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1. Installing and setting up OkMap Desktop

You can download and install OkMap Desktop from:

<http://www.okmap.org/en/okmapDesktopDownloads.aspx>

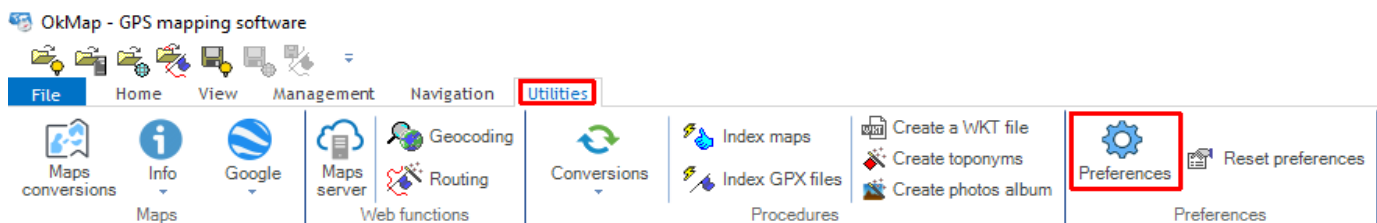
When you click on **Buy** you can choose to pay through PayPal, if you have an account, or by credit card. **OkMap Desktop** comes as a ZIP file. Extract and install it.

You should tick **Create a desktop icon** when the **Select Additional Tasks** window comes up in the installation process. It will create a shortcut for the **OkMap** program on the desktop. Double clicking on this in future will start the program.



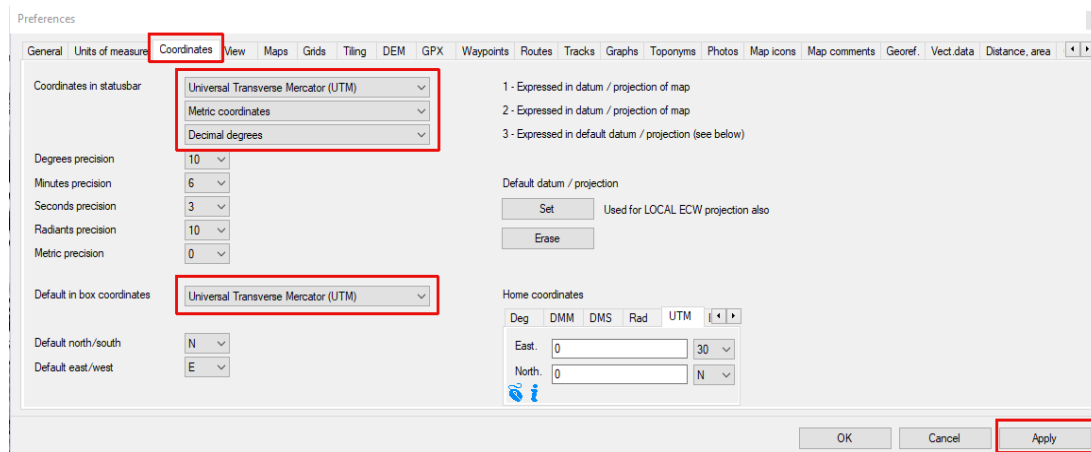
Using the Preferences option to change some of the default settings in OkMap

The main default settings can be changed in the **Utilities** tab by clicking on **Preferences**



Check your maps for details of the coordinate system used - e.g. **IG** [Irish Grid] or, as shown below, **UTM** [Universal Transverse Mercator].

Coordinates



Go to the **Coordinates** tab and:

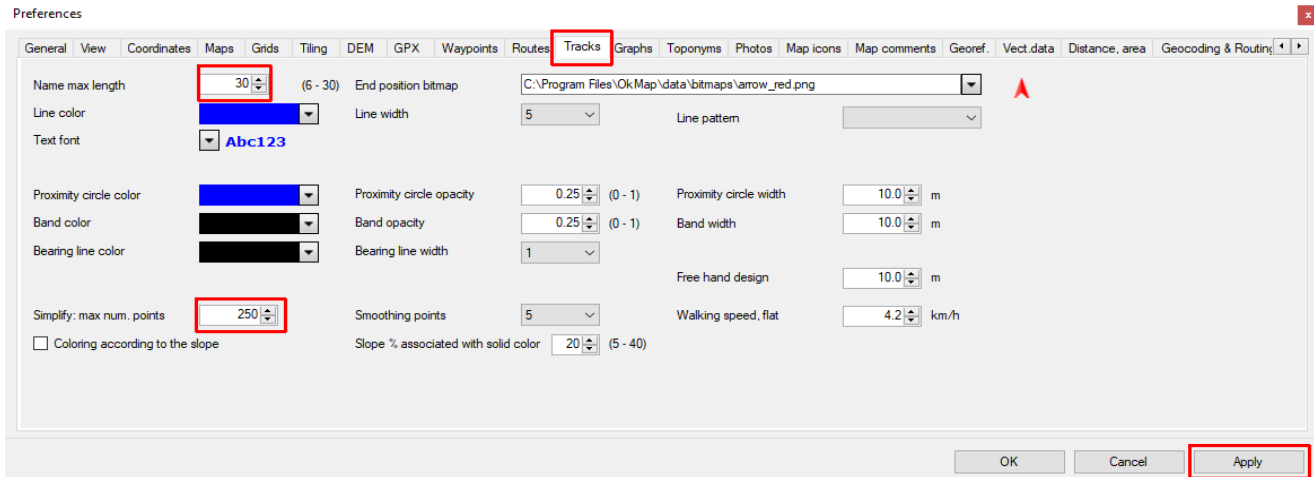
- set the **Coordinates** boxes to **Universal Transverse Mercator (UTM)**, **Metric coordinates** and **Decimal degrees**
- set the **Metric precision** to **0** [no decimals]
- set the **Default in box coordinates** to **Universal Transverse Mercator (UTM)**

before clicking the **Apply** button.

Tracks

In the **Tracks** tab and in the top and bottom left-hand corners:

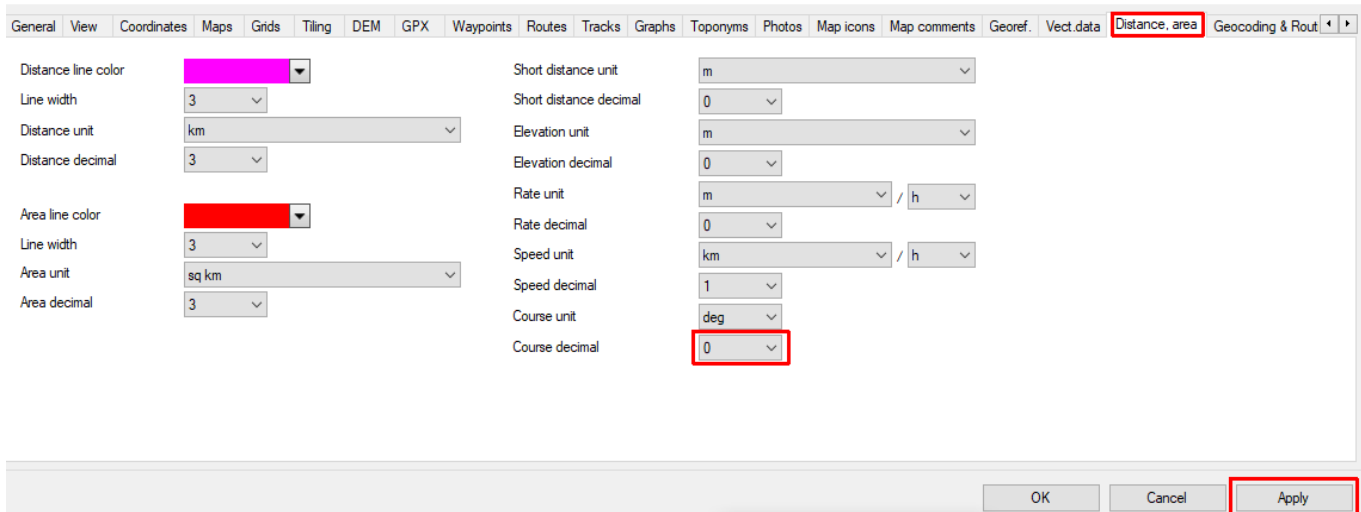
- Set the **Name max length** to **30** [OkMap will, for compatibility with GPS devices, only allow a maximum of 30 characters in a track name]
- Set **Simplify: max num. points** to **250** [a reasonable limit to the number of points on a track when the track **Simplify** function is used to reduce the recorded number]



before clicking the **Apply** button.

Distance and area

In the **Distance, area** tab and in the bottom right-hand corner set the **Course decimal** to **0** [to avoid decimals] before clicking the **Apply** button.



