, against the relevant tree tag codes, record the heights (in cm, to

the nearest centimetre) of the three largest DBH trees in the entire LTP in the <Tree Height> field and check the box in the <3 Largest DBH> field.

Identify and record the heights of five other trees across the range of diameters in the LTP: Check every *n*th number in the list of ranks under the <DBH Range Five> field, and make a note of its tree tag number. In the <Tree Height> field, record the heights of the 5 selected trees.

Indicate presence of stem scorching on tagged trees: In the Tree Mensuration section, against the relevant tree tag codes, check the boxes in the <Stem Scorch > 0.5 m> field for those trees where stem scorching is present at > 0.5 m in height.

Record the maximum bark height of the 8 tree height trees: In the Tree Mensuration section, against the relevant tree tag codes, record the maximum rough bark heights of the 8 tree height trees in the <Rough Bark Height> field. Record rough bark height to the nearest 0.1 m, or height of 0 for trees without bark.

Record the maximum scorch height of the 8 tree height trees: In the Tree Mensuration section, against the relevant tree tag codes, record the maximum scorch heights of the 8 tree height trees in the <Scorch Height> field. Record scorch height to the nearest 0.1 m, or height of 0 for trees without scorch marks.

Tree Canopy Cover:

Record Observer Names: In the Tree Canopy Cover section, fill in Observer 1's name in the <Observer Name> field and fill in Observer 2's name in the <Observer Name> field.

Record Canopy or Sky Count for each direction: In the Tree Canopy Cover section, record the count for canopy or sky cover made by both Observer's 1 and 2. When a Canopy Count is made, record the value for each direction (north, east, south, west) in the <Canopy Count> field and record a dash (-) in the <Sky Count> field for the same direction. When a Sky Count is made, record the value for each direction (north, east, south, west) in the <Sky Count> field and Canopy Count is calculated (= 96 – Sky Count) and recorded in the <Canopy Count> field for the same direction.

Calculate and record each Observer's Subtotal: In the Tree Canopy Cover section, calculate the sum of each observer's <Canopy Counts> and enter in the <Observer Subtotal> field.

Calculate and record the grand total Canopy Count: In the Tree Canopy Cover section, calculate the sum of each observer's subtotal and enter in the <Grand Total Canopy Count> field.

Calculate and record the average Canopy Cover: In Tree Canopy Cover section, calculate the average

canopy cover by multiplying the <Grand Total Canopy Count> by 0.13 and enter it in the <Average Canopy Cover %> field.

Tree Canopy Health:

Record the amount of epicormics present on each Height Tree: In the Tree Canopy Health section, enter the percentage of epicormic shoots present on the entire tree in 5% levels in the <Epicormics Present> field.

Record the proportion of dieback present in each Height Tree: In the Tree Canopy Health section, enter the percentage of dieback observed in the entire tree in 5% levels and record in the <Proportion of Dieback> field.

Measure and record the length of dead top present in each Height Tree: In the Tree Canopy Health section, enter the length of the dead top (in metres), if present, in the <Length of Dead Top> field.

Record the amount of crown defoliated in each Height Tree: In the Tree Canopy Health section, identify the percentage of crown defoliated in 5% levels and record in the <Crown Defoliated> field.

Record the amount of canopy density in each Height Tree: In the Tree Canopy Health section, identify the percentage of canopy density in 5% levels and record in the <Canopy Density> field.

Record the crown clumping score in each Height Tree: In the Tree Canopy Health section, enter the crown clumping code that best describes the tree in the <Canopy Clumping Score> field.

Record the amount of crown discolouration in each Height Tree: In the Tree Canopy Health section, identify the percentage of crown discoloured in 5% levels and record in the <Crown Discoloured> field.

Record the position of the crown in each Height Tree: In the Tree Canopy Health section, enter the crown position code that best describes the crowns relationship to its neighbouring tree in the <Crown Position> field.

Record any comments: Identify any site specific variables making the site distinguishable in the Comments section. Record any additional information relating to the plot or plot surrounds that are individual to that plot in this field.

Complete the Field Form Check section at the bottom of the page: The Contractor Field Crew Leader initials the <Team Leader Initials> field, enters the date <Date checked> and writes down any comments about data verification in the <Comments> field.

Complete the Data Entry Check section at the bottom of the page: The Field Crew member who enters the data into the Working Database writes their surname in the <Contractor Surname> field

and the date data entry was completed for the form in <Date entered>.

