

A step-by-step guide to conducting an i-Tree Canopy study



Photo: Samuel Roberts

Contents

What is canopy cover?	2
How i-Tree Canopy works	3
Stage 1 – Define your study area	5
Stage 2 – Set up the study design	10
Stage 3 – Adjust the benefits settings.....	11
Stage 4 – Conduct the canopy cover assessment.....	12
Stage 5 – Share your assessment results	16
Privacy Notice.....	17
Frequently asked questions.....	19
Navigating the canopy cover webmap.....	21
'Tree' or 'non-Tree' - a picture guide.....	24

What is this document for?

This user guide shows you step-by-step how to complete a canopy cover assessment using i-Tree Canopy (v7.1) for the purposes of supporting the UK urban canopy cover webmap. This document has been refreshed to reflect relevant changes following the recent updates to the i-Tree Canopy website and includes lots of screenshots to help you through the process, as well as an FAQ section and information on where to access additional support.

What is canopy cover?

Canopy cover is the area of ground in a study area which is covered by tree canopy, often provided as a percentage.

The amount of canopy cover in an area is linked to the provision of benefits from trees, such as providing shade, shelter, removing pollutants and carbon dioxide from the air, providing habitat for wildlife, and making our urban areas more attractive, sustainable and healthy places to be.

Estimating canopy cover across urban areas provides an indicator of the spread of these benefits across our towns and cities.

Want to know the canopy cover of your local neighbourhood, ward, town or city?

i-Tree Canopy allows you to estimate tree canopy cover for any geographic location. This online tool is used around the world and is free, quick, and easy to use. In the UK it has been used to assess canopy cover of 283 English towns and cities. The results for this study estimated that the average cover was 15.8%. For details see:

https://www.researchgate.net/publication/322337570_The_Canopy_Cover_of_England%27s_Towns_and_Cities_baselining_and_setting_targets_to_improve_human_health_and_well-being

We are building an electoral ward-scale canopy cover map for the UK. Ward level assessments are useful as they identify the distribution of canopy cover **within** large towns and cities, so can help identify priority areas for new tree planting. Using these established administrative boundaries means that canopy cover assessments can be repeated using the same boundaries and be understood in comparison to other metrics collected at the ward level. The source of our ward boundaries is:

https://geoportal.statistics.gov.uk/datasets/7193daa99995445aa84a0b23352e56a1_0

We developed an online webmap to store and present the findings of this project. This webmap shows selected urban wards for the UK and whether they have had a canopy cover assessment conducted. For wards with canopy cover, the map shows their relative percentage canopy cover. As more canopy cover assessments are completed this will continue to build up and show the distribution of canopy cover across our urban areas.

We have also made rural wards available for survey; where these wards have been assessed, these are also visible on the webmap.

We hope you can help us to complete this canopy cover map by conducting canopy cover assessments and sending us your results.

How i-Tree Canopy works

The tool works within a web browser. It creates a set of random points which you then check through one-by-one deciding if they fall on the canopy of a tree, or not. By comparing the proportion of points identified as 'tree' or 'non-tree' the tool estimates the percentage canopy cover. The accuracy of this approach improves with the number of random points checked. We recommend at least 300 points for a ward area. This may sound like a lot! But most points take only a second to do.

The hardest part in this process is deciding whether a random point has fallen on a tree or a shrub. **To make estimates of canopy cover comparable between different sites and projects, we're only interested in canopies that belong to trees.** While on the ground a tree may look quite different to a shrub, viewed from above (as they are in i-Tree Canopy) they can look very similar. We will provide more guidance on this and the rest of the assessment process in the step-by-step section of this user guide.

There are five stages to conducting an i-Tree Canopy assessment:

- 1) Define your study area
- 2) Set up the study design
- 3) Adjust the settings (*optional*)
- 4) Conduct the canopy cover assessment, point-by-point
- 5) Export your canopy assessment results

Before you start, here are some useful links and resources that you will need or may help you complete the assessment.

For completing the canopy cover assessment, please visit the i-Tree Canopy website: <https://canopy.itreetools.org/>

For downloading the ward shapefiles, please visit the canopy cover webmap: <http://forestry.maps.arcgis.com/apps/webappviewer/index.html?id=d8c253ab17e1412586d9774d1a09fa07>

To access the configuration file and for further information on the project, please visit the Forest Research site: <https://www.forestresearch.gov.uk/research/i-tree-eco/urbancover/>

For a helpful instructional video created by a contributor to the webmap, please visit: https://www.youtube.com/watch?v=Nw5i_EdOgKU

Stage 1 – Define your study area

You can conduct an i-Tree Canopy study for pretty much any geographic area. A study at ward-level is meaningful, particularly if you can do all of the wards in your town or city.

You can decide the boundary for your desired study area by either using our ward boundaries, or by drawing your own custom boundaries. Please note that if you decide to draw your own custom boundaries, we don't have the capacity to upload these results to the canopy cover webmap.

To download the ward boundaries:

Visit our web map at:

<http://forestry.maps.arcgis.com/apps/webappviewer/index.html?id=d8c253ab17e1412586d9774d1a09fa07>