Grids

In the **Grids** tab change the colour to **red** and the width of the grid lines to **1** as shown.

You can choose to show this grid when a map image has been georeferenced.



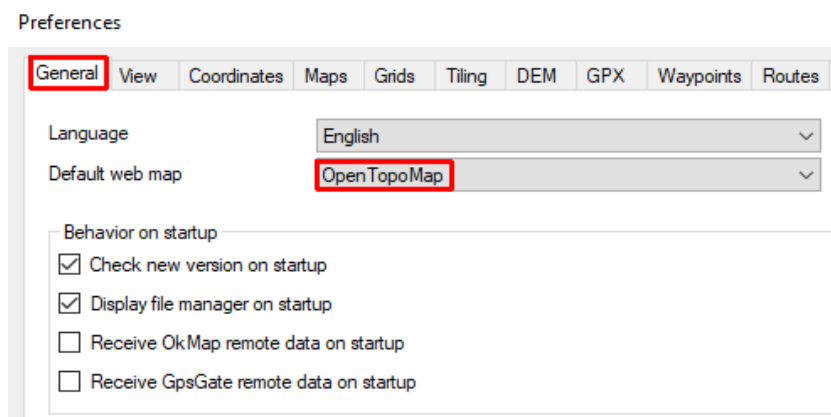
Click on **OK** to close the **Preferences** window.

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2. Using a webmap

If you have a track and you don't know what to load as the underlying map layer then you can simply load the track and allow OkMap to use a web map - this will display the track wherever in the world it is.

As described on P. 2 go to the **Utilities** tab and click on **Preferences** before going to the **General** tab and changing the default web map from **AllRailMap** to **Open TopoMap**.



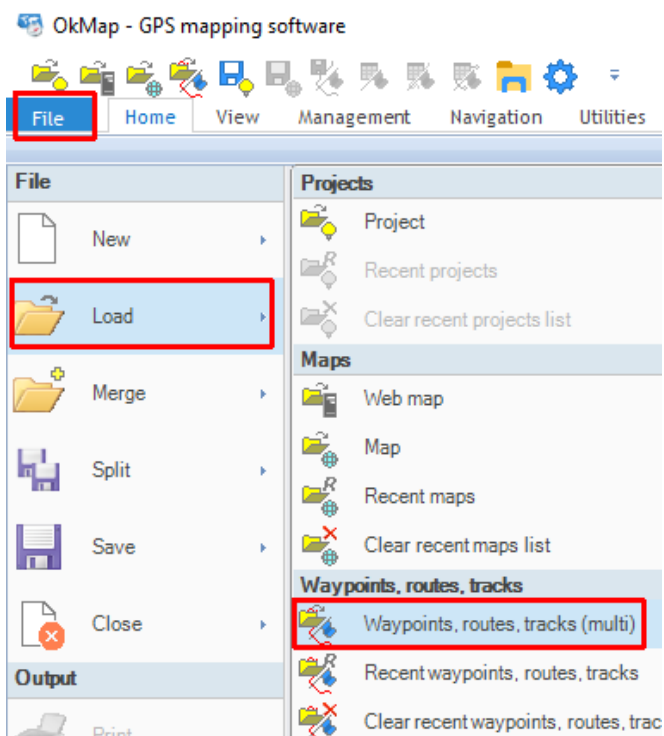
Click on **Apply** at the bottom right of the window.

Go to

File > Load > Waypoints, routes, tracks (multi)