Course Woody Debris (CWD) and Stumps

Record LTP slope adjusted radius: On the Course Woody Debris page in the Post-Fire Recovery Form, record the slope adjusted LTP radius in the <Slope Adjustment LTP Radius> field.

Record the length and proportion of charring of each CWD piece: In the Coarse Woody Debris section, enter the length for each separate piece of CWD corresponding to the appropriate <Diameter Class>, <Level of Decay or Structural Change> and <Proportion of Charring>.

If there is no CWD, check the box in the <No Course Woody Debris> field so that an audit of the data will not confuse an absence of data for a failure to assess the parameter.

Record the dimensions of any piles of slash and its average level of decay: In the Slash Pile section, record in metres (to the nearest 0.1 m) the height of the slash pile in the <Height> field, the width pile in the <Width> field and the length of the slash pile in the <Length> field. Record the average level of decay of the slash pile in the <Decay Class> field.

If there is no pile of slash, check the box in the <No Slash Pile Present> field so that an audit of the data will not confuse an absence of data for a failure to assess the parameter.

Record the height of each stump: In the Stumps section, record the height of each stump in the field that corresponds to the appropriate <Diameter Class> and <Level of decay>.

If there are no stumps, check the box in the <No Stumps Present> field so that an audit of the data will not confuse an absence of data for a failure to assess the parameter.

Record any comments: Record any additional information relating to the plot in the <Comments> field.

Complete the Field Form Check section at the bottom of the page: The Contractor Field Crew Leader initials the <Team Leader Initials> field, enters the date <Date checked> and writes down any comments about data verification in the <Comments> field.

Complete the Data Entry Check section at the bottom of the page: the Field Crew member who enters the data into the Working Database writes their surname in the <Contractor Surname> field and the date data entry was completed for the form in <Date entered>.

Check type of Soil Measurement Plot: On the Soil Page page in the Post-Fire Recovery Form, check the box next to either the <Tier 1 Plot> or the <Tier 2 Plot> field.

Record Slope and Large Soil Pit Distance from Sample Point Location: Record the Slope in degrees and Large Soil Pit Distance from the Sample Point Location in metres in the <Slope> and <Large Soil Pit Distance from Sample Point> field.

Small Soil Pit:

Record Small Soil Pit Stone Fraction Weight: In the Small Soil Pit section of the Soil Field page in the Post-Fire Recovery Form, record the stone weights in grams against 25 mm and 5 mm in the <Stone weight> field.

Check the Small Stone Sample: In the Small Soil Pit section, check the box for the sample taken and bagged in the <Small stone sample check> field. Record any comments in the <Comments> field.

Record Small Soil Pit Volume Estimate Measurements: In the Small Soil Pit Volume section, record – in cm to the nearest cm – the measured distances from the plank base to the base of the small soil pit, for each of the four pit edges, the 12 other points and the perimeter of the top and bottom.

Large Soil Pit:

Record Large Soil Pit Profile Photograph Details: In the Large Soil Pit Photographs section, record the digital storage card code (SC code) for each Large Soil Pit Profile photograph taken. Check the photograph taken box against each photograph taken and record any relevant comments for each photograph (refer to SOP 10: Event Log Form: Recording Plot Visit Details and Taking Photographs).

Record Large Soil Pit Profile Horizons Details: In the Large Soil Pit Horizons, starting at 1 (the top horizon and working down) and working down, record the codes which describe each soil profile horizon (as shown in Appendix 17.2) in the <Horizon description code> field. Against each horizon code, record the upper and lower horizon boundary depths in cm (to the nearest cm) – in the <Upper boundary> and <Lower boundary> fields.

Record Large Soil Pit Profile Horizons Colour Information: In the Large Soil Pit Horizons section, against each horizon code, record the hue, value, chroma and moisture codes for the horizon, in the <Hue>, <Value>, <Chroma> and <Moisture> fields.

Record Large Soil Pit Profile Horizons Mottle Information: In the Large Soil Pit Horizons, against each horizon code, record the mottle abundance, size, contrast and colour using codes from the Tables in

Soil

Appendix 17.3, in the <Abundance>, <Size>, <Contrast>, <Colour> fields.

Record Large Soil Pit Profile Horizons Texture Information: In the Large Soil Pit Horizons section, against each horizon code, record the texture and texture qualification information using codes from Tables in Appendix 17.3, in the <Texture>, <Texture qualification> fields.