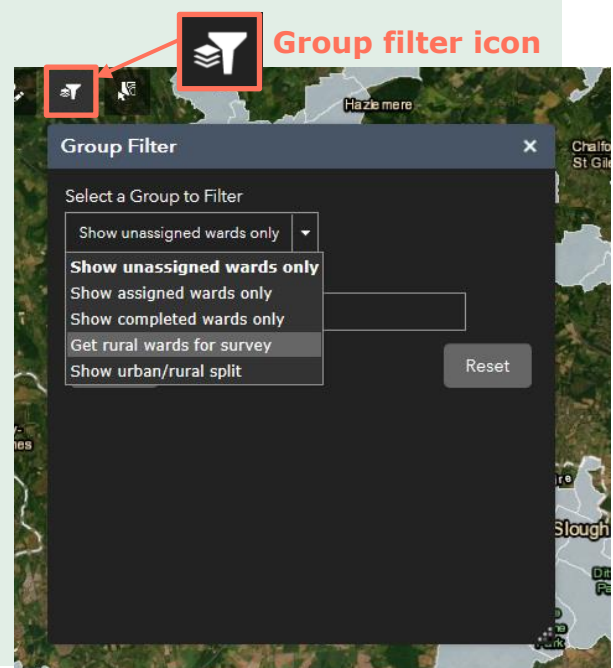
The map shows the whole of the UK, with wards visible in patches of green, yellow and blue. Wards in blue are urban wards in need of canopy assessment. Wards in green have been assessed and display their canopy cover estimate when you click on them. The darker green they are, the higher their canopy cover. Wards in yellow have been 'assigned' to someone, meaning someone has already downloaded the shapefile (.shp) for the ward boundary to conduct a canopy cover assessment.

- 1. Find the ward you would like to assess.** You can use the search bar at the top of the screen to navigate to your assessment area.

If you would like to assess a **rural ward**, please read the instructions below. If not, please skip to step 2.

Unassessed rural wards are not visible on the webmap by default. To make them visible, click the '**Group filter**' icon at the top of the map screen. A pop-up window will appear, where you can select '**Get rural wards for survey**' from a drop-down menu. Click '**Apply**' and this will then display rural wards, which will be grey in colour.

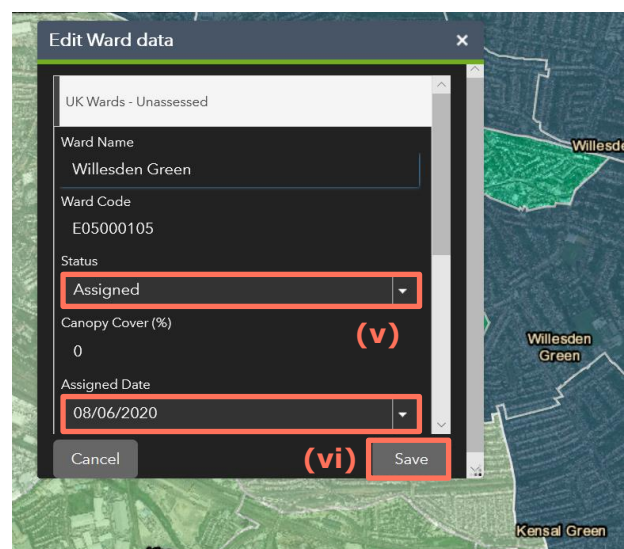
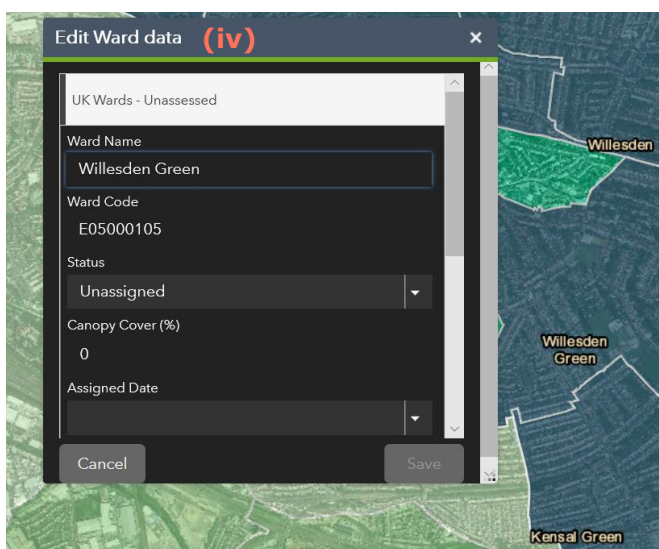
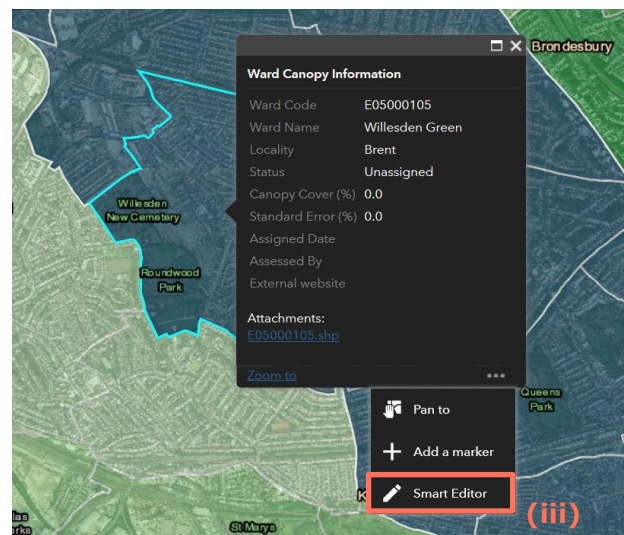
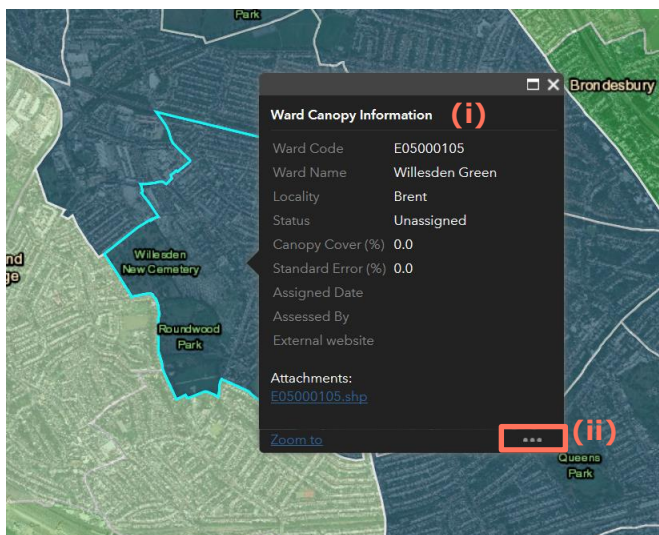
Notes: there may be a delay in the wards showing, depending on the speed of your internet connection. If you close the 'Group Filter' window, often the map reverts back to urban wards. It is best to leave this window open whilst you select your rural ward for survey.



