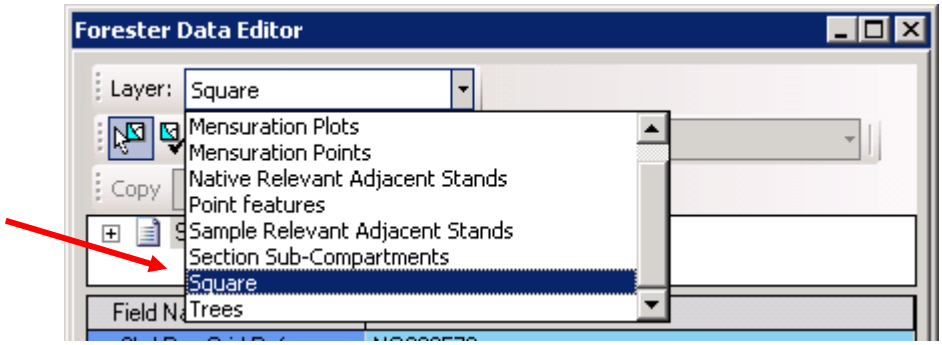
Chapter 3: Square Data

Contents

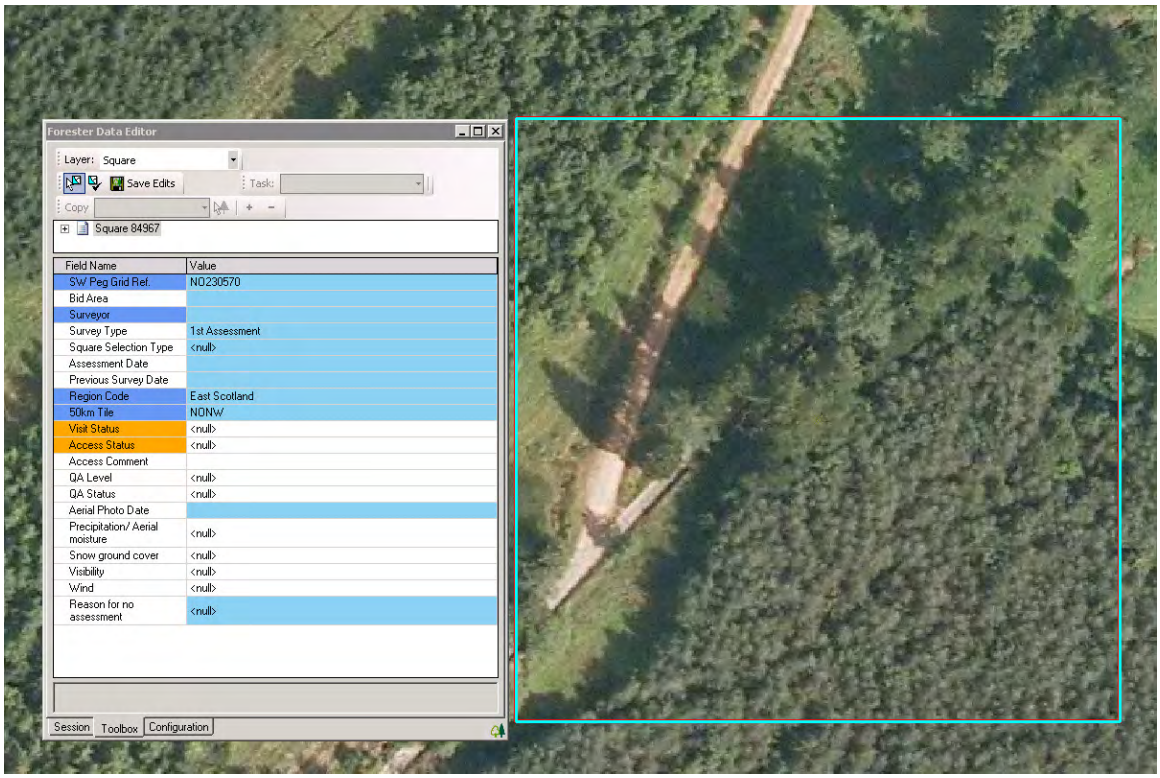
3.0 Square Data

3.1 Accessing the Square Data Fields

In the Forester Data Editor window, click on the Layer drop down menu and select Square.



The square boundary changes to blue and the square data fields appear in the Forester Data Editor window. The window may have to be expanded to see all the data fields. Use the mouse to click-and-drag the margins.



3.2 Finding the Square and Completing the Square level assessment

3.2.1 Finding the square

1. The software, data and tough book provided are a good starting point for finding the squares approximate location. If you open up the GIS software and use the appropriate schemas provided you will be able to see the squares location in the context of OS mapping and photography and you will be able to navigate to its broad location. You can augment this with the use of traditional paper maps, such as atlases and OS land ranger maps. You should make use of the Multi-square mapping tool. Details of how to use this utility can be found in the Additional Documents folder on your toughbook: file name - 2nd_Cycle_software_tools V2.doc.

Once you get closer to the square you have the choice of utilising your GPS, the tough book and traditional survey (map and compass) techniques in combination to find the squares exact location. You can take a GPS location from the surveyor software and feed that into your GPS as a 'point to find'. The papers 'Field Navigation and Square Navigation' give detailed guidance on navigation. These are found in the Navigation sub-folder within the Additional Documents folder.