Record Large Soil Pit Profile Horizons Coarse Fragments Information: In the Large Soil Pit Horizons section, against each horizon code, record coarse fragment abundance, size, shape, lithology, strength and distribution using codes from Tables in Appendix 17.3, in the fields <Abundance>, <Size>, <Shape>, <Lithology>, <Strength> and <Distribution> fields.

Record Large Soil Pit Profile Horizons Structure Information: In the Large Soil Pit Horizons section, against each horizon code, record grade, ped size, pedality type, compound structure and fabric, using codes from Tables in Appendix 17.3, in the fields <Grade>, <Ped size>, <Pedality type> <Compound structure> and <Fabric> fields.

Record Large Soil Pit Profile Horizons Void Information: In the Large Soil Pit Horizons section, against each horizon code, record cracks, pore abundance and pore diameter information using codes from Tables in Appendix 17.3, in the <Cracks>, <Pore abundance> and <Pore diameter> fields.

Record Large Soil Pit Profile Horizons Pans Information: In the Large Soil Pit Horizons section, against each horizon code, record presence or absence of pans in the <Pan> field.

Record Large Soil Pit Profile Horizons Roots Information: In the Large Soil Pit Horizons section, against each horizon code, record root size and abundance information using codes from Tables in Appendix 17.3 in the <Root size> and <Root abundance> fields.

Check the Large Soil Pit Horizontal Core Samples: For each Large Soil Pit horizon, in the Large Soil Pit Horizontal Cores section, record the horizon code and against each, check the box for each sample taken and bagged, in the <Horizontal core sample check> field. Against each soil core sample horizon, record any comments in the <Comments> field.

Check the Large Soil Pit Vertical Core Samples: In the Large Soil Pit Vertical Core section, against each Large Soil Pit vertical core depth (0 to 10 cm, 10 to 20 cm and 20 to 30 cm), check the box for each sample extracted and bagged, in the <Vertical core sample check> field. Against each vertical soil core sample, record any comments in the <Comments> field.

Soil Sampling Block:

If the plot is a Tier 2 Plot:

Check the Soil Sampling Block Core Samples: In the Tier 2 Sampling Block section, check the box for each soil sample (upper 10 cm sample and lower 20 cm sample) for against each of Soil Sampling Blocks (north east, south east, south west and north west) in the <Upper 10 cm sample check> and <Lower 20 cm sample check> fields. Record any comments in the <Comments> field including changes in distance from Sample Point Location.

0.5 m x 0.5 m Sampling Quadrants:

If the plot is a Tier 1 plot:

Record the locations of 0.5 m x 0.5 m Sampling Quadrants: In the tier 1 0.5 m x 0.5 m Sampling Quadrants section, check four boxes to record the distance along each east and west transect in the <Sample Location (check)> field. Against each checked <Sample Location (check)> box, check boxes under the <Surface litter sample>, <Soil sample (0-10 cm) (check)> and <Soil sample (10-30 cm) (check)> fields, for each surface litter and soil sample taken and bagged. Record any comments in the <Surface litter sample comments>, <Soil sample (0-10 cm) comments> and <Soil sample (10-30 cm) comments> fields.

If the Plot is a Tier 2 plot:

Check the Tier 2 0.5 m x 0.5 m Quadrant Litter Samples: In the Tier 2 0.5 m x 0.5 m quadrant section, check the boxes under the <Surface litter sample> field, against each of the quadrant locations (north east, south east, south west and north west) for each surface litter and soil sample taken and bagged.

Check the Tier 2 0.5 m x 0.5 m Quadrant Soil Samples: In the Tier 2 0.5 m x 0.5 m quadrant section, check the boxes under the <Soil sample (0-10 cm) check>, <Soil sample (10-20 cm) check>, <Soil sample (20-30 cm) check>, against each of the quadrant locations (north east, south east, south west and north west), for each vertical soil sample extracted and bagged.

Post-Fire Recovery Form Section 2 – Recording Measurements for Years 2, 3, 4 & 5

Plot Identification

Complete the Identification section at the top of each page in the Post-Fire Recovery Form: Fill in the Sample Point Identification Code, Bioregion, Date, the SOP version number, Contractor Company Name and the Names of each Contractor Field Crew member present, in the <Sample Point ID>, <Bioregion>, <Date>, <SOP version> and <Contractor Company> fields. Against each <Field Crew Member #> fill in the Contractor Field Crew member surname in the <Contractor Field Crew Member Surname> field and first

name in the <Contractor Field Crew Member First Name> field. The Contractor Field Crew Leader should be the first name recorded in the Identification section of each page in the form. The crew member who enters information in the form (i.e. the scribe) should check the box <Scribe> next to their name.

