

# 12.0 Plot Assessments

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## 1st Assessment (New) Squares

For each NFI-treed Section that is deemed Accessible, or visually assessable, the surveyor will need to carry out full or abbreviated plot assessments. Full plot assessments are carried out when the plots/points are accessible and comprise:

- Tree assessments
  - Species assessment
  - Diameter at Breast Height (DBH) – see Diameter (DBH) Assessments V2.doc in Mensuration sub-folder of Additional Documents folder
  - Tree heights and crown diameters – see Height and Crown Diameter Assessments V2.doc in Mensuration sub-folder of Additional Documents folder
  - Live/Dead (Reason, Decay Class and Total Height (visual estimate) if dead)
  - Storey assessment
  - Conifer Straightness (if Conifer  $\geq 14$ cm DBH) – see the Additional Documents folder
  - Component Group
  - Excessive lean
  - Windsnap
- Stump assessments
  - Number of stumps
  - Size of sample stumps
  - Decay class
  - Species category
- Young tree assessments
  - Young Tree assessments
    - Seedling or sapling identification
    - Species
    - Number
    - Mammal Damage
- Lying Deadwood assessments
  - Deadwood Type
  - Diameter
  - Decay class
  - Decay features

## 12.1 Plot types

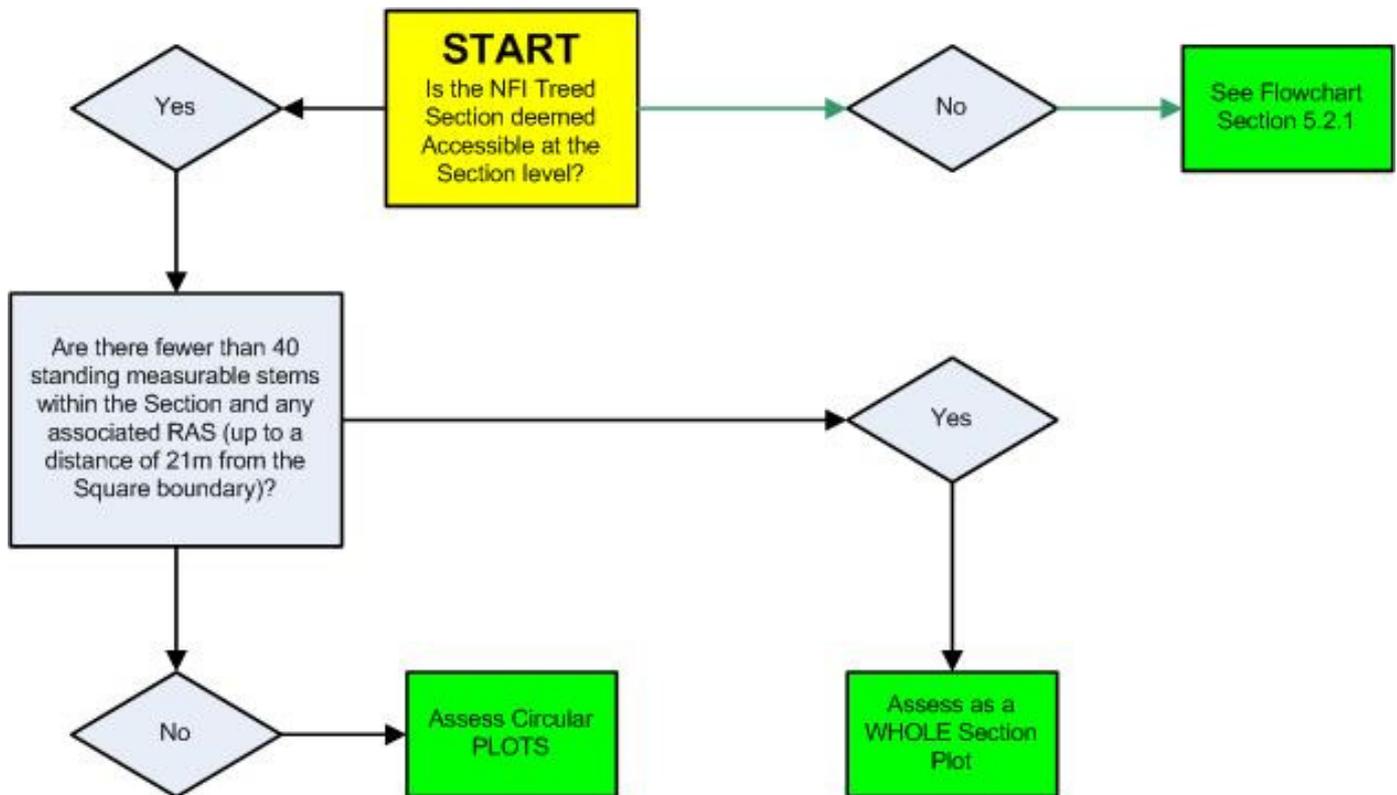
The NFI uses two types of sample plot (also see flowchart 12-1 overleaf):

1. Circular plots – where there are  $\geq 40$  standing measurable<sup>1</sup> stems (live *and* dead) within a Section (and any associated Sample RAS – see Chapter 11 - where applicable), circular plots are used to gain a representative sample of the Section. All circular plots within the NFI are 5.64m *horizontal* radius (0.01ha planimetric area) and for Sections  $< 0.6$ ha two plots are generated by the software. For Sections  $\geq 0.6$ ha the software generates three plots.
2. Whole Section Plots – where there are  $< 40$  standing measurable stem within a Section (and any associated Sample RAS up to 21m from the square boundary) then all measurable stems are assessed. Some assessments (e.g. stump) are based around a Point randomly located within the Section.

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<sup>1</sup> Where measurable stems are standing stems (live or dead)  $\geq 4$ cm DBH.

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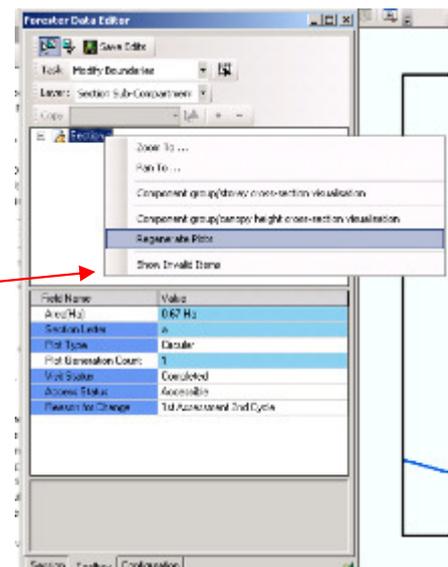
Flowchart 12 - 1: Circular Plots or Whole Section Plot Decision chart

## 12.2 Generating circular plots

Select the Section in which to generate plots and ensure the 'plot type' data field at the Section level is set to Circular (the default setting). Then right click on the Section in the Forester Data Editor window and from the drop down menu choose Regenerate Plots.