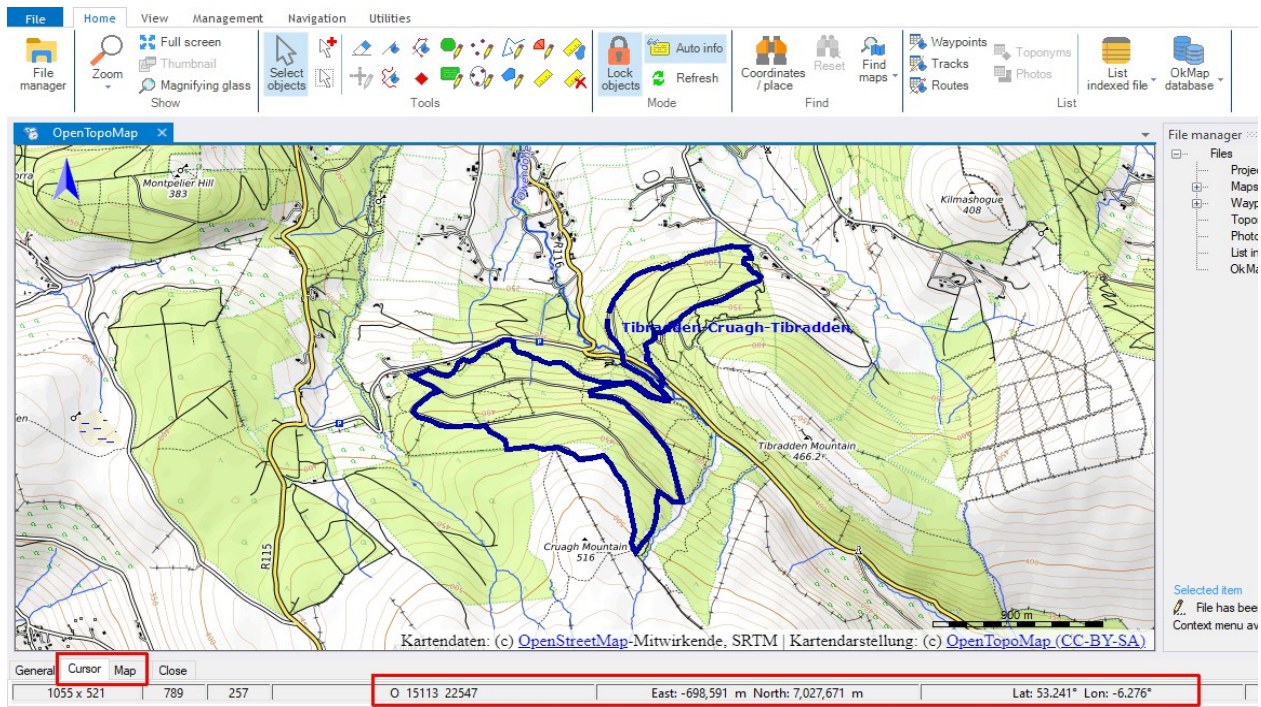
which will bring up a standard Open File Dialog window showing the contents of a folder of demo GPX files.

Ignore these and find your way to the folder on your computer which contains the GPX file you wish to examine.



Double click on the file.

After some time an **Open TopoMap** tile for this area will have been downloaded and the track will be shown.



If you click on the **Cursor** button at the bottom left of the screen you will see the coordinates of the mouse pointer along the bottom of the screen.

You can create and edit tracks [see P. 20] using any web map.

However the full power of OkMap is best seen when it has been used to prepare a map from a scanned paper map which is specifically designed for hikers.

Such a map comes in two files - *<map name>.jpg* and *<map name>.okm*

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3. Scanned maps

At home you can probably scan part of a paper map to give an A4 size image.

For scans of a complete map you will need to get this done for you in a print shop which offers large image scanning]. Ask for the resultant image to be a **.jpg** file at a resolution of 300 dpi

Here the example is an A4 image of part of a Irish map scanned at home.

A scanned map, like a photograph, is a rectangular array of pixels.

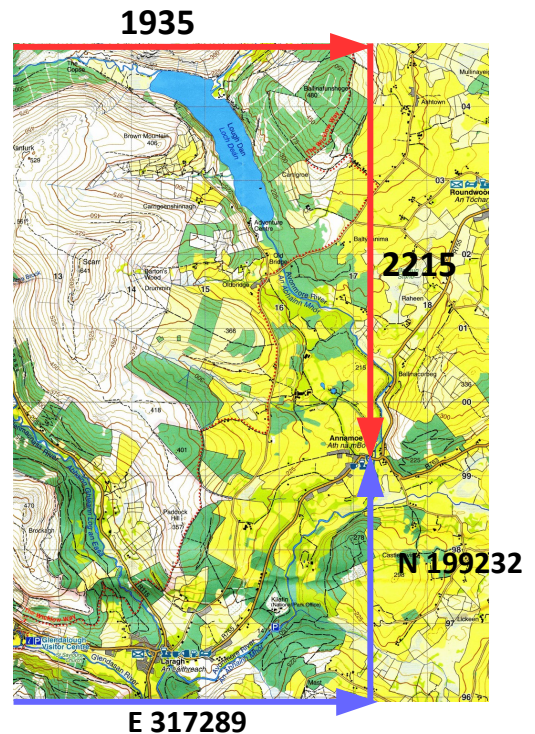
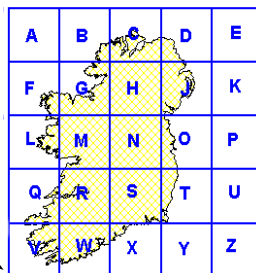
In this example it measures 2550 pixels wide by 3510 pixels high.