Small Tree Plot

Record all tree species: In the Small Tree Count section of the Small Tree Plot page in the Post-Fire Recovery Form, record the name of each live species and dead species name in the <Species Name> field.

Unidentifiable species should be given a descriptive name and recorded in <Tree Species>. Check the <Temporary Name> box to mark this record as an unidentified species that is temporarily named.

Record the number of all tree species: In the Small Tree Count section, record the frequency of living and dead trees in the <Live Count> and <Dead Count> fields. Add the number of living and dead trees for each species and record in the <Total> field.

If there are no small trees within the Small Tree Plot, check the box in the <No small trees present> field so that an audit of the data will not confuse an absence of data for a failure to assess the parameter.

Record any comments: Record any additional information relating to the plot in the <Comments> field.

Complete the Field Form Check section at the bottom of the page: The Contractor Field Crew Leader initials the <Team Leader Initials> field, enters the date <Date checked> and writes down any comments about data verification in the <Comments> field.

Complete the Data Entry Check section at the bottom of the page: The Field Crew member who enters the data into the Working Database writes their surname in the <Contractor Surname> field and the date data entry was completed for the form in <Date entered>.

Vegetation Quadrats

Record the maximum tree or shrub height: In the Height and Total Projected Foliage and Woody Species Cover section of the Vegetation Quadrat page in the Post-Fire Recovery Form, record the maximum height (in cm, to the nearest cm) of the tallest living tree or shrub species for each quadrat in the <Height of the tallest tree> field.

Record total projected foliage cover and woody species cover: For each quadrat, record the total projected foliage cover in the <% Total projected

foliage cover> field and woody species cover in the <% Woody species cover> field.

Record all understorey species: In the Understorey Species Count section, record the scientific binomial name of every vascular (non-tree) and every tree species less than 1.3 m in height for each quadrat in the <Species Name> field and the frequency of each tree species corresponding to the relevant species name. Understorey species in quadrats do not include small trees being counted as recruits.

Unidentifiable species should be given a descriptive name and recorded in <Species Name>. Check the <Temp Name> box to mark this record as an unidentified species that is temporarily named.

Record the percentage cover of ground parameters: In the Ground Cover section, record the percentage ground cover to the nearest 1% for each quadrat. Record the percentage cover of bare ground in <% Bare ground>. Record the percentage cover of rock in <% Rock>. Record the percentage cover of mosses and liverworts in <% Mosses & liverworts>. Record the percentage cover of lichen in <% Lichen>. Record the percentage cover of fine litter in <% Fine litter>. Record the percentage cover of medium litter in <% Medium litter>. Record the percentage cover of charcoal in <% Charcoal>. Record the percentage cover of other parameters in <% Other> and describe the parameter in the <Other description> field.

Record the composition of medium and fine litter: In the Medium and Fine Litter Composition section, record the percentage of both medium and fine litter composed of the corresponding class of component in the <Component Class> field.

Record the depth of fine litter: In the Fine Litter Depth section, record the four measurements taken for depth of fine litter (to the nearest cm).

Record the number of stems of new recruits of woody species: In the Woody Species New Recruit section, record the scientific binomial name of every new recruit of woody species for each quadrat in the <Species Name> field and note the number of stems of new recruits of woody species adjacent to the relevant species name. Record stem count for those woody species rooted within the quadrat only and not overhanging woody species recruits.

Unidentifiable species should be given a descriptive name and recorded in <Species Name>. Check the <Temp Name> box to mark this record as an unidentified species that is temporarily named.

Record the life-stage of woody species: In the Woody Species Life-Stages section, record the scientific binomial name of all woody species for each quadrat in the <Species Name> field, and record the life-stage of each *individual* woody species using (J) for juvenile plants, (M) for reproductively mature

plants, and (S) for senescing or dying plants adjacent to the relevant species name.

Unidentifiable species should be given a descriptive name and recorded in <Species Name>. Check the <Temp Name> box to mark this record as an unidentified species that is temporarily named.