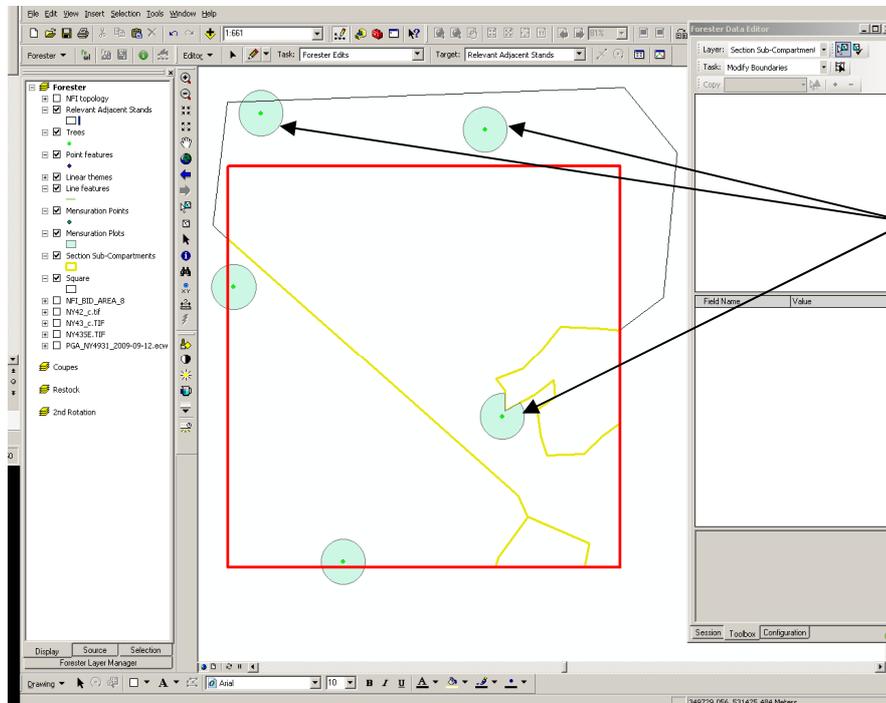
A message box will appear asking whether to include a Relevant Adjacent Stand (RAS). Include a Sample RAS as appropriate.

If the answer to the RAS prompt is, 'No' then the plot centres will be restricted to within the Section boundaries. However part of the plot may still fall out with the Section as outlined in Chapter 12.3.



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If the answer is 'Yes' then the plot centres may fall up to 15m outwith the Square boundary. Note that it is possible that all or none of the plots may fall within the RAS. If the RAS layer is a solid colour then the symbology needs to be changed to hollow in order to see any plots within the RAS.



In this image the software has randomly located the plots within the Section and its adjoining Sample RAS.

Plots should not be regenerated multiple times, they must be accepted where they fall *unless* it is found that the Section boundary was incorrect and has subsequently been moved or the plot type needs to be changed.

Even if you are in a section with more than 40 trees, you will occasionally have a plot with no measureable trees in. Don't worry, carry on as normal, locate the centre, peg the location and carry out your deadwood, stump and young trees assessments. Having no measurably trees in a plot is not a problem, as its location happened by chance and although it may be unrepresentative of the stand overall, it is representative of woodlands in the region as a whole and the plot is 'picking up on' how woods occasionally have open spaces within them. This will only happen occasionally and will be balanced out through sampling probability, where an equal number of plots in other stands will fall in denser areas. Thus this is a random sampling issue and is self correcting. This is inherent to the probabilistic nature of sample selection and balances out over time.

What we do have to avoid are systematic errors, errors which happen constantly which are not balanced out, such as a poorly calibrated hypsometer, which will measure trees incorrectly or in an unrepresentative fashion all of the time, in all plots and all squares across the region and will bias the survey.

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## 12.3 Circular plots crossing Square and Section boundaries

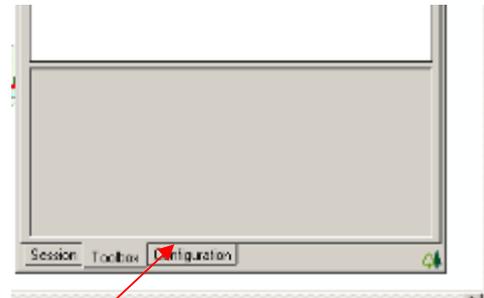
Whilst the actual Points of Circular plots/Points generated can never cross Square or Section boundaries, the area for stump/stool Seedling, Sapling and Lying Deadwood assessments can.

### 12.3.1 Section boundaries

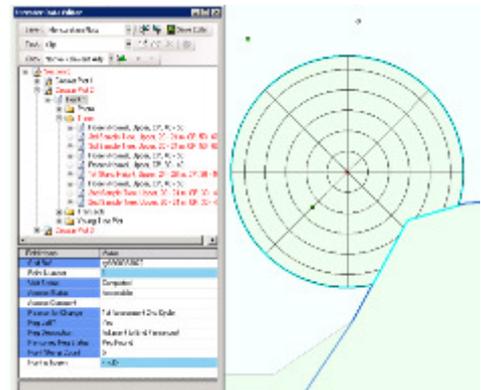
Ensure the plot target is turned on:

#### 12.3.1.1 Plot Target

Clicking on the Configuration tab gives access to the Configuration part of the Forester Data Editor. Ticking the 'Display plot target on active point' will give a guide at each plot to help mapping stems and stumps/stools more accurately.

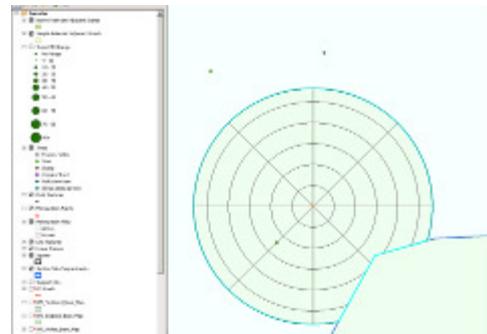


Each circle, starting from the centre is 1m apart except the last two which are 0.64m apart. The eight straight lines follow the main compass bearings.



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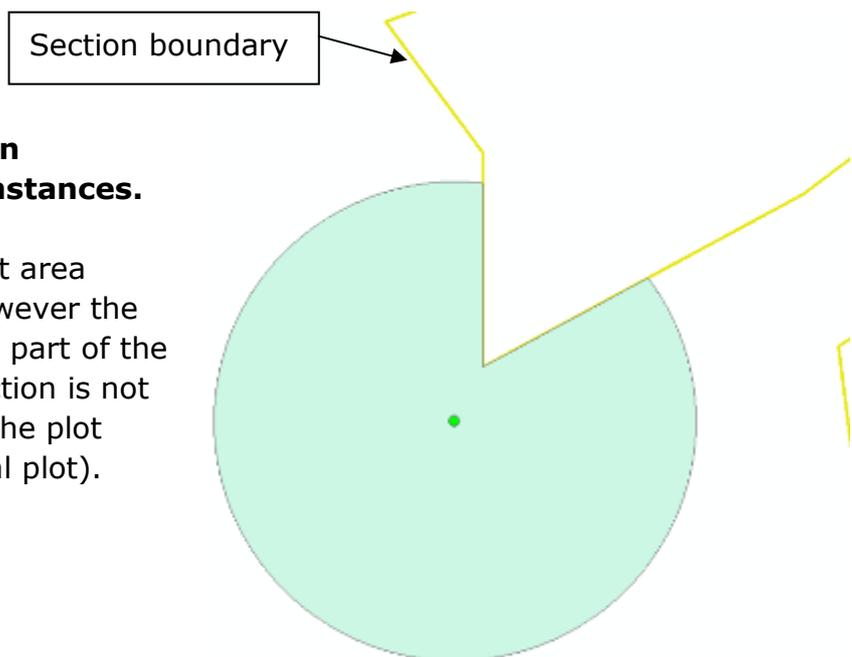
Using the plot target gives a clear indication of how much of the plot crosses the Section boundary and surveyors need to be aware of which stumps/stools are inside the plot and Section and which are not.