As you approach the square the first point of the square to locate is the South West corner. This will be the key 'axis' or reference point for the whole survey and it is vital that you locate it accurately, as all other measures will be located in reference to this.

Once you have found the SW corner you need to mark it with the metal peg and wand provided. The peg should be sunk vertically into the ground, through the metal disc, until only 1 inch is visible. The wand should be sunk close, again vertically with the, majority proud of the ground, so it is visible. The objective is to make the wand visible from a distance, but that if the wand is removed the peg, being less evident will remain. A metallic peg is used so that finding it again can be assisted through the use of metal detectors.

Either before you find the peg location or just after, you need to assess if you can actually access the whole square to complete the survey assessment. That will enable you to discern if:

A. You will be able to gain complete access to the square and you can undertake the full survey – this will cover most instances.

B. Access is either limited or completely restricted. In these rare instances we apply a restricted variant of the protocol and expect you to survey less.

To guide you through what has to be collected in these different situations, tables 3-1 to 3-3 later in this document illustrate what has to be collected and when. The field surveyor software also guides you through these choices and in the software when you first open the square edit dialogue to help discern what has to be assessed there are two main data fields to complete;

3.2.2 Visit Status and Access Status.

It is important to complete these assessments first as they will determine within the protocol and the software what you have to assess at the square level and the associated lower subservient levels (such as sections and components). For instance if you cannot access the square at all and cannot see it, you are not expected to complete many assessments. However if you can access the square and make assessments, you will be expected to undertake all assessments.

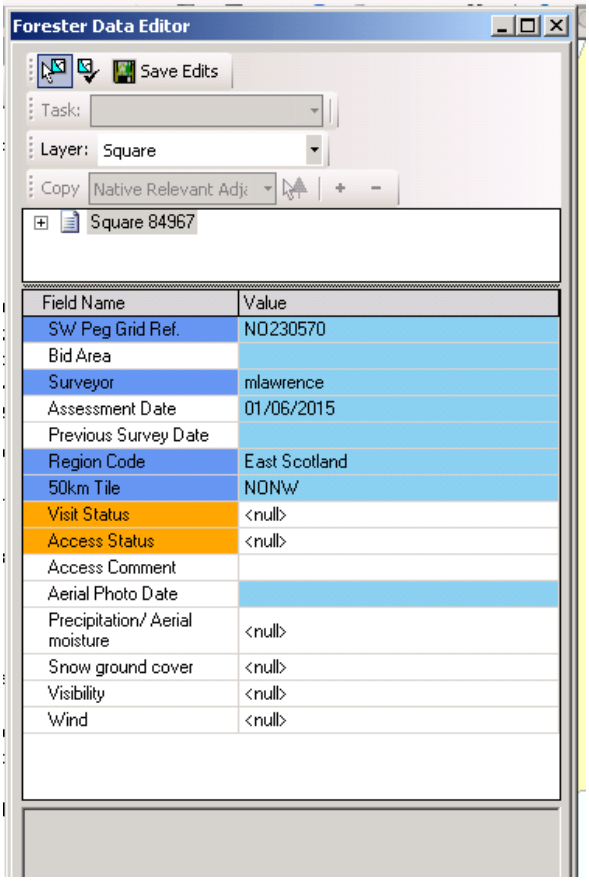
Thus the outcome of assessing Visit Status and Access Status will determine what factors are to be assessed on the day. In the software these are the first two fields to be completed and they are shown in orange, indicating that they are mandatory.

The remaining data fields are in blue, having been completed by the software, and are there for your information only. They cannot be edited by the surveyor.

Depending on the choices you make in these two fields other assessment requirements and their empty fields will be made available within the edit dialogue.

Depending upon which Access Status option is chosen, a number of new orange (mandatory) data fields will appear in the Forester Data Editor window.

3.2.2.1 Accessible squares (New)



The following data fields are those found at square level. Some are pre populated and are there for your information and will be highlighted blue, whilst others are highlighted orange and must be surveyed and completed. These actions must be undertaken if any part of the square is physically accessible. Note that the orange mandatory data fields turn blue once completed.

The fields that have a white background should also be completed to ensure a full data set.

Fields with Italicised text are pre-populated and do not require editing.

Table 3 - 1: Accessible square data fields (New Square)

Data Field	Options	Comments
SW Peg Grid Ref	*Fixed*	*This field will be pre populated and is the GIS grid reference of the SW corner of the square. It is here that you need to navigate to and establish the location of the square by.*
Lot Area	*Fixed*	*This field will be pre populated and represents the lot area the square is located within.*
Peg Location	SW	The peg assessment and its associated fields are only required when the square is accessible. Peg the SW corner in the first instance.