Record any site related comments: Record any additional information relating to the plot in the <Comments> field

Complete the Field Form Check section at the bottom of the page: The Contractor Field Crew Leader initials the <Team Leader Initials> field, enters the date <Date checked> and writes down any comments about data verification in the <Comments> field.

Complete the Data Entry Check section at the bottom of the page: The Field Crew member who enters the data into the Working Database writes their surname in the <Contractor Surname> field and the date data entry was completed for the form in <Date entered>.

Large Tree Plot

Record LTP slope adjusted radius: On the Large Tree Plot page in the Post-Fire Recovery Form, record the slope adjusted LTP radius in the <Slope Adjustment LTP Radius> field.

Tree Mensuration:

Enter the number of tagged trees in each quadrant: In the Tree Mensuration section of the Large Tree Plot page in the Post-Fire Recovery Form, after marking out quadrants and tagging trees, record the tag codes of all tagged trees under the <Tree Tag Code> field. Record the tree tag codes in ascending order, starting with NE01...NE02 etc. followed by SE, SW and NW tree tag codes.

Record the Tree Status of each tagged tree: In the Tree Mensuration section, against the relevant tree tag code, record each tree as either LS (Live Standing), LF (Live Fallen) or DS (Dead Standing) in the <Tree Status> field.

Record Tree Death: In the Tree Mensuration section, against tagged trees recorded as *Dead Standing* (under <Tree Status>), record the probable cause of death in the <Tree Death> field.

Record Tree Species: In the Tree Mensuration section, against the relevant tree tag code, record the tree species in the <Tree Species> field.

Unidentifiable species should be given a descriptive name and recorded in <Tree Species>. Check the <Temporary Name> box to mark this record as an unidentified species that is temporarily named.

Record Tree Crown Class: In the Tree Mensuration section, against the relevant tree tag code, record the crown class in the <Crown Class> field.

Record Tree Characteristics: In the Tree Mensuration section, against the relevant tree tag code, check one of more tree characteristics (e.g. bent over, near dead, head out etc.) which best characterise and describe the tagged tree and may be useful for identifying the tree in the future.

Record the DBH of each tagged tree: In the Tree Mensuration section, against the relevant tree tag code (recorded above) record the diameter (in cm, to the nearest 0.1 cm) in the <DBH> field. Calculate averages around branches and swellings prior to recording the DBH.

Rank the DBH of each Live Standing tagged tree: In the Tree Mensuration section, rank the DBH in the <DBH Rank> field of each Live Standing (under <Tree Status>) tagged tree.

Record the height of the three largest DBH tagged trees: In the Tree Mensuration section, against the relevant tree tag codes, record the heights (in cm, to the nearest centimetre) of the three largest DBH trees in the entire LTP in the <Tree height> field.

Identify and record the heights of five other trees across the range of diameters in the LTP: Check every *n*th number in the list of ranks under the <DBH Range Five> field, and make a note of its tree tag number. In the <Tree Height> field, record the heights of the 5 selected trees.

Tree Canopy Cover:

Record Observer Names: In the Tree Canopy Cover section, fill in Observer 1's name in the <Observer Name> field and fill in Observer 2's name in the <Observer Name> field.

Record Canopy or Sky Count for each direction: In the Tree Canopy Cover section, record the count for canopy or sky cover made by both Observer's 1 and 2. When a Canopy Count is made, record the value for each direction (north, east, south, west) in the <Canopy Count> field and record a dash (-) in the <Sky Count> field for the same direction. When a Sky Count is made, record the value for each direction (north, east, south, west) in the <Sky Count> field and Canopy Count is calculated (= 96 – Sky Count) and recorded in the <Canopy Count> field for the same direction.

Calculate and record each Observer's Subtotal: In the Tree Canopy Cover section, calculate the sum of each observer's <Canopy Counts> and enter in the <Observer Subtotal> field.

Calculate and record the grand total Canopy Count: In the Tree Canopy Cover section, calculate the sum of each observer's subtotal and enter in the <Grand Total Canopy Count> field.

Calculate and record the average Canopy Cover: In Tree Canopy Cover section, calculate the average canopy cover by multiplying the <Grand Total Canopy Count> by 0.13 and enter it in the <Average Canopy Cover %> field.

Tree Canopy Health:

Record the amount of epicormics present on each Height Tree: In the Tree Canopy Health section, enter the percentage of epicormic shoots present on the entire tree in 5% levels in the <Epicormics Present> field.