## 12.3.2 Section boundaries

**Plots may never cross Section boundaries under any circumstances.**

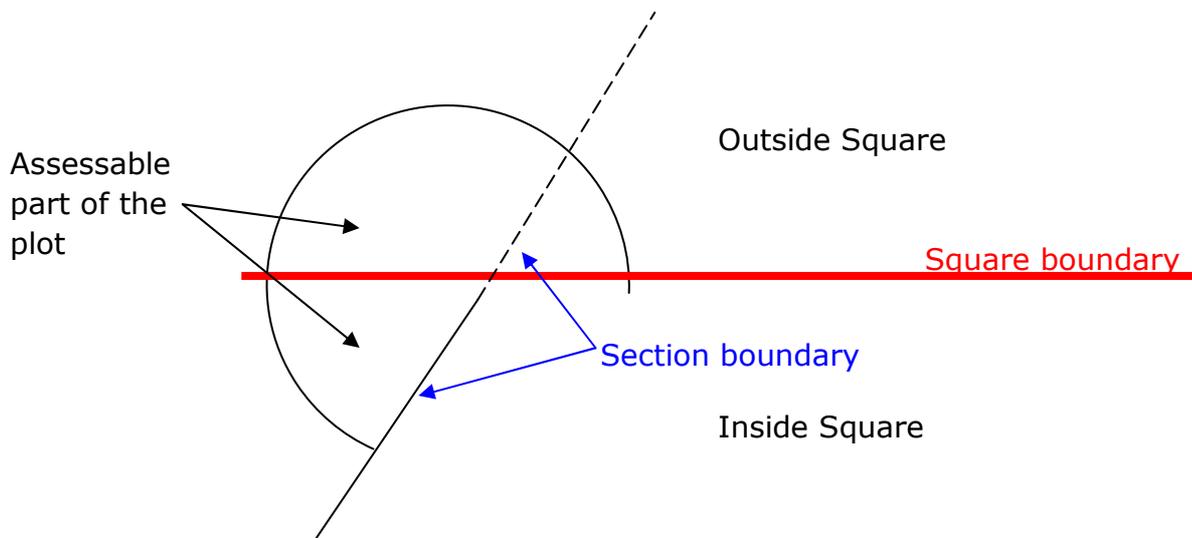
In the situation opposite the plot area crosses a Section boundary; however the software automatically cuts that part of the plot off so that the adjacent Section is not sampled as part of the Section the plot centre is located within (a Partial plot).



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In rare cases the software will not curtail a plot crossing a Section boundary because this boundary is physically present outside the Square but has not been mapped (unless as a RAS).



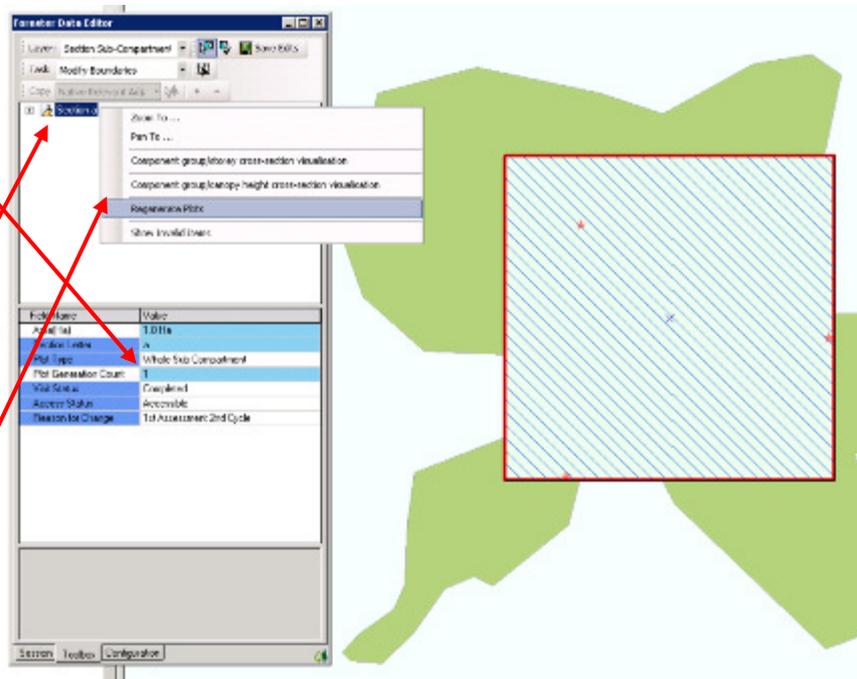


## 12.4 Generating Whole Section plots

Ensure the 'plot type' data field at the Section level is set to Whole Sub-compartment.

Select the Section in which to generate points and right click on the Section in the Forester Data Editor window.

From the drop down menu choose Regenerate Plots. The Relevant Adjacent Stand (RAS) *cannot* be included when generating points.



*Trees outside the square boundary are **never assessed** as part of a Whole Section plot assessment. Stumps, young tree plots and transects, however, can be as they are assessed within a circular plot around the Point or as part of a transect.*

## 12.5 Locating Plots/Points

1. Look at the square map and orientate yourself in relation to where you think the plots should be, are they close to an obvious feature such as rides, rivers or veteran trees? The OS support data and aerial photography can be invaluable for this.
2. You can solely rely on traditional survey and compass techniques to find and approach the approximate area.
3. The GPS is also a very useful tool. Input the grid reference of the plot/point and turning on the 'beep' for when you are close.

## 12.6 Inaccessible Plots/Points

### 12.6.1 Circular Plot

A **Plot** (Circular) is deemed Inaccessible if:

Definition:

- A plot that has more than 10% of its measurable stems inaccessible
  - Where <10% of the measurable stems are inaccessible the mensuration assessments for those trees may be estimated.

Where a *circular* plot is inaccessible, but can be seen, a visual abbreviated mensuration assessment **of the predominant storey (or thicket storey if inaccessibility is due to thicket stage trees)** is carried out comprising:

- Mean height
- Number of stems in the plot (where applicable)
- Estimated mean DBH

Where a circular plot is inaccessible and cannot be seen no mensuration assessments are carried out.

#### 12.6.1.1 Section Accessibility – all plots inaccessible

Should all plots be deemed Inaccessible (including those automatically regenerated by the software) then the section should be recorded as 'Inaccessible, visual assessment possible'.

### 12.6.2 Whole Section Plot - Point

Definition:

A **Point** (Whole Section plot Point) is deemed Inaccessible if:

- It is not possible to access the transects/young tree plots for that Point
- It is not possible to access the 5.64m radius area around the Point for stump assessments

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Surveyors will need to decide which level of inaccessibility to use: whether the Point can be visually assessed or not.