Data Field	Options	Comments
	• NW • SE • NE	If it is not possible to peg the SW corner move clockwise to the NW corner and peg this, if that is not possible, peg the next clockwise corner and so on.
	• Elsewhere	Where no corner is suitable, place a peg somewhere along a square boundary if possible.
	No Peg	Where a peg has not been left for whatever reason, mark the spot with a twig and biotape.
Peg Reason	• No Landowner Permission • Health & Safety • Legal Restriction • Public Access Area • Residential • Garden • Impenetrable Surface • Puddling Ground • Boggy Ground • Inaccessible • Multiple causes • Terrain • Ground Vegetation • Forest Operations • Other	This data field only appears if the SW corner has not been pegged. Select the reason why the SW corner could not be pegged.
Peg GPS Location	• Free text	Once you have located and confirmed the SW peg location, you need to take a consolidated GPS reading and record this here. This may be different to the ArcMap derived coordinates used to navigate to. This must be 12 characters, starting with the Ordnance Survey 100km Square letter, followed by 10 digits (e.g. SU0380004500). This data will be used by the NFI QA team and later surveyors to locate this

Data Field	Options	Comments
		square and thus it is important to take a reliable reading.
Peg Comments	• Free text	**Always** give notes to help relocate the peg in the future (e.g. by root plate of fallen tree, 3m North of footpath).
Surveyor	• *Fixed*	*This should be your name and will be automatically taken from your login details. It will be used in quality assurance processes to isolate any issues concerning accuracy, precision, quality and 'correctness' of the survey to individual surveyors.*
Distance of Square to Road	• <200m • 200 – 400m • 400 – 600m • 600 – 800m • 800 – 1000m • > 1000m • Not Possible to Assess	Measure the distance as the crow flies from the square to the nearest road able to take a 32 ton timber lorry. Use the ArcMap "Measure" tool. For office use only.
Mechanical Harvesting	• Wheeled vehicle on site possible • Wheeled vehicle on site impossible • Sky line site • Mech. Harvesting Impossible • Not Possible to Assess	Harvesting operations can be carried out using a wheeled vehicle. Harvesting operations cannot be carried out using a wheeled vehicle, but they can be carried out using a tracked vehicle. Site is too steep for wheeled/tracked vehicles, but can be harvested using a skyline. Site conditions are unsuitable for any form of mechanical harvesting. For office use only.
Assessment date	*Fixed*	*This will be automatically populated to the first date you save edits. It will represent the date of your survey.*

Data Field	Options	Comments
Previous Survey Date	*Fixed*	*This is the date of the last survey and only applies to re measure squares.*
Region Code	*Fixed*	*This is the NFI region within which the square is located.*
50km Tile	*Fixed*	*This is location of the square in relation to the Ordnance Survey grid.*
Visit Status	• Unvisited	For office use only.
	• In Progress	Square data collection is in progress but it is necessary to return another time to finish the data collection.
	• Completed[2]	Square data collection has been completed. Select this option if **all** parts of the square have been assessed either through being objectively measured or visually assessed
	• Refused Access[2]	Select this option if **no** data has been collected because access was denied across the **entire** square or on the approach to the square.
	• Not possible to assess[2]	Select this option if **no** data has been collected because the **entire** square could not be objectively measured or visually assessed for some reason other than refused access.
Access Status	• Accessible	Select this if **any** part of the square is physically accessible.
	• Inaccessible, visual	Select this if the **entire** square is

[2] Before a Square is checked back in it must have a Visit Status of either:

- Completed
- Refused Access
- Not possible to assess

Data Field	Options	Comments
	assessment possible Inaccessible, NO visual assessment possible	physically inaccessible but **at least part** of it can be visually assessed (e.g. one or more Sections can be visually assessed). Select this if the **entire** square is inaccessible and **no** part of it can be visually assessed.
Access Comment		Here you should note anything particular to that site that the next surveyor may need to know to gain access, such as where to park, the best way to walk in or where an unlocked gate may be.
Aerial Photo Date	Fixed	This is the date at which the current aerial photo you have been supplied with was flown and is for that specific square. It is supplied to help you understand why the photo and your observations may be different. For example a photo may be up to 5 years old and something may have happened within the square since then. The AP used for the previous survey is also supplied (old photography), no date is supplied for this, but it was generally taken around 2006.
Precipitation / aerial moisture	• No survey impact • Low survey impact • Medium survey impact High survey impact	These fields are to help FC staff assess how the weather at the time you assessed the square may have affected your assessment. Excessive moisture in the air (rain, heavy mist, snow) or moisture and noise (such as a waterfall) can significantly impact on your hypsometers performance. In these instances it is best to use traditional 'mechanical' instruments such as tapes and Clinometers (e.g. Sunnto) to takes heights and distances. Indeed this can be a good 'excuse' to calibrate your equipment through comparison. You should make

Data Field	Options	Comments
		your best attempt at assessment in all such conditions, by taking the provisos outlined above and below, and through assessing the impact any such factors may have had on your assessment (none to high) and recording these in the 'weather fields' FC can take the conditions you had to measure in into account when we undertake Quality Assurance on your work and when we analyse and report upon your data.
Snow ground cover	• No survey impact • Low survey impact • Medium survey impact High survey impact	Deep snow may impact on your ability to assess the lower levels of vegetation and NVC. In such instances looking for areas without snow cover, or scraping back snow is expected to help gain an accurate assessment.
Visibility	• No survey impact • Low survey impact • Medium survey impact High survey impact	Poor visibility can also impact on your ability to assess, impairing height measurements, canopy stratification and % component allocations. Again try to organise your time at the site so that the best visibility possible is achieved before finalising on these measurements.
Wind	• No survey impact • Low survey impact • Medium survey impact • High survey impact	Excessive wind can hamper accurate tree height measurement by bending and moving the tree, distorting the distance from leader to ground. In such instances you should wait until the wind is as low as is likely and take your best reading. Taking two or three heights a few seconds apart to see if you have this correct is a sensible precaution.