2. Assign the ward to yourself.

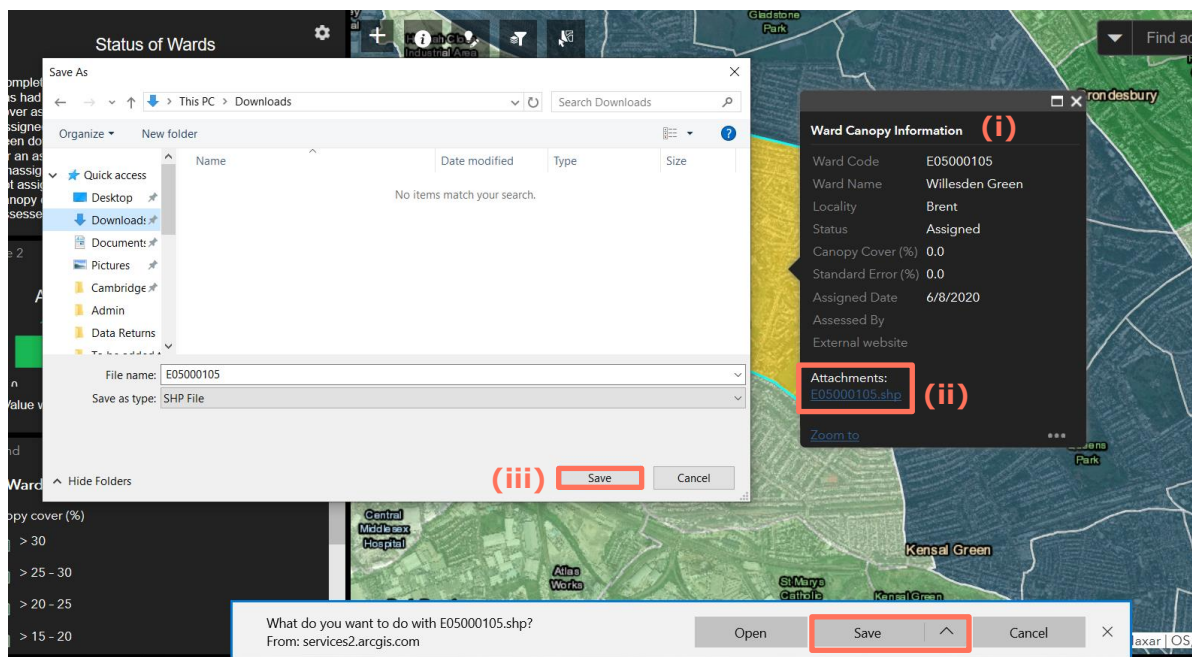
- (i) Click on the ward you would like to assess. A pop-up will appear which displays the ward information.
- (ii) At the bottom right-hand corner of this window there is **an icon with three dots** - click on this and a drop-down menu will appear.
- (iii) Click '**Smart editor**'.
- (iv) Another pop-up window will appear called 'Edit Ward data'.
- (v) There are two things we would like you to edit here to let us know that the ward has been assigned. First, go to the '**Status**' box and from the drop-down menu, select '**Assigned**'. Then, select today's date from the '**Assigned Date**' box.
- (vi) Click '**Save**' and close the window.

This helps us keep track of what wards are being worked on, and also ensures other contributors don't do the same ward as you.



3. Download the ward boundary file.

- (i) Click on your ward again to open up the information box.
- (ii) Look for the heading that says '**Attachments**'. Underneath this will be a ward code ending in **.shp**. This is the shapefile containing the ward boundaries that you'll need to complete the canopy cover assessment. Click to download the shapefile.
- (iii) When a pop-up appears, click '**Save as**' and save it in a folder where you'll be able to find it later. Don't try to open the file – it will only open successfully when you upload it to i-Tree Canopy.




4. Upload your shapefile to the i-Tree Canopy website.

- (i) Head to the i-Tree Canopy website <https://canopy.itreetools.org/>
- (ii) Click the button '**Get started**' (see picture below)
- (iii) Click '**Load shapefile boundary**'
- (iv) Use the '**Browse**' function and navigate to your saved shapefile. Once you have selected your shapefile, click '**Ok**'. You do not need to upload a Projection file.
- (v) Once uploaded your screen will refresh and you should now see your ward area appear in red on a Google Map. Click the '**Next**' button.

Welcome to i-Tree Canopy! v7.1


Estimate tree cover and tree benefits for a given area with a random sampling process that lets you easily classify ground cover types.

- Select from existing geographic boundaries, draw your own project area boundaries onto Google Maps, or load an ESRI shapefile.
- You can use multiple, non-overlapping boundaries at the same time.
- i-Tree Canopy randomly generates sample points and zooms to each one so you can choose from your pre-defined list of cover types for that spot.
- With i-Tree Canopy, you review Google Maps aerial photography at random points to conduct a cover assessment within a defined project area.
- 500-1000 survey points are suggested; the more points you complete, the better your cover estimate for your study area.
- If estimating tree cover, tree benefits can also be estimated.
- [Learn how i-Tree Canopy works.](#)
- [Video Learning Resources](#)




[Get Started](#) (ii)

Use of this tool indicates acceptance of the EULA



Configuration step 1 of 3: Use the map and tools provided to define the area you want to survey. The easiest option is to select a pre-existing boundary, but you can draw your own areas right on the map, or load in one or more shapefiles.



(iii)

Just curious? Dive right into survey mode with an existing project.