## 12.6.2.1 Section Accessibility – all Points inaccessible

Where all the Points within a Whole Section plot are deemed Inaccessible the entire section is recorded as 'Inaccessible, visual assessment possible'.

## 12.7 Inaccessible plot/Point: Data entry – all plots/points

When either of the Inaccessible options is selected under “Access Status”:

- An “Inaccessible Reason” data field appears. Select the most appropriate reason:

**Table 12 - 1: Plot Inaccessible Data Fields**

<b>Data Field</b>	<b>Options</b>	<b>Comments</b>
Inaccessible Reason	<ul style="list-style-type: none"><li>• Inaccessible thicket</li> <li>• Inaccessible health and safety</li><li>• Inaccessible slope</li><li>• Inaccessible obstruction</li><li>• Inaccessible wind blow</li><li>• Inaccessible other</li></ul>	<p>Thicket definition: “Stands of conifer/broadleaved trees where the bases of the live crowns of the trees are below 1m in height, and the live crowns interlock so tightly that access is impossible”.</p> <p>E.g. dense gorse preventing access.</p>

NB: No stump or transect data is required for that plot/Point – software automatically enters a value of ‘None’.

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## 12.7.1 Inaccessible plot: Additional Data entry – Circular plots

For a circular plot only: If Access Status is set to 'Inaccessible, Visual Assessment Possible' AND Inaccessible Reason is thicket, slope or windblow, then an abbreviated mensuration tree assessment must be carried out by completing the Data Fields below:

**Table 12 - 2: Plot Visual Assessment Data Fields**

<b>Data Field</b>	<b>Options</b>	<b>Comments</b>
Height (m)	<ul style="list-style-type: none"><li>• Free text</li></ul>	Estimate the mean total height of: <ul style="list-style-type: none"><li>• The predominant stems,</li><li>• or if thicket is the reason for inaccessibility then assess the thicket stems only.</li></ul>
Tree count	<ul style="list-style-type: none"><li>• Free text</li></ul>	Estimate the number of stems/coppice stools within the plot for: <ul style="list-style-type: none"><li>• The predominant stems,</li><li>• or if thicket is the reason for inaccessibility then assess the thicket stems only.</li></ul>
Est. Mean DBH (cm)	<ul style="list-style-type: none"><li>• Free text</li></ul>	Estimate the average DBH of all the stems within the plot for: <ul style="list-style-type: none"><li>• The predominant stems,</li><li>• or if thicket is the reason for inaccessibility then assess the thicket stems only.</li></ul>

If Access Status is set to 'Inaccessible, Visual Assessment Possible' AND Inaccessible Reason is health & safety, obstruction or other, then no abbreviated mensuration assessment is required at that plot, however a replacement plot will be generated for assessment (up to a maximum of three new plots).

## 12.8 Data Collection Procedure

### 12.8.1 Circular Plots

When assessing Circular Plots surveyors are expected to adhere to the following procedure in order to ensure all data is collected and fields filled out correctly.

- Navigate to the chosen Plot.
- Access status – determine accessibility of the Plot.
- Place metal peg and yellow rod/wand at the Plot centre and attach biotape. Where possible, additional biotape placed at eye level will aid return visits for QA and survey staff.
- Record the field GPS reading of peg – do **not** record the coordinates from the ArcGIS software **unless** the Plot is Inaccessible in which case use the ArcGIS coordinates.
- Complete peg description field and take photo if possible to aid return visits up to 10 years in the future.
- Complete data collection for the Plot – see below.

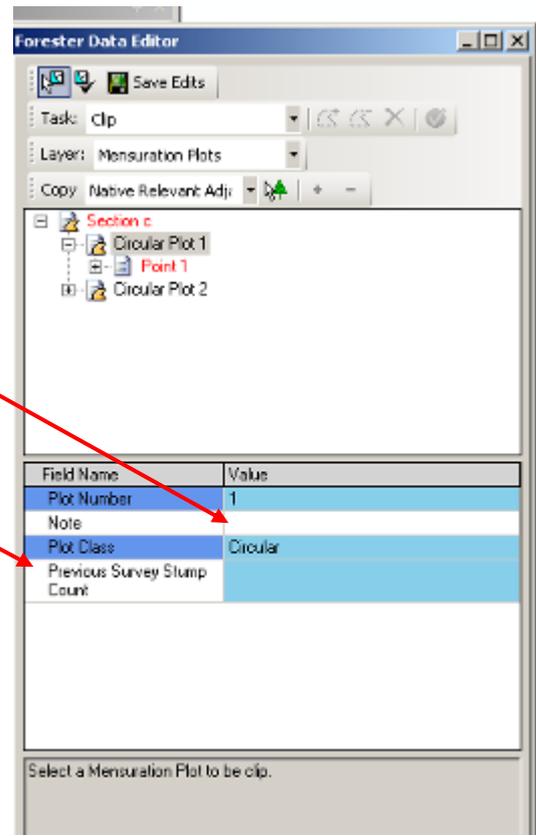
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## 12.8.1.1 Circular Plot level data

At this level there is only one field which requires completing:

Note – put any comments in here relating to the plot e.g. guide to location, any issues etc.

Previous Stump Count – this is for re-measure squares only

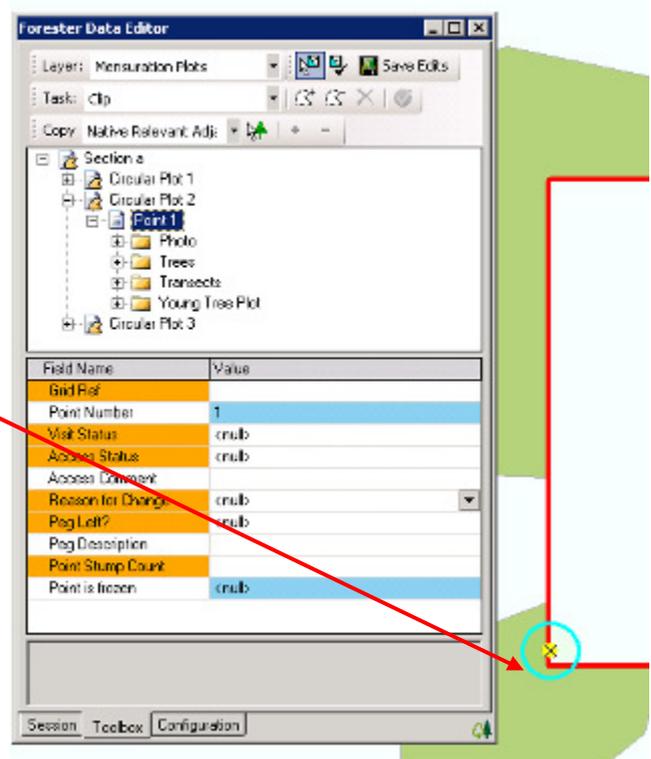


## 12.8.1.2 Point 1 Data for each Plot

In the Forester Data Editor window:

### For Circular Plots:

Click on "Point 1" for the Plot to be assessed. The plot centre will be highlighted in yellow on the map.



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The orange data fields **must** be completed. The white "Peg Description" data field should always be completed. If there is nothing on the ground to help locate the peg in the future put 'Nothing' in the description.