3.2.2.2 Inaccessible squares: visual assessment possible

The following data fields must be completed if the **entire** square is inaccessible but **at least part** of it can be visually assessed. Note that the orange mandatory data fields turn blue once completed.

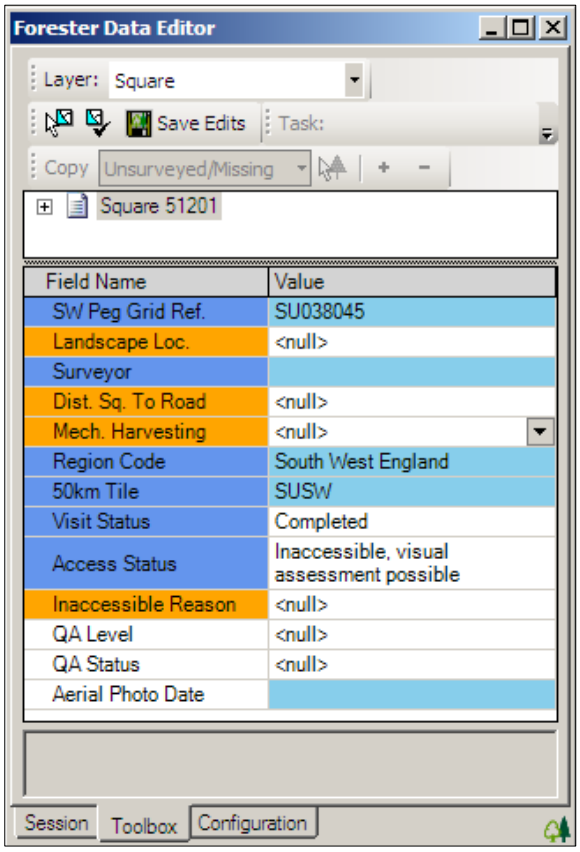


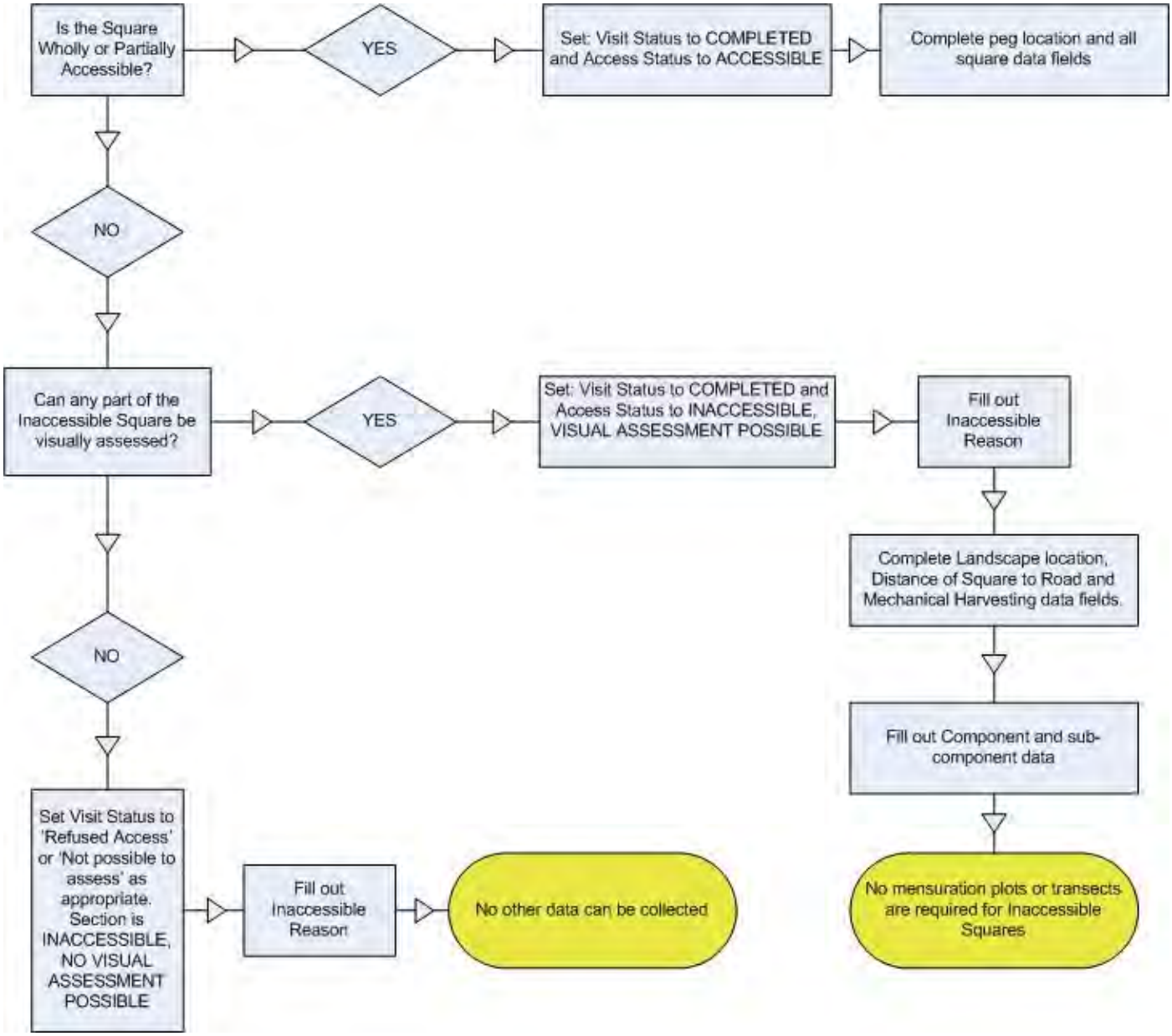
Table 3 - 2: Inaccessible square data fields (visual assessment possible).