[Launch Our Example Project](#)

Ready to survey your own area? Use these functions to map your project boundaries.

US Boundaries

UK Boundaries

[Load Shapefile Boundary](#)

[Draw Boundary](#)

Work with map boundaries.

[Select](#) [Delete](#)

You can combine multiple boundaries!

Select a Shapefile

Shapefile (*.shp)

[Browse](#)

Projection (*.prj)

[Browse](#)

Using projections other than WGS84 (EPSG:4326) may not produce the correct results. This feature is currently experimental.

[Upload](#) [Cancel](#) (iv)

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US Boundaries

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[Load Shapefile Boundary](#)

[Draw Boundary](#)

Work with map boundaries.

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You can combine multiple boundaries!

Configuration step 1 of 3: Use the map and tools provided to define the area you want to survey. The easiest option is to select a pre-existing boundary, but you can draw your own areas right on the map, or load in one or more shapefiles.



(v)

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UK Boundaries

[Load Shapefile Boundary](#)

[Draw Boundary](#)

Work with map boundaries.

[Select](#) [Delete](#)

You can combine multiple boundaries!

[Next](#)

Notes:

Please start with one ward. Once that is done you can assign the next one to yourself.

If we don't hear from you with the results for your 'Assigned' ward within a month of the AssignDate we will return the ward to 'Unassigned'. If you're still working on your ward just email us to let us know and send in your results when you're done.

If you are struggling to download the shapefile, try using a different web browser. If you are still unable to download the shapefile, drop us an email stating which ward you would like to assess, and we can send the shapefile to you.

Now you have downloaded your shapefile, skip ahead to Stage 2 to set up your assessment.

To draw custom boundaries for a canopy cover assessment:

Drawing your own bespoke boundaries is useful if you're interested to find out about the canopy cover of more informally defined areas, like a park or neighbourhood. To create an area using this approach, follow these steps:

1. Go to <https://canopy.itreetools.org/> and click the button '**Get started**'.
2. Zoom in or search for your local area. When you've found the area you want to define for your canopy cover assessment, click the '**Draw boundary**' button.
3. To start drawing your ward boundary, click on the map. This will add your first boundary point. Keep clicking around your area of interest, to outline the boundary. To finish drawing, click back on the first point which completes the polygon. Now click the '**Next**', button in the bottom right corner. **Proceed to Stage 2.**

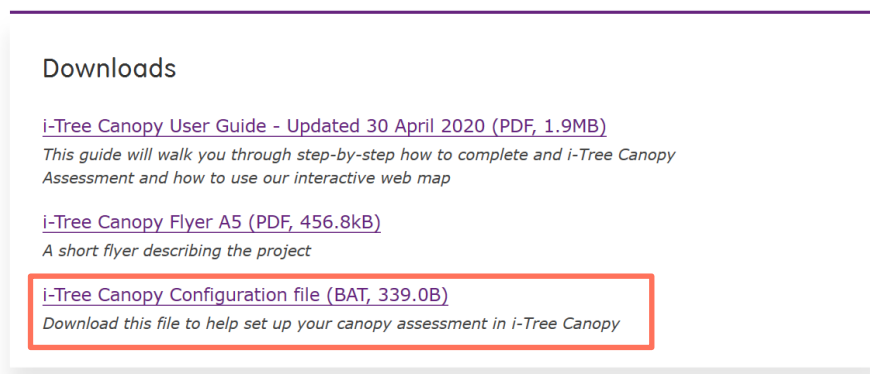
Stage 2 – Set up the study design

If you have loaded your shapefile or drawn your boundary, and clicked 'Next', you should now be on a page called 'Configuration step 2 of 3.' Here you will be able to change the cover classes to those that you need for the assessment: 'Tree' and 'Non-Tree.'

There a couple of ways of doing this, but the simplest and easiest method is described below, which involves using our configuration file.

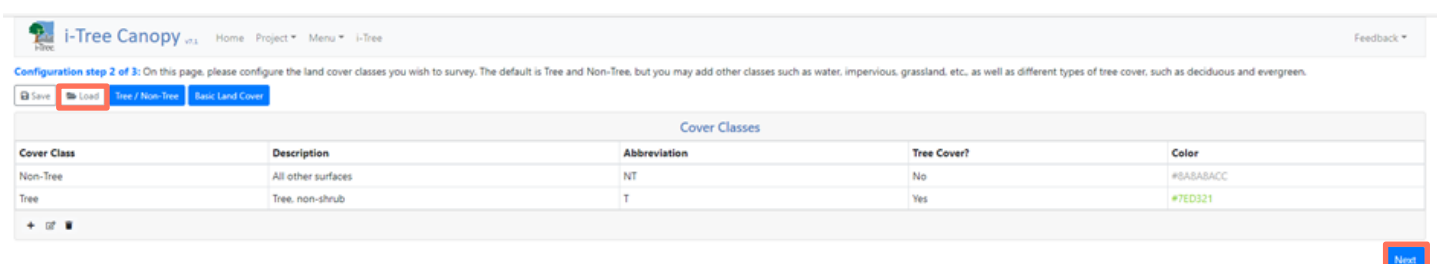
1. Download the configuration file.

Head to our webpage <https://www.forestresearch.gov.uk/research/i-tree-eco/urbancover/> where you will need to download our '**i-Tree Canopy Configuration file**'.



2. Upload the file.

Upload the configuration file to the i-Tree Canopy website using the '**Load**' button, towards the top of the screen. Once you have clicked '**Open**' the window will refresh and bring up the updated table.



3. Check the table is correct.

Once updated, have a quick check to make sure that all the information is right, and that 'Non-Tree' is in the first row. This will make it quicker to complete your assessment as this will become the default cover class. The table should look like the one in the screenshot above. If so, click '**Next**' and **proceed to Stage 3.**

Stage 3 – Adjust the benefits settings

The next screen allows you to change some settings about the project. By changing these settings, this allows the software to automatically calculate some of the benefits associated with the percentage of canopy cover for a given area.