### 12 - 3: Point 1 Data Fields

Data Field	Options	Comments
Grid Ref.	Free text	Enter the field GPS reading for the plot centre, using the "2 letter-10 digit format" e.g. TQ0901012008 unless the plot is Inaccessible in which case use the ArcGIS coordinates.
Point Number	Software generated	
Visit Status	<ul style="list-style-type: none"> <li>Unvisited</li> <li>In progress</li> <li>Completed</li> <li>Refused Access</li> <li>Not possible to assess</li> </ul>	<p>In progress can be used if the surveyor needs to leave the site before completing data entry (e.g. it gets dark before completion). Ensure that this is changed to Completed when the square is finally completed.</p> <p>Completed should be used if the plot can be assessed, either physically or visually and the assessment work and recording are complete.</p>
Access Status	<ul style="list-style-type: none"> <li>Accessible</li> <li>Inaccessible, visual assessment possible</li> <li>Inaccessible, NO visual assessment</li> </ul>	If either of the inaccessible options is selected, an "Inaccessible Reason" data field will appear (see table 12-2).
Access comment	<ul style="list-style-type: none"> <li>Free text</li> </ul>	Any comments relating to access – e.g. reason for Inaccessibility if Inaccessible Other used
Reason for Change	<ul style="list-style-type: none"> <li>No Change 2<sup>nd</sup> cycle</li> <li>Real Change 2<sup>nd</sup> cycle</li> <li>Error Change 2<sup>nd</sup> cycle</li> </ul>	<ul style="list-style-type: none"> <li>A change in the data due to an error found by NFI office staff.</li> </ul>

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	<ul style="list-style-type: none"> <li>• Spatial Error 2<sup>nd</sup> cycle</li> <li>• 1st Assessment – 2<sup>nd</sup> cycle</li> </ul>	<ul style="list-style-type: none"> <li>• A change in the data due to a spatial error found by NFI office staff.</li> <li>• The normal Reason for 1<sup>st</sup> assessment of the site.</li> </ul>
<b>Data Field</b>	<b>Choices</b>	<b>Comments</b>
Peg Left?	<ul style="list-style-type: none"> <li>• No</li> <li>• Yes</li> <li>• Not surveyed</li> </ul>	If “No” then the “Peg not Left Reason” data field will appear.
Peg not Left Reason	<ul style="list-style-type: none"> <li>• No Landowner Permission</li> <li>• Health &amp; Safety</li> <li>• Legal Restriction</li> <li>• Public Access Area</li> <li>• Residential</li> <li>• Garden</li> <li>• Impenetrable surface</li> <li>• Puddling Ground</li> <li>• Boggy Ground</li> <li>• Inaccessible</li> <li>• Multiple Causes</li> <li>• Terrain</li> <li>• Ground cover vegetation</li> <li>• Forest operations</li> <li>• Other</li> </ul>	<p>E.g. the site is a Scheduled Ancient Monument and ground disturbance is forbidden.</p> <p>E.g. livestock-grazed woodland, graveyards.</p>
Peg Description	Free text	Record anything to help relocation of the peg for Quality Assurance purposes and for the return visit in 5-10 years time.
Point Stump count	Free text	A count of the total number of stumps within a circular plot or within 5.64m of a Whole Section Plot point.

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Data entry for Trees, Stumps, Young Tree plots, Trees and Lying Deadwood can be found in Chapters: 13-16.

## 12.8.2 Whole Section Plots (Points)

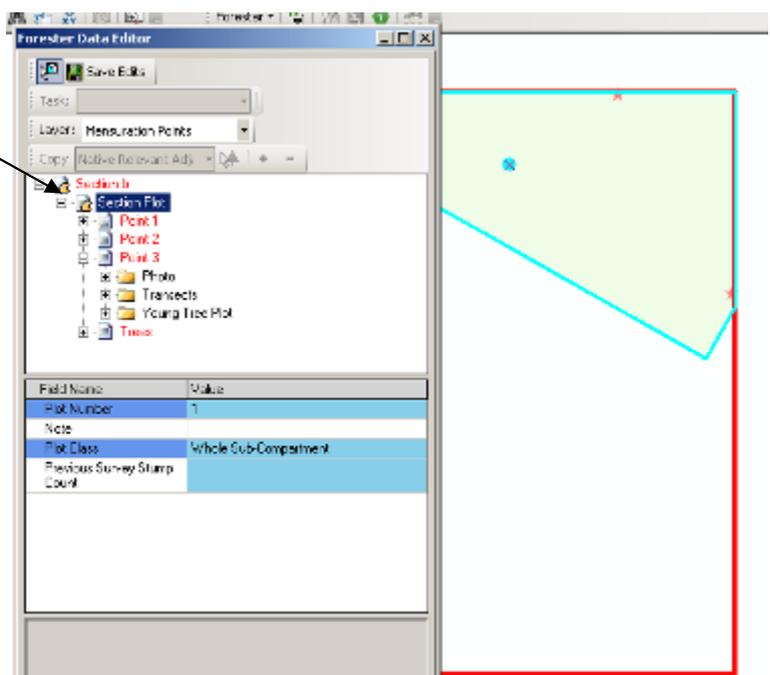
When assessing Whole Section Plots (Points) surveyors are expected to adhere to the following procedure in order to ensure all data is collected and fields filled out correctly.

- Navigate to the chosen Point.
- Access status – determine accessibility of the Point.
- Place metal peg and yellow rod at the Point and attach biotape. Where possible, additional biotape placed at eye level will aid return visits for QA and survey staff.
- Record the field GPS reading of peg – do **not** record the coordinates from the ArcGIS software **unless** the Point is Inaccessible in which case use the ArcGIS coordinates.
- Complete peg description field and take photo if possible to aid return visits up to 10 years in the future.
- Complete data collection for the Point – see below.

### 12.8.2.1 Section Plot level data

Ensure that "Mensuration Points" is showing in the Layer box and click on Section Plot.

At this stage only the Notes field needs to be filled in.



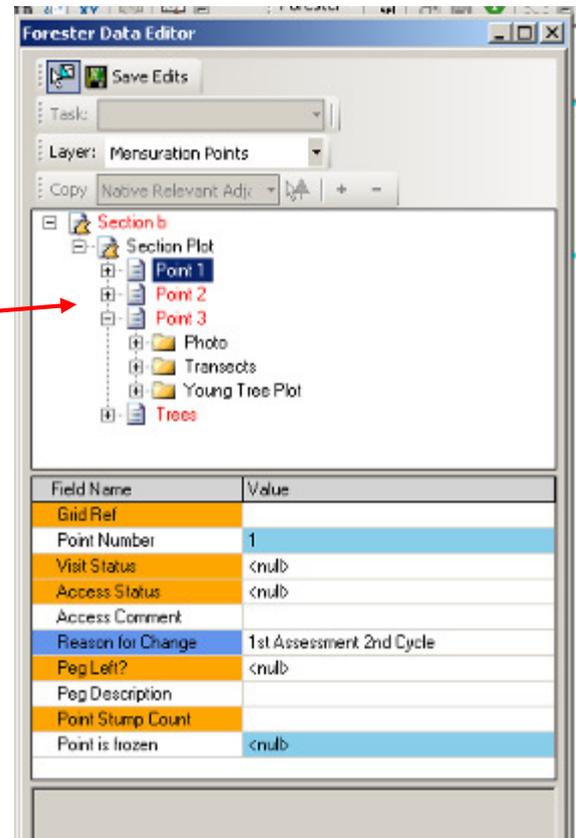
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## 12.8.2.2 Point level Data for each Point

In the Forester Data Editor window:

Click on Point 1, Point 2 or Point 3 for the Plot to be assessed. The plot centre will be highlighted on the map. Note that if a Point is inaccessible then the software may generate a new Point to be assessed.