Data Field	Options	Comments
Distance of Square to Road	See Table 3-1	Same as for accessible squares.
Mechanical Harvesting	See Table 3-1	Same as for accessible squares.
Inaccessible Reason	• Inaccessible thicket	Thicket is defined as stands of 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. This applies to conifers and broadleaves.
	• Inaccessible health and safety	Inaccessible due to H&S reasons (report reasons in Checkpoint report)
	• Inaccessible slope	Inaccessible due to slope (report steepness and surface conditions in Checkpoint report)
	• Inaccessible obstruction	Inaccessible due to an obstruction reasons (report obstruction in Checkpoint report)
	• Inaccessible windblow	Inaccessible due to windblow.
	• Inaccessible other	Where vegetation prevents access (e.g. head-high bramble, dense gorse or rhododendron etc.) select this option.

3.2.2.3 Inaccessible squares: NO visual assessment possible

If the **entire** square is inaccessible and **no** part of it can be visually assessed, only the "Inaccessible Reason" data field needs to be completed - see Table 3 - 2 above. Note that the software will not allow collection of any Section data.

3.2.3 Square accessibility flowchart



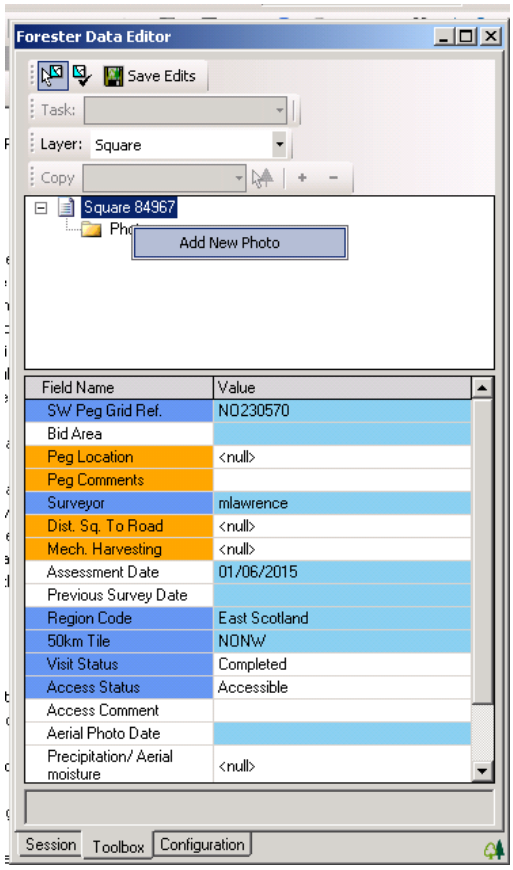
Flowchart 3 - 1: Square Accessibility

3.3 Adding a Square Photo

Currently **optional**, but this may become mandatory in the future. Multiple photos can be taken but at least one must show the location of the SW peg on the ground, where possible with a distinctive feature in view to help find the peg on return visits.

Right-click on the photo sub-folder to Add New Photo – see section 3.3.2 for more information.

Photos of other square related features e.g. pests & diseases, obstructions etc. can be placed here with an appropriate Comment.