This is an optional step, and not necessary for contributing to the canopy cover webmap. However, should you wish i-Tree Canopy to calculate the benefits from your ward assessment, this benefit calculation has now been parametrised for the UK. You can also go back and change the settings at a later date, or once you have finished your assessment.

1. Change the location.

Under 'Available Locations' tick 'United Kingdom'. Then under 'Selected Locations' select the appropriate option for the type of ward you are assessing.

2. Change the currency.

In the Currency box change the 'code' to 'GBP'. Check that the symbol has changed to '£'

3. Change the unit of measurement.

In the Measurement box change the 'Units' to 'Metric'. This updates the values estimated for benefits associated with tree canopy cover in the box below. It should look like the screenshot below:

Then click the '**Next**' button (bottom right) and **proceed to Stage 4.**

Configuration step 3 of 3: Use this page to assign appropriate tree benefit valuations to each land cover class that denotes tree canopy cover.

Available Locations: ☒ United States of America, ☒ **United Kingdom**, ☐ Sweden

Selected Locations: ☒ United Kingdom, ☐ All, ☐ Rural, ☒ **Urban**

Currency: Code: Symbol:

Measurement: Units:

☒ Use benefits from selected locations

Air Pollution Benefits

Abbreviation	Description	Removal Rate (g/m ² /yr)	Monetary Value (£/t/yr)
CO	Carbon Monoxide removed annually	0.000	£956.63
NO2	Nitrogen Dioxide removed annually	3.065	£187.91
O3	Ozone removed annually	10.304	£928.15
PM10*	Particulate Matter greater than 2.5 microns and less than 10 microns removed annually	2.080	£33,713.00
PM2.5	Particulate Matter less than 2.5 microns removed annually	0.521	£30,654.87
SO2	Sulfur Dioxide removed annually	0.405	£64.93

Currency is in GBP. Metric Units: g = grams, t = metric ton, m = meters

Next

Stage 4 – Conduct the canopy cover assessment

This page is where the fun starts! If you clicked 'Next' in the previous step, then a map of your area will have appeared on your screen with the red boundary line shown (no points are shown yet).

Navigating the assessment page

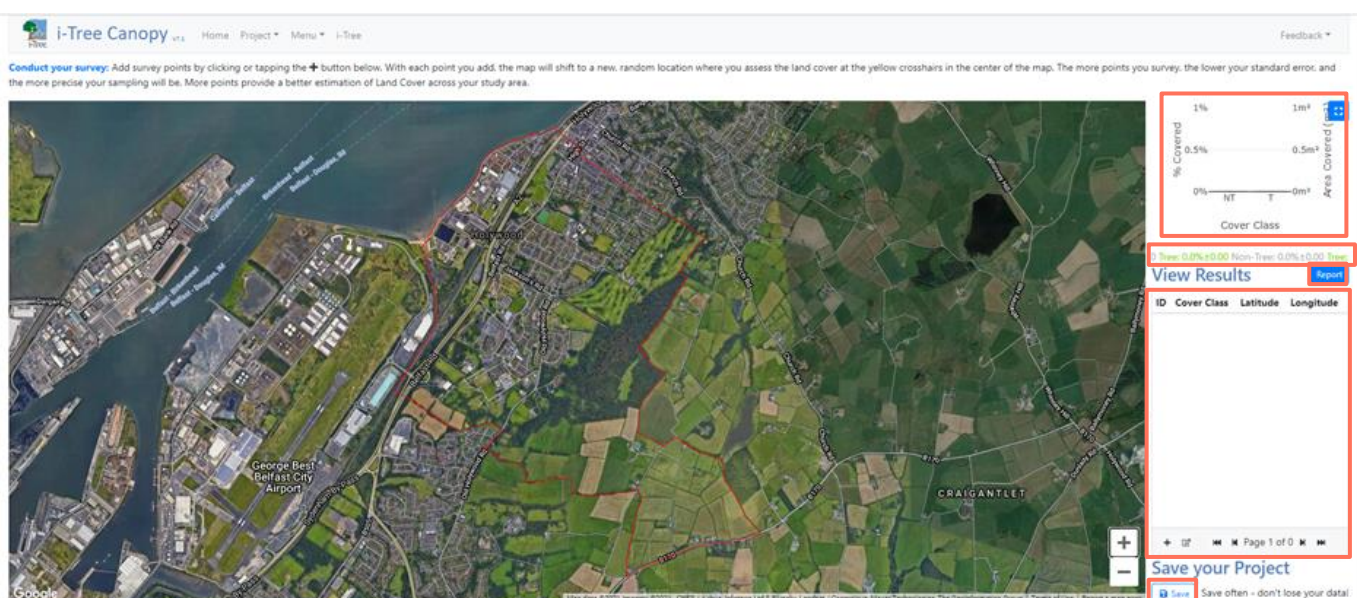
Graph: To the right of the map is a graph which will update as you go through identifying the random points. This gives you an indication of how the cover classes compare as you go along.

Rolling statistics: Underneath the graph you will see a scrolling bar of text. This gives a rolling update of the tree cover vs. non-tree cover and the standard error as you go through the assessment.

Points table: Below the rolling statistics is a table with the headings shown of ID, Cover Class, Latitude, Longitude. This is where your assessment points will appear once you have added them.

Save: You'll need to make sure you save your assessment regularly, in case the website crashes. The save button is in the bottom right corner of the webpage.

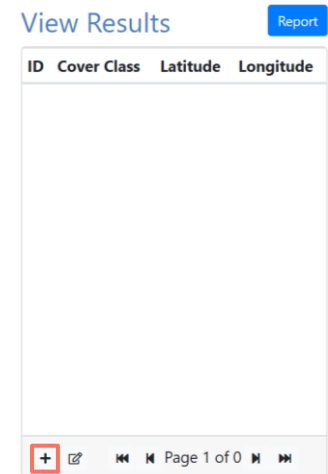
Report: The report function allows you to view the results of your assessment. You can click on this anytime throughout your assessment. Click the 'back' button in your browser to return to the assessment screen.