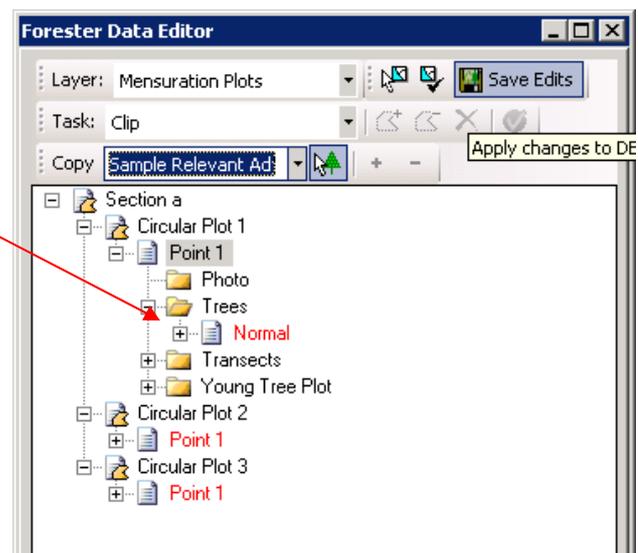
Fill in the data fields as you would for a circular plot.



## 12.9 Photo

Add a Photo in the same way as described in Chapter 9.3. Photos are **not yet** Mandatory and need to illustrate the peg location.

In the Comment box note the bearing the photo was taken (from the surveyor to the peg) as well as a description.



## Re-measure Squares

The general rule of thumb when re-measuring first cycle squares is to attempt to maintain continuity between the two assessments. If for example we change the location of the plots with each survey it would be harder or impossible for us to identify how individual trees had grown or died over the 5 years.

With such we expect you to find and use existing plot locations and types where possible.

The section on locating plots explains how to achieve this and what to do if you have difficulty in locating plots. This section looks at what to do if you find the plot's location, but its 'circumstances' or the composition and nature of the trees around and within it have changed.

### 12.10 Section splits or boundary changes

Where a section has to be split or its boundaries changed to reflect change on the ground, to reflect for example; felling, windblow or restocking boundaries, the protocol is to maintain the existing plot locations.

Plots will remain belonging to the section where their plot centre sits. When splitting sections this will be irrespective of if that plot centre is within the old 'parent section' or the new 'child' section.

The software will manage all this for you; all you have to do is get the sectioning correct. Plot locations will be maintained and even if you split a section in half or significantly modify the boundaries the plot locations will remain the same. For example plots will not be 'wiped' as per the 1<sup>st</sup> cycle (and 1<sup>st</sup> assessment square) protocol.

Where plots end up spanning section boundaries as a result of modifying boundaries or through splitting sections, the plots will be clipped to the new boundary of their new section. Plots will belong to the section that their plot centre falls within. Any 'fractions' of the plot cut off and remaining in a new section and 'divorced' from its plot centre, will become a 'fraction plot' within the remaining section. There is no requirement to carry out assessments of the fraction plots.

Once sections have been split, or their boundaries modified, you should right click on the section and choose the 'check existing plots' function. The software will then check to

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see if there are still enough, or too many, plots within the new sections (to sample them effectively) and will create additional new plots if necessary.

## 12.11 Landuse or stock changes

Where section boundaries remain the same but some form of significant change has occurred within the section, such as clearfelling or windblow the same principle of continuity in plot location applies.

## 12.12 Sample RAS

If a sample RAS was created in the first cycle, as the number of trees within the adjacent section was <40, and since then, the number of measurable trees has increased, keep the circular plots and mensuration RAS 'as are'.

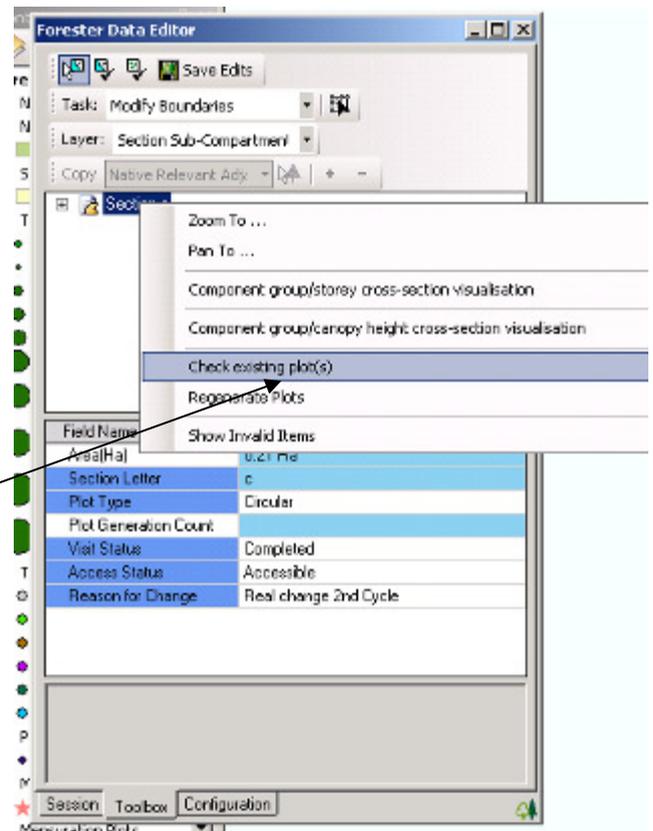
If in the same circumstance the number of trees has fallen, keep the same circular plots and the RAS.

Once the surveyor is content with the location of **all** Section boundaries then for each NFI Treed Section plot locations and types must be verified using the Check existing plot(s) function.

This is accessed by right-clicking on the Section folder in the Forester Data Editor box.

This function updates the status of Circular plots within the Section ensuring that the correct number of plots is present within the Section and re-classifying any plots that have been split due to re-sectioning.

Where there are too many plots the software will 'freeze' some of the plots. Frozen plots do not require re-measurement.



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Note that Whole Section Plots within re-measure squares do not need to be 'Checked' by the software in the same way as circular plots - it is not possible to have more than one Whole Section plot within a Section.