Record the proportion of dieback present in each Height Tree: In the Tree Canopy Health section, enter the percentage of dieback observed in the entire tree in 5% levels and record in the <Proportion of Dieback> field.

Measure and record the length of dead top present in each Height Tree: In the Tree Canopy Health section, enter the length of the dead top (in metres), if present, in the <Length of Dead Top> field.

Record the amount of crown defoliated in each Height Tree: In the Tree Canopy Health section, identify the percentage of crown defoliated in 5% levels and record in the <Crown Defoliated> field.

Record the amount of canopy density in each Height Tree: In the Tree Canopy Health section, identify the percentage of canopy density in 5% levels and record in the <Canopy Density> field.

Record the crown clumping score in each Height Tree: In the Tree Canopy Health section, enter the crown clumping code that best describes the tree in the <Canopy Clumping Score> field.

Record the amount of crown discolouration in each Height Tree: In the Tree Canopy Health section, identify the percentage of crown discoloured in 5% levels and record in the <Crown Discoloured> field.

Record the position of the crown in each Height Tree: In the Tree Canopy Health section, enter the crown position code that best describes the crowns relationship to its neighbouring tree in the <Crown Position> field.

Record any comments: Identify any site specific variables making the site distinguishable in the Comments section. Record any additional information relating to the plot or plot surrounds that are individual to that plot in this field.

Complete the Field Form Check section at the bottom of the page: The Contractor Field Crew Leader initials the <Team Leader Initials> field, enters the date <Date checked> and writes down any comments about data verification in the <Comments> field.

Complete the Data Entry Check section at the bottom of the page: The Field Crew member who enters the data into the Working Database writes their surname in the <Contractor Surname> field and the date data entry was completed for the form in <Date entered>.

Record LTP slope adjusted radius: On the Course Woody Debris page in the Post-Fire Recovery Form, record the slope adjusted LTP radius in the <Slope Adjustment LTP Radius> field.

Record the length and proportion of charring of each CWD piece: In the Coarse Woody Debris section, enter the length for each separate piece of CWD corresponding to the appropriate <Diameter Class>, <Level of Decay or Structural Change> and <Proportion of Charring>.

If there is no CWD, check the box in the <No Course Woody Debris> field so that an audit of the data will not confuse an absence of data for a failure to assess the parameter.

Record the dimensions of any piles of slash and its average level of decay: In the Slash Pile section, record in metres (to the nearest 0.1 m) the height of the slash pile in the <Height> field, the width pile in the <Width> field and the length of the slash pile in the <Length> field. Record the average level of decay of the slash pile in the <Decay Class> field.

If there is no pile of slash, check the box in the <No Slash Pile Present> field so that an audit of the data will not confuse an absence of data for a failure to assess the parameter.

Record any comments: Record any additional information relating to the plot in the <Comments> field.

Complete the Field Form Check section at the bottom of the page: The Contractor Field Crew Leader initials the <Team Leader Initials> field, enters the date <Date checked> and writes down any comments about data verification in the <Comments> field.

Complete the Data Entry Check section at the bottom of the page: The Field Crew member who enters the data into the Working Database writes their surname in the <Contractor Surname> field and the date data entry was completed for the form in <Date entered>.

Course Woody Debris (CWD) without Stumps

Version (current)	Version (previous)	Author	Date	Summary of changes
1.0		AA01	DD/MM/YYYY	
1.0	1.0	MW0A	24/03/2011	Inclusion of data and information recording section consistent with procedures
1.0	1.0	MW0A	19/04/2011	Edits following field testing, 15/04
1.0	1.0	MW0A	20/04/2011	Minor edits to incorporate comments by AM1K
1.0	1.0	MW0A	21/4/2011	Minor edits to incorporate comments by Lauren Bennet
1.1	1.0	MW0A	04/07/2011	Amendments made post field season 1

Endorsed

Date 28/04 /11**Name:** Kristen Thrum**Position:** Acting Team Leader, Forests and Parks Monitoring and Reporting**Division/Branch:** Forests and Parks Division / Management and Operations Branch

Standard Operating Procedure 16A Measuring Post-Fire Forest Recovery Appendix 16A.1

Course Woody Debris Reference Pictures



Figure 1. Advanced decay/ structural change, moderate charring



Figure 2. Advanced decay/structural change, severe charring



Figure 3. Moderate decay/ structural change, no charring



Figure 4. Moderate decay/ structural change, severe charring



Figure 5. Sound decay/ structural change, moderate charring