Conducting your assessment

1. Add an assessment point.

To get started click the '+' in the bottom left corner of the points table. This will add your first assessment point to the aerial view map. You will notice the map will zoom into an area with the assessment point displayed as **yellow crosshairs** in the centre of the map.



2. Decide on tree or non-tree.

Have the crosshairs landed on a tree? You can zoom in and out of the map to try and get a better view. You may also wish to increase the zoom of your internet browser, so that more of the map is visible on the screen. Remember, the question is not whether there are any trees in the full aerial view at all, but if the centre of the yellow crosshair is directly on a tree. If you need some further guidance on identifying trees in aerial photographs, then take a look at the help box on the next page. In the example below, you can see that the crosshairs have landed on grass. We would record this as 'Non-tree'.



Note: In some areas, a 'Tilt view' function is available, which allows you to view the imagery obliquely. This function is located above the plus and minus signs in the bottom right corner of the map. It will be visible as a grid icon (see A on the right). If you can't see this button, then this simply means that tilt view is not available for the area you are viewing, so you won't be able to use this function. If you do have access to the tilt functions, click button A to switch to tilt view. (this icon will then change to B on the right). This function should ONLY be used to clarify a point that you are unsure about, and it is important to return to 'Planar view' (A) when you have done this. If the button appears like Button B (right) then the view is currently tilted, and this should be corrected.



What's a tree?

We are interested in tree canopy cover, not shrub cover - though it can be difficult to tell the difference when viewed from above.

Here are some guiding principles to help you tell a tree from a shrub:

- If it's an ornamental type tree in a garden (like a cherry) yes, it's a tree
- If it's a garden hedge, no - it's not a tree
- If it's a hedgerow along a road, assess scale by zooming in and out of the map – if it looks like a tree, select tree, but if it looks small and scrubby select non-tree
- If the cross is on the shadow from a tree, it's not a tree!
- If it's on waste land, again assess scale by zooming in and out. Try to determine whether it is a tree, or merely a shrub or other vegetation.

Throughout, the trick is to be consistent please

Some example images are provided on page 24 of this document.

3. Select the appropriate cover class.

You will notice that the points table next to the map has changed to look like the image on the right. If the assessment point has landed on a tree, use the drop-down menu under '**Cover Class**' to change this to '**Tree**' otherwise just accept the default '**Non-Tree**'. Then, click the '**Save & Create New**' button to add your next point.

4. Continue to assess points.

Then it is simply a case of continuing to assess points! The number of points to assess depends on the size of the area you are assessing. For ward assessments, we suggest aiming for 300 points, checking the standard error (SE) value in the rolling statistics or using the 'Report' function. If the standard error is more than 2.0, please continue adding points to try to reduce this to less than 2.0 standard error. For larger wards and/or in areas with higher canopy cover, closer to 500 points may be needed. If you are doing a large town or city, you *will* need more points than 500. For example, in the past we've used 3,000 random points to assess canopy cover for Greater London. If you are doing multiple wards in one town or city, we recommend you try to do the same minimum number of assessment points in each ward.

View Results

[Report](#)

Add New Point

ID	1
Cover Class	Non-Tree
Latitude	51.546645213576575
Longitude	-0.2315497108714707
<div> Save Save & Create New </div>	

+
Page 1 of 1

Make sure you regularly save your data. We would recommend doing this every 50 or 100 points in case the web page crashes, and you need to reload the assessment. To do this...

- (i) Use the '**Save**' function in the bottom right corner of the page, below 'Save your Project'.
- (ii) You will then need to name the file – we would advise you use the ward code (the same code as your shapefile) to help prevent any confusion if you are assessing multiple wards. It also helps us to identify the ward on our database much more quickly too.
- (iii) Make sure you save the assessment file in a location you will remember (in many browsers the default will be your 'Downloads' folder).
- (iv) You can then continue to assess your ward or leave it and come back to it another time. (Please take a look at the FAQ section for guidance on how to return to an assessment.)

Notes:

Once you have your eye-in you'll speed up. About 50 points in 5-8 minutes, or 500 in an hour. You can take a break by saving your data at any time and come back to it later.

If you want to go back to a point that you've already assessed to check it and/or change it, navigate to that point in the table, and click on that point's row. You can now edit the information and change between 'Tree' / 'Non-Tree' once again in the drop-down menu. Remember to save this point again to keep the changes.

Once you have assessed enough points, continue to Stage 5.

Stage 5 – Share your assessment results

So, you've finished assessing the points, now it's time to focus on the results.

1. Make sure you've done a final 'Save' of the assessment.

Check the previous page if you need guidance on how to do this.

2. Have a look at your results.

Use the '**Report**' function to see the results of your assessment. When the report screen loads, you'll notice a few different features including a graph comparing the 'Tree' and 'Non-Tree' cover classes, a map that shows all of the assessment points, a summary table showing the results and some tables estimating tree benefits. We are most interested in the summary table showing the results – see the screenshot below for help interpreting this.

Abbr.	Cover Class	Description	Points	% Cover ± SE	Area (ft ²) ± SE
NT	Non-Tree	All other surfaces	462	76.87 ± 1.72	30947802.24 ± 692434.96
T	Tree	Tree, non-shrub	139	23.13 ± 1.72	9311135.31 ± 692434.96
Total			601	100.00	40258937.55

Total number of assessment points → 601
 % estimate of canopy cover → 23.13 ± 1.72
 Standard error → 1.72

3. Please send us your results!

We would really love to receive your ward assessments to add to the canopy cover webmap for the UK. To do this...