For each NFI-treed Section that is deemed Accessible, or visually assessable, the surveyor will need to carry out full or abbreviated plot assessments. Full plot assessments are carried out when the plots/points are accessible and comprise:

- Tree assessments
  - Species assessment
  - Diameter at Breast Height (DBH)
  - Tree heights and crown diameters
  - Live/Dead (Reason, Decay Class and Total Height (visual estimate) if dead)
  - Storey assessment
  - Conifer Straightness (if Conifer  $\geq 14$ cm DBH) – see the Additional Documents folder
  - Component Group
  - Excessive lean
  - Windsnap
  - Re-survey status
  
- Stump assessments
  - Number of stumps
  - Size of sample stumps
  - Decay class
  - Species category
  - Re-survey status
  - Good felling practice
  
- Young tree assessments
  - Young Tree assessments
    - Seedling or sapling identification
    - Species
    - Number
    - Mammal Damage
  
- Lying Deadwood assessments
  - Deadwood Type
  - Diameter
  - Decay class
  - Decay features

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## 12.13 Plot types

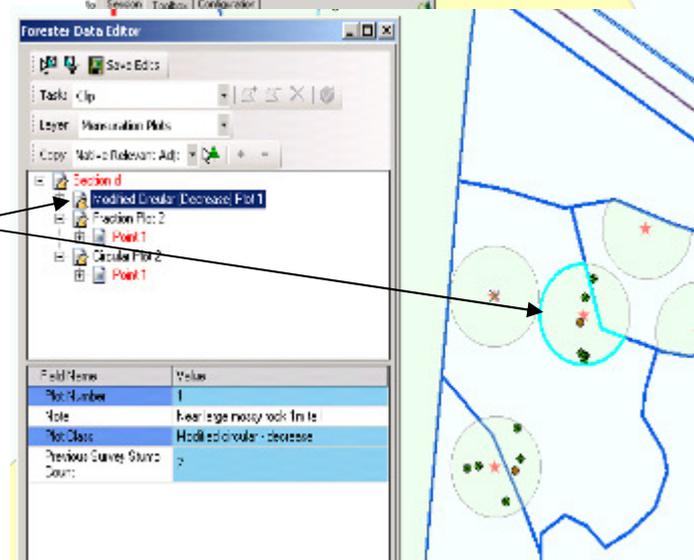
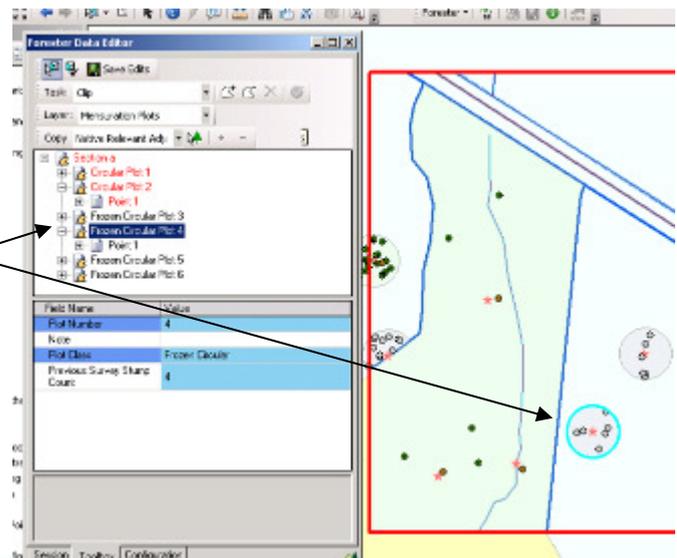
The NFI uses two main types of sample plot plus three sub-categories of Circular Plot.

1. Circular plots – same as for 1<sup>st</sup> Assessment (New) squares - where there are  $\geq 40$  standing measurable<sup>2</sup> stems (live *and* dead) within a Section (and any associated Sample RAS – see Chapter 11 - where applicable), circular plots are used to gain a representative sample of the Section. All circular plots within the NFI are 5.64m *horizontal* radius (0.01ha planimetric area) and for Sections  $< 0.6$ ha two plots are generated by the software. For Sections  $\geq 0.6$ ha the software generates three plots.
  - a. Frozen Plot – a plot that no longer needs assessing due to: e.g. 2 Sections being merged and there are now too many plots to be re-assessed

Where a plot has been frozen the trees within it will be grey in colour and the plot called a frozen plot within the software.

**Mensuration assessments** - No data needs to be collected for these plots.

- b. Modified circular plot – Where a plot has increased/decreased due to a Section boundary change and includes the plot centre



<sup>2</sup> Where measurable stems are standing stems (live or dead)  $\geq 4$ cm DBH.

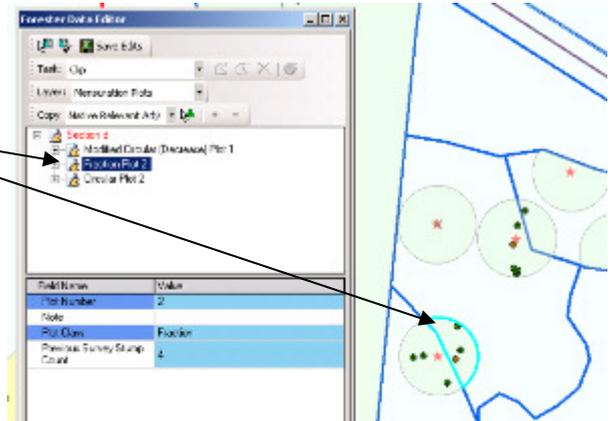
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within the Section

**Mensuration assessments** – assess as per a normal re-measure plot. Assign extra sample height trees as required.

- c. Fraction plot – Where a plot has increased/decreased due to a Section boundary change and does not include the plot centre within the Section.

**Mensuration assessments:** assess the trees/ stumps within the fraction area. Note number of stumps and assess existing stumps as required. Extra sample height trees are not required.



- 2. Whole Section Plots – same as for 1<sup>st</sup> Assessment (New) squares - where there are <40 standing measurable stem within a Section (and any associated RAS up to 21m from the square boundary) then all measurable stems are assessed. Some assessments (e.g. stump) are based around a Point randomly located within the Section.

## 12.14 Tolerances - Circular plots

With circular plots, if changes such as clearfelling or seed tree felling have reduced the tree numbers within the section, but the numbers are still above the 40 tree rule, or up to 10% less than this – 36 trees, simply maintain the circular plots.

With circular plots, if the clearfelling has reduced the tree numbers within the section to less than the 40 tree rule or up to 10% less than this – 36 trees - convert the circular plots to section plots. The plot centres will remain the same to keep plot continuity. The trees and sample trees will be assigned to section plot, but do not need to change location. Complete the plots as per section plots protocol. As the points are in the same place, it means the transect on point 1 is in the same place and also continued stump re-assessment is possible.

## 12.15 Tolerances – Whole Section Plots

In section plots, where for example a clearfell site that was designated as a section plot has been planted:

If the restocking has increased the measureable tree numbers within the section, so that there are more than 40 measureable trees are evident, convert to circular plots. Again the plot centres of the section plots will be maintained and will form the basis of the new circular plots. All the trees are maintained and assigned to their nearest circular plot (if a tree is outside a circular plot boundary it is).

Or for example if in a restock site that was existing at the time of the first assessment there are now enough young trees that have grown large enough to be recruited to the measurable trees category - convert to circular plots.

## 12.16 Locating Re-measurement plots/points

As well as having the methods for locating plots/points in 1<sup>st</sup> assessment squares you will have extra information to aid you:

1. Look at the plot data to check if the plots contain any notable trees or features – for example a large broadleaved tree in a young conifer stand, or a single wolf tree, this will aid navigation.
2. Check if there were any seedlings, saplings or dead wood in the plot, these can help confirm the plot location once found.
3. Check the peg left field to see if a peg was previously left. Where one has been left the metal detector provided can help to locate it
4. Look at the peg location description field left for you by the previous surveyor, it could contain key details on locating the plot
5. Look for the metal peg and/or 'red wand' at the plot centre

These techniques should take you to the approximate location of the plot. However if the wand has been removed or has been obscured by vegetation and the peg is not immediately evident, whilst you should have the approximate location of the plot, you may not be quite sure.