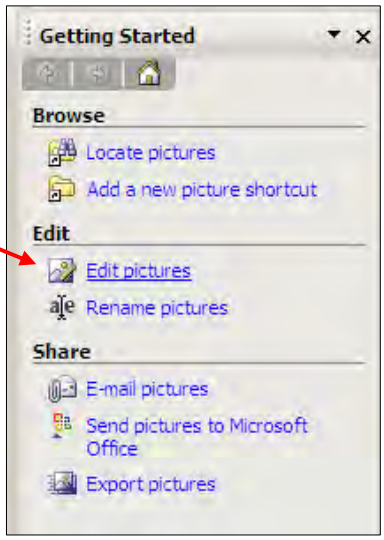
3.3.1 Resizing a photo

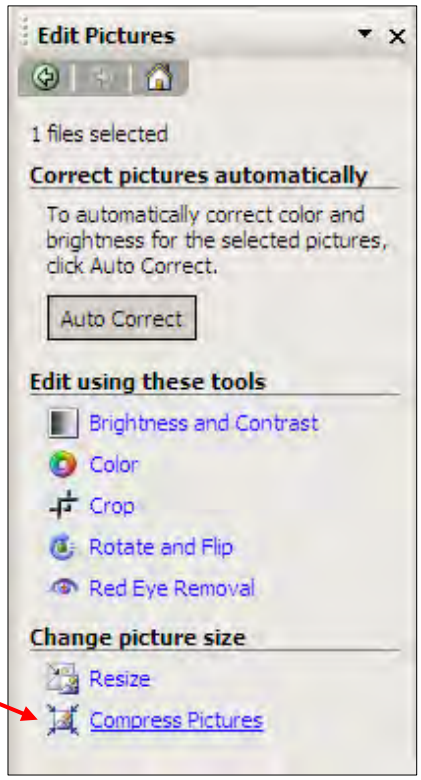
The NFI Forester software will only allow photos up to **2MB** in size, so it may be necessary to resize the photo. To do this:

Save the photo to the Toughbook.

Open Microsoft Picture Manager (Start> All Programs> Microsoft Office> Microsoft Office Tools> Microsoft Office Picture Manager) and double-click on the photo to open it.

In the "Getting Started" window on the right of the screen, click on "Edit pictures", then in the "Edit Pictures" window, click on "Compress pictures".





Make a back-up of the original photo (File> Save As…> browse to the location where the edited photo is to be saved).

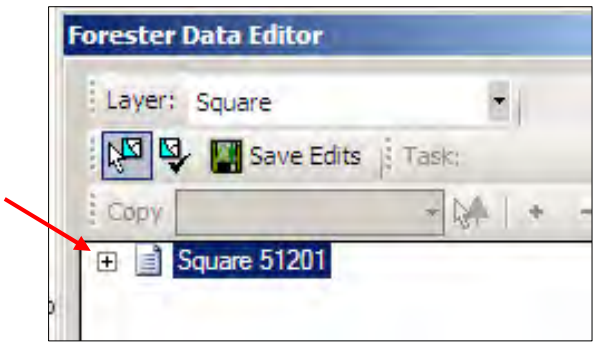
In the "Compress pictures" window, experiment with the different compress options and then click the OK button.

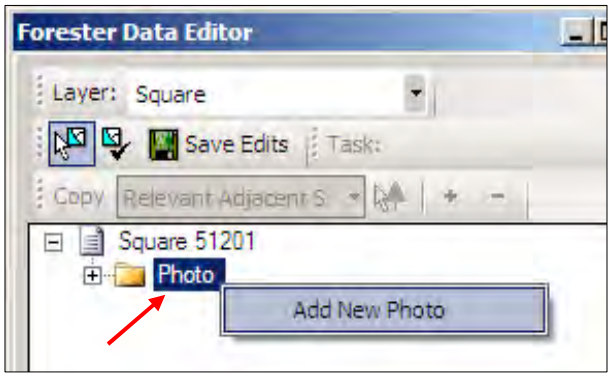
Click on the "Save" icon at the top left of the screen to save the edited photo.

Close the Microsoft Picture Manager.