- (i) Email us at: canopycover@forestresearch.gov.uk
- (ii) Please remember to tell us all of the following information:

- **Name of Ward (preferably ward code)**
- **% Estimate canopy cover**
- **Standard error**
- **Total number of assessment points checked**

- (iii) Please also attach your final saved version of your assessment file.

Please note

In sending your results to us we will assume that you are happy for us to share these on the website, where it will be visible and downloadable.

Please let us know if you'd like yourself or your organisation to be acknowledged. We can add your name or organisation and a link to your organisation's webpage; this information will then be publicly viewable on the canopy cover webmap.

We will retain your email while we process the data in case we need to contact you regarding any queries. Subsequently we will delete your contact information.

If you would like to receive updates on the project, **please confirm by email**. In this case we will retain your contact information.

Privacy Notice

The Forestry Commission's Personal Information Charter can be found here: <https://www.gov.uk/government/organisations/forestry-commission/about/personal-information-charter>. Any information we collect from you will be managed according to this policy and is subject to data protection. This policy complies with the General Data Protection Regulation (EU 2016/679) introduced on 25 May 2018.

Contact information provided via this ward canopy cover website will be held by Forest Research for a reasonable limited period while the canopy cover data supplied is processed, after that it will be deleted accordingly. This information will be held securely in the UK or EU by Forest Research (Forestry Commission) and will not be used for any other purpose. The Forestry Commission is registered as a data controller under the Data Protection Act 1998 (Registration No: Z6542658).

We want this data to be fully available to all to support urban tree awareness, research, stewardship and management. The data can be selected to review for all wards where assessment has been completed. Data can also be downloaded in various formats. If you want a large section of data that is difficult to select through the online map, get in touch with us and we'd be happy to send it to you.

Options for exporting your results

Excel file: To have results which you can look at in an MS Excel file, you can click the 'Project' button above the map, then 'Export'. This will give you the option to export in a few different formats. To export as an excel file, click 'CSV'. This file will include point Id, the cover class assigned for each point, the description of each cover class, and the latitude and longitude coordinates for each point.

PDF report: To be able to view your report in a pdf format, click the 'Report' button above the map, then 'Print.' A window will pop-up which will allow you to change printing settings. If you have Microsoft, under 'Printer' you can change this to 'Microsoft Print to PDF'. Then click 'Print'. This will then allow you to save your PDF report to your computer.

Want to move onto another ward assessment?

First, make sure you take a break from the screen to rest your eyes! We recommend you take a 5-minute break every 20 minutes, and a 15-minute break after one hour.

Before you start another assessment, you need to exit the project. To do this, click the 'Project' button (above the map), then 'File' and then 'New/start over'. Don't forget to make sure you have saved your assessment before you do this – a window will pop up asking if you would like to 'Clear all data and start a new project'. If you have saved your file, click 'Ok.' You're then clear to start another assessment. Use the 'Home' button to return to the main screen.

Frequently asked questions

Q. The ward I'd like to assess has already been assigned, but the assign date is quite old. Can this be assigned to me instead?

A. Yes, if the ward has been assigned for a month or more then this ward can be re-assigned to you. Please drop us an email to let us know if this situation applies to you, and we can re-set the ward status so that you can assign it to yourself.

Q. I am having trouble displaying the rural wards!

A. It may be that the map screen is taking a while to re-load. To make things a bit easier, make sure you zoom to the area you are looking to assess first, before applying the filter. Don't close the pop-up box, otherwise this will revert back to displaying urban and completed wards only. If you have been waiting a while with no luck, try refreshing the browser, or closing and re-opening the webpage.

Q. I can't download the ward boundary shapefiles from the webmap!

A. First, double check that your shapefiles haven't saved in a random location on your computer, check your 'Downloads' folder or other recently accessed folders. If you can't find the file, drop us an email letting us know the ward you'd like to assess (ward code please) and we'll send the shapefile over to you.

Q. I'm not sure whether I have assessed a tree or a shrub?

A. It can be really difficult to tell the difference between trees and shrubs on aerial imagery, particularly when the imagery is older or of poorer quality. If the tilt view function is available, you could use this to see the tree or shrub better. If the tree or shrub in question is along a transport route, you might be able to use street view on Google Maps to look at the tree. You can also take a look at the example photos on page 24 for some comparisons, or use other objects for scale, such as buildings or cars. If you're still unsure, just make your best judgement. Remember to be as consistent as you can with your approach throughout the assessment.

Q. I've assessed a point wrong by accident. How do I change it?

A. You can double click on an assessment point you would like to change to bring back up the option to change the cover class. Amend the cover class, then click 'Update' below.

Q. What file type should I save the assessment as?

A. Please just save the assessment file using the default file type. In previous versions of the i-Tree Canopy website, you used to download your saved ward assessment as a .dat file. This file type has now changed. If you try to convert the file, sometimes this can corrupt it and we are unable to view the results, so just send your ward file over to us in whichever format it has saved as by default.

Q. I've completed assessments for a whole town or district. Is there a way of downloading this data for multiple wards at a time?

A. Yes, once we have uploaded the ward data to the canopy cover webmap, you can use the 'Select and download wards' function (located at the top of the map screen) to do this. Once you have clicked on the icon, you can select wards you would like to download the results for, using a polygon or a rectangle. When drawing your rectangle or polygon, make sure to encompass all the wards you are interested in. In the pop-up window, there will be two layers that appear – 'UK wards – Unassessed' and 'UK wards – Assessed.' Click the icon with the three dots adjacent to the layer called 'UK wards – Assessed.' This will bring up a drop-down menu where you can select 'Export to CSV file.' This will then download all of these results into an excel spreadsheet which you can save to your computer.




Q. How do I re-load an assessment file in i-Tree Canopy?

A. If you would like to continue your i-Tree Canopy assessment or revisit one you've already completed, you can re-load your saved assessment file in i-Tree Canopy. To do this, go to the i-Tree Canopy website. Next, click 'Project' then 'File' and then 'Open'. Navigate to your saved assessment file, and then click 'Ok'. This will re-load your assessment screen.