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In these instances it is worth remembering that GPS readings can be inconsistent over time and out by up to ten's of metres. If there is a difference between what you think the location is and what the previous surveyor recorded, you should use good survey techniques to confirm your location (such as waiting for a few minutes to pick up more satellites or moving to a clearing for the GPS). Additionally you can also take the latitude/longitude of the plot centre from the GIS and compare this to your GPS reading to confirm the location.

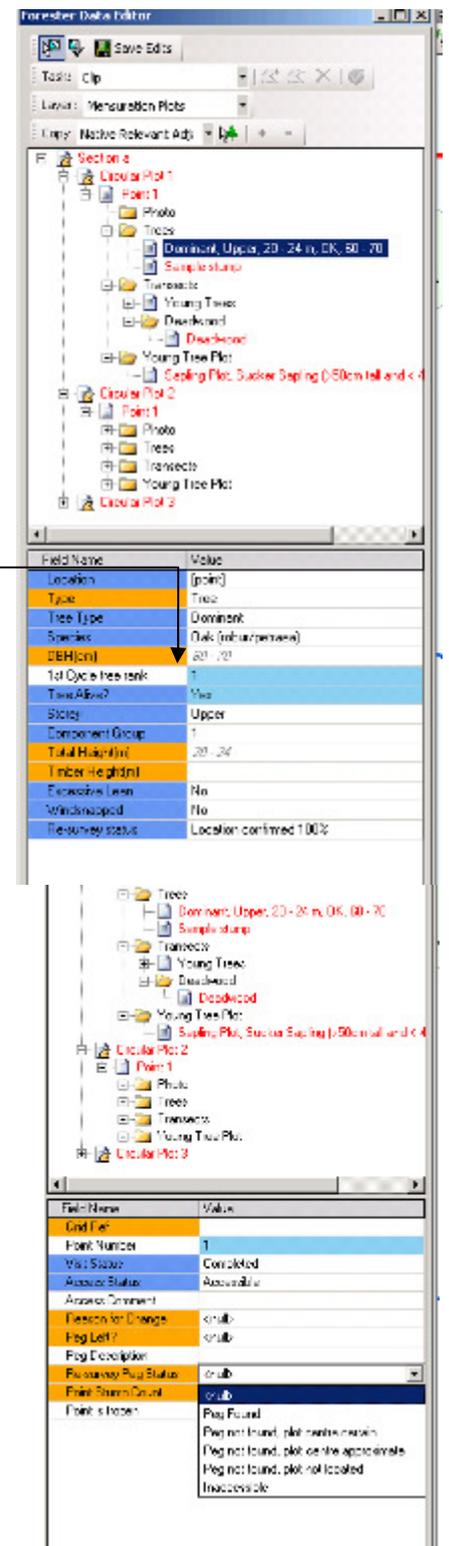
If this does not help you find the approximate or exact plot centre use the following techniques and information to locate the plot centre:

1. Look at the number and type of trees in the plot and their configuration, does where you stand align with that picture?
2. You are supplied with tree species, broad diameter classes and approximate tree heights, use these.
3. Is there a coppice stool, stump, or dead tree in the plot, can you use this information to locate the plot?
4. You have the species and nature of the dominant tree, try to find that.
5. You have the 1<sup>st</sup> cycle 'tree rank' field held against each tree in the plot. This 'ranks' the trees in order of diameter as of the previous survey from largest to smallest. This should help orientate you within the plot, especially in plots where there is a large diameter distribution.
6. This should help you 'fine tune' which tree is which.
7. And finally you have the metal detector to find the peg.

Using these techniques and information sources you should be able to find your plot centres in most instances.

You are required to complete the Re-survey peg status field to reflect how well you have located the peg:

- Peg found
- Peg not found, plot centre certain



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- Peg not found, plot centre approximate
- Peg not found, plot not located
- Inaccessible

1. Peg not found, plot centre certain - **Definitely found**; surveyors have a high level of proof that they have the centre to less than 0.5m
2. Peg not found, plot centre approximate' **Probably found**; surveyors believe that they have the centre to within 0.5m to a maximum of 5m, here you have found some or all of the plot trees identified in the first survey, but the trees are located away from the plot centre and / or are too few, so that without a lot of measuring and trigonometry you cannot get the plot location to less than 0.5m, but you know the peg location is contained within your plot.
3. Peg not found, plot not located - **Not found**; you do not know location and cannot reference any of the features identified in the original plot, you have no certainty that the plot contains the original peg location. Regenerate a new plot.

Where the plot has not been found (Peg not found, plot not located) the plot will be 'frozen' and left to see if QA or the next surveyor can find the plot. If they do the plot can be 'unfrozen' and brought back into use.

When you choose the plot not found field the system will generate another plot location for you and you will need to locate, establish and complete that plot instead, following the normal technique.

We recommend that if you cannot find a plot, to spend no more than **10** minutes searching for it before declaring the 'peg not found'.

## 12.17 Confirming the plot and aligning/finding the right trees

If you can only find the approximate plot location that is much preferable to establishing a new plot and where possible should be used.

Occasionally where you think that you have the plot location, but no peg, you will need to use the finer aspects of the tree data to locate your plot centre. You should also use these techniques to confirm that you have the location correct.

Look at the tree numbers, species and sizes within the plot, do they match?

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Measure a few trees and see if the 'tree rank' maintains itself and the broad dbh's and your dbh's accord.

Generally trees will maintain their size 'ranking' between cycles and if you find that your measured trees are wildly out of this sequence, it is likely that you have your plot location incorrect or your orientation within the plot incorrect. At that point you should look at re checking your plot location and / or your orientation within the plot.

It is vital that you are certain that you have both the plot correctly located and the sequence of trees correctly identified.

If you record the 'right' measures against the wrong trees, the survey will be invalid. Make sure you have located your trees correctly

Remember that the previous surveyor would generally have recorded their trees starting at north and moving clockwise.

## 12.18 Inaccessible plots

Occasionally you may find the plot/Point is now inaccessible, whereas it was accessible in the 1<sup>st</sup> cycle. Change the value in the access field and assess these as you would for a 1<sup>st</sup> assessment square. Alternatively a plot that was inaccessible in the first cycle, may be accessible now. In these instances change the access status and complete the plot as per normal.

## 12.19 When plot type changes between Circular and Whole Section

Occasionally a Section within a re-measure square will move from having circular plots to Whole Section plots (e.g. after a thinning event) or vice versa (a young tree crop where enough (40+) trees have grown to be  $\geq 4$ cm DBH to qualify the Section as needing circular plots).

If a re-measure Square has a Section that was originally a Whole Section Plot and there are still less than 40 measurable trees within the Section but now the extension of the Section outwith the Square contains measurable trees that could be captured in a

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Sample RAS, surveyors can draw a Sample RAS and change the Section to circular plots. The circular plots will be based upon the Whole Section Plot Points.