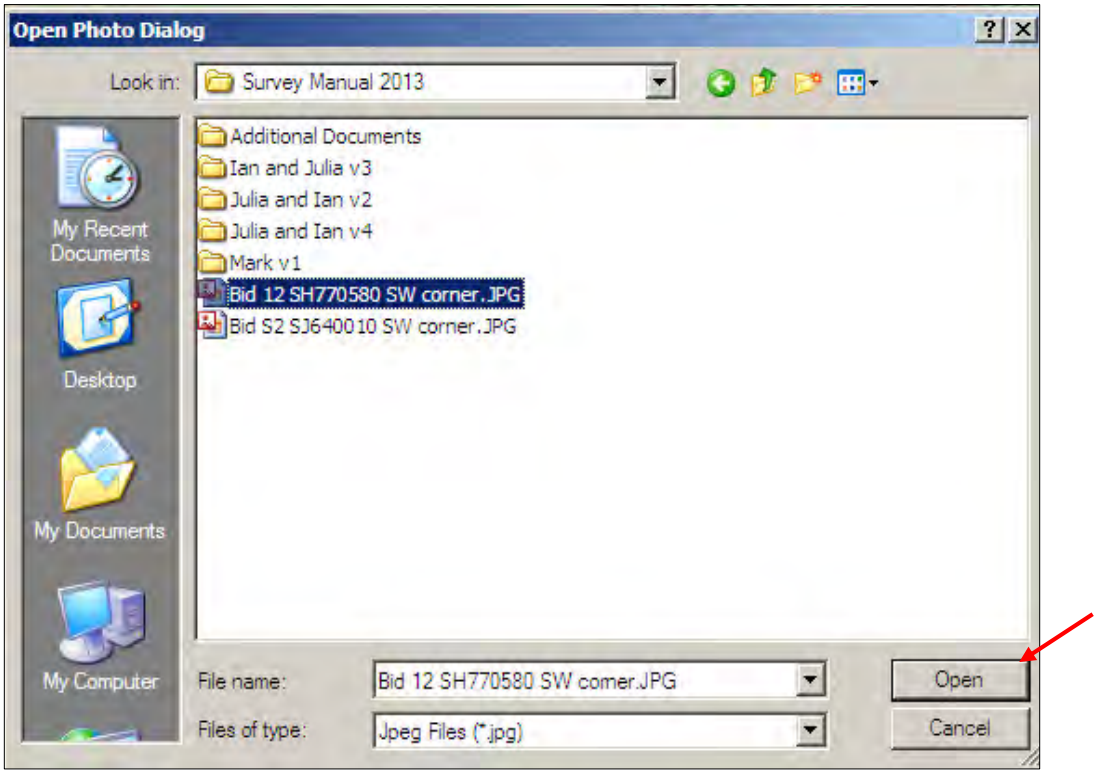
3.3.2 Adding a photo into Forester

Click on the [**+**] sign to the left of the square name in the Forester Data Editor window. Then right-click on the Photo folder and select "Add New Photo".

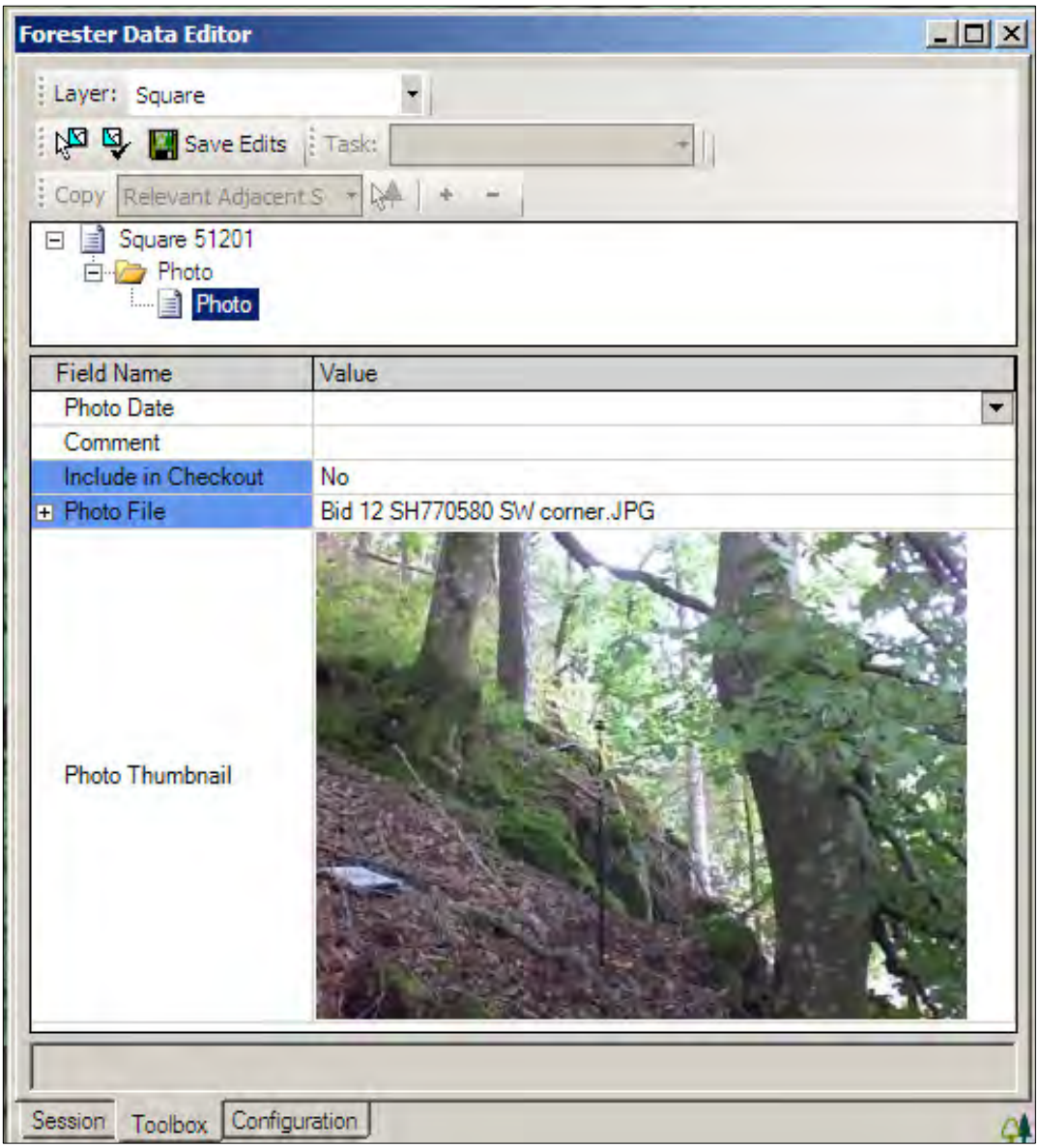




In the "Open Photo Dialog" window, browse to the photo and click on the "Open" button.



The photo will appear in the Forester Data Editor window.