Navigating the canopy cover webmap




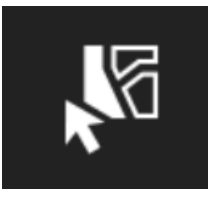

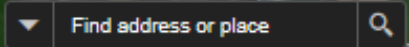
Ward Status Explained

Every ward in the map is given a 'status' to help us keep track of the progress of the project. There are three defined 'status' each shown in its own colour on the map. Please see the table below for their description.

Example	Status	Description
	Unassigned	The ward has not had a canopy assessment completed for it yet. It also has not had anyone come along and 'assign' it to themselves to conduct an assessment by downloading the ward boundary to use in the assessment. Those that are blue are unassigned urban wards. Those that are grey are unassigned rural wards.
	Assigned	The ward has not had a canopy assessment completed for it yet. However, someone has recently downloaded the ward boundary to complete the ward assessment. So, this ward can be considered already 'in progress'.
	Completed	This ward has had its canopy assessment completed and the results sent back to Forest Research to be update the map with. The shades of green refer to the level of canopy cover – darker greens indicate a higher level of canopy cover, lighter greens indicate wards with lower levels of canopy cover.

Tools

The web map has a number of tools you can use to navigate and edit the map. See the table below for details.

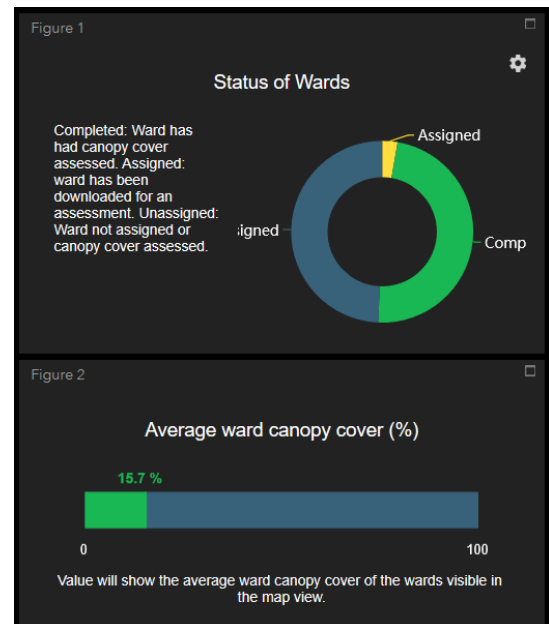
Button	Name and Description
	About Tool: Click this tool to see more information about the web map with instructions on how to download the ward boundary for a canopy cover assessment.
	Editor Tool: You can use this alternative tool to edit the ward information and download the ward boundary file. However, the tool does not work on unassessed rural wards.
	Group Filter Tool: This tool allows you to only show wards of a certain status. For example, if you're only interested in wards which have completed canopy assessments, you can click this tool and in the first drop-down box select 'Show completed wards only'.
	Select and download data Tool: This tool allows you to select a set of wards by drawing a rectangle or polygon on the map – wards within or overlapping this rectangle are selected. You then have options to review statistics on your selection, or download the data in a number of formats.
	Home Tool: Click this to return to the original map extent showing the whole of the UK.
	Find Address Tool: Type in a location to zoom to that location on the map.

Figures

The webmap has two figures which show statistics on the progress of the project and average canopy cover levels. The figures are generated based on the current extent of the map screen view. For example, if you zoom into a handful of wards, these figures may be different to that if you zoomed in at the county level.

Figure 1: Shows the proportion of all the completed and assigned wards, compared with those that remain unassigned. You can hover your mouse over different parts of the diagram to get a pop-up of the number and percentage of wards with the different statuses. Please note that this figure does not take into account unassigned rural wards.

Figure 2: Shows the average canopy for all the visible wards. This canopy cover average is only counting the wards with completed canopy assessments.



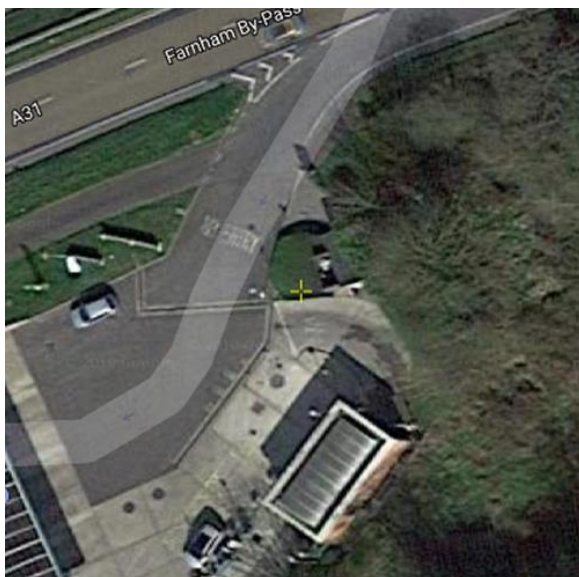
'Tree' or 'non-Tree' - a picture guide



Tree: The cross-hairs fall onto the canopy of a small tree. The fact it casts a sizeable shadow and covers the fence line helps identify it as a tree, rather than a shrub.



Tree: The cross-hairs fall on top of a tree. Aerial photographs can be taken in the winter, and so often the trees are bare and brown rather than leafy and green. However, here you can see the tree's branches reaching out and see the cross-hairs fall on the canopy area of those branches.



Non-tree: The yellow cross bars fall just on the side of a formally cut hedge, which counts as a shrub rather than a tree.



Non-tree: The cross-bars fall on the shadow from a cluster of trees, rather than on the tree itself therefore it is classed as 'non-tree'.

This guide was written by Kathryn Hand, Kate Sparrow and Kieron Doick, Forest Research. We are grateful to Dr Ingo Schüder, Director Brillianto, for road-testing and improving the guidance and for providing additional screenshots for the step-by step instructions.