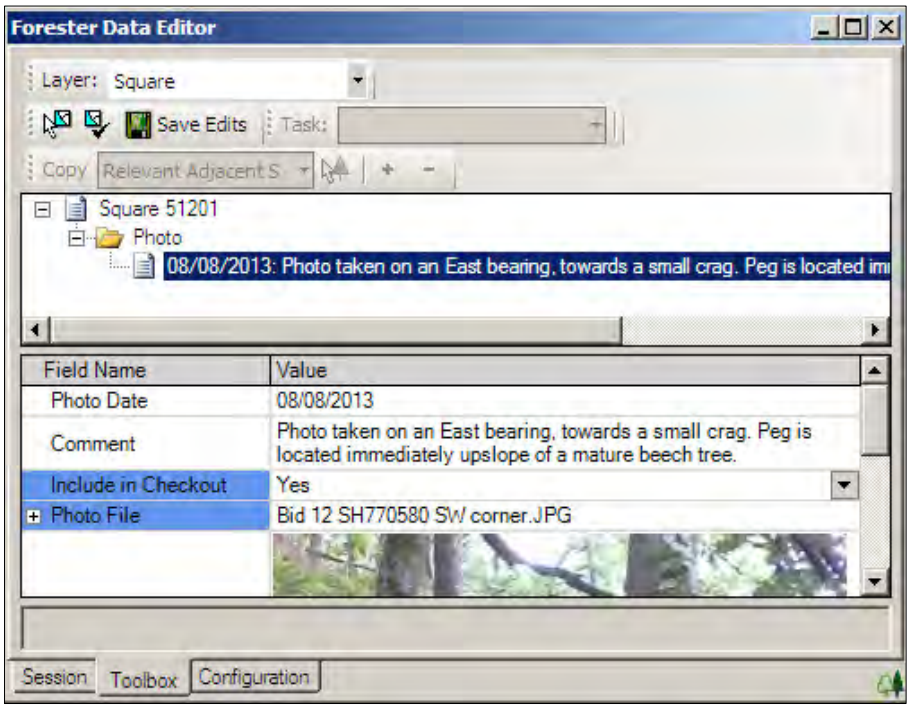


3.3.3 Completing the photo data fields

Table 3 - 3: Square photo data fields

Field Name	Value	Comments
Photo Date	Calendar.	Click in the white box and the current date is automatically entered. Click on the drop-down arrow at the right of the box to call up the calendar. Edit the date as required.
Comment	Free text	**Always** give notes to help relocate the corner peg.
Include in Checkout	• No • Yes	For office use only. **Always** select this option.
Photo File		The photo filename is automatically entered by the software.

Here is a completed example.



3.4 Re-measure Squares.

The approach and protocol for finding, assessing and recording features at a re measure square is generally the same as for a new square.

3.4.1 Locating squares - before you visit the square

It is often best to have a look at the re-measure square you are to assess in advance of your visit.

Ten minutes looking at the square will help you to ascertain:

1. Number of sections,
2. Number of storeys
3. Number of components
4. Number of plots
5. Plus you can assess the distance you need to travel to the site and how far you have to walk and any access advice.

This will help you to plan your day, understand if it will be a quick or a slow square and in general will help you to understand the nature and composition of what you are about to assess. This will help you to plan your work time and travel efficiently and will help you to save time and money and to supply the NFI with the best possible survey.

With this information to hand you need to locate the square and you need to locate the SW corner (or other corner/location if that is what the previous surveyor did).

The first main exception in locating a re-measure square, compared to locating a new square, is that you will be given the GPS reading that the previous surveyor took for the peg. You can use this in conjunction with your GPS unit to help you find the peg and marker wand. If you find the peg or wand add the new ones supplied, ensuring that the new metal peg is placed in the plot centre.

If you cannot find the peg or wand, check the peg location field and comments from the previous surveyor and look for the peg again. If necessary reference other plots and pegs or notable features, but spend no more than an additional 45 minutes doing so. If finally you still cannot find the peg, locate a new peg and wand where you have assessed they should be and record that you could not find the original peg in the peg comments field.

The following table shows only the fields that are treated differently between a new square and a re-measure square. For those that are treated the same refer to the previous table.

3.4.2 Square level variations for a re measure square

Table 3 - 4: Re-measure square data fields

Data Field	Options	Comments
Peg Location		You will be given the previous surveyors peg location. Find that and confirm it within the software. If you cannot find the peg, follow the procedure outlined above.
Peg reason		Either confirm this from the first survey or change to meet your own assessment.
Peg GPS Location		You will be provided with the previous surveyors GPS reading. Use this to help find the location, then take your own reading and replace the previous reading with yours (within the field).
Peg Comments		You will be given the previous surveyors peg comments to help you find the peg. **Always revise these notes where necessary to help relocate the peg in the future**.
Distance of Square to Road		You are provided with the previous surveyor's assessment, make your own assessment and confirm or amend as appropriate.
Mechanical Harvesting		You are provided with the previous surveyors assessment, make your own assessment and confirm or amend as appropriate.
Previous Survey Date	*Fixed*	*This is the date of the last survey and only applies to re measure squares. You should measure the square within +/- 3 weeks of this date, or if that proves impossible, ask fro permission*

Data Field	Options	Comments
		to take within +/- 3 months as long it is within the same growing season.
Access Status		You are given the access status of the previous survey. This will often change between surveys. Make your own assessment and confirm or amend as appropriate. Any change will lead to either fewer or more assessments than the previous survey and where access was restricted and now it is not, that will lead to new assessments.