Computers give individual pixels a pair of coordinates measured **across and down** from the **top left** hand corner.

Here the centre of the bridge across the Avonmore at Annamoe has pixel coordinates (1935, 2215)

However the Irish Grid coordinates of this point are measured **across and up** and are
(E 317289, N 199232)

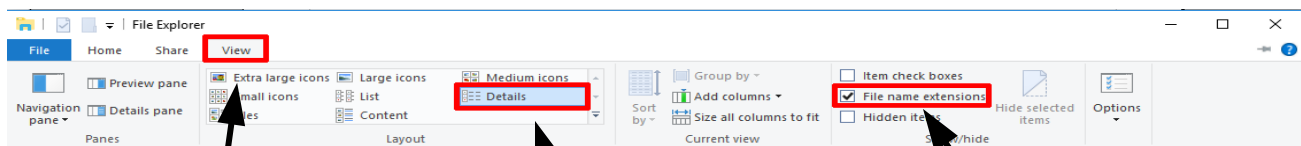
These are in metres measured from an origin in the Atlantic off the South-West coast.



A conversion formula is needed in order for the computer to display the coordinates of any point in the Irish Grid form. The process of calculating and saving this formula is called **georeferencing**.

File extensions

It is a good idea to set up File Explorer so as to show the full file names, including their extensions, and all the details about the file rather than just an icon.



First click on the **View** tab

Click on **Details**

Tick the **File name extensions** box

Scanned maps will be stored in files with extension of either **.jpg** or **.png**.

Files with these extensions are **raster** files which means they consists of an array of pixels. OkMap can deal with either type but in the examples that follow **.jpg** is used

Georeferencing conversion formulae for use with OkMap are stored in files with the extension **.okm**. These are text files.

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4. Coordinate systems, projections and datums

Coordinate systems

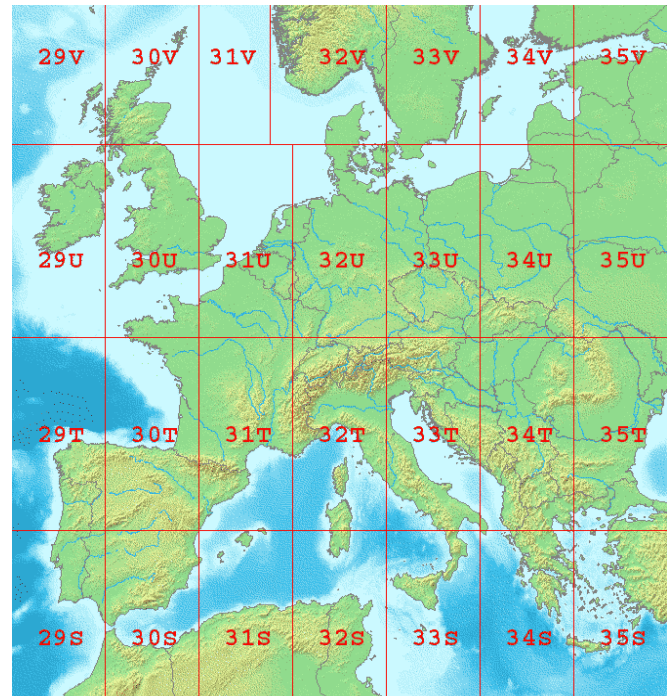
Instead of working with the standard universal latitude/longitude coordinates where the Earth is treated as a sphere most paper maps use a grid obtained by treating a small part of the Earth as approximately flat.

The most commonly used grids on maps in Europe are **UTM** [Universal Transverse Mercator], **IG** [Irish Grid] and **BNG** [British National Grid].

UTM coordinates are given in metres measured from the SW corner of the rectangle.

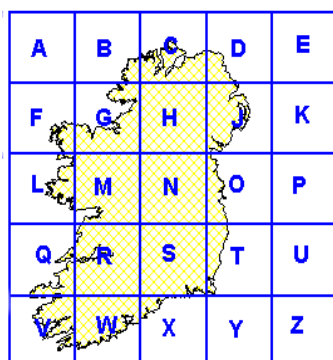
Usually these distances are given as a 6 figure Easting and a 7 figure Northing.

This allows for distances up to 1,000km due East and 10,000km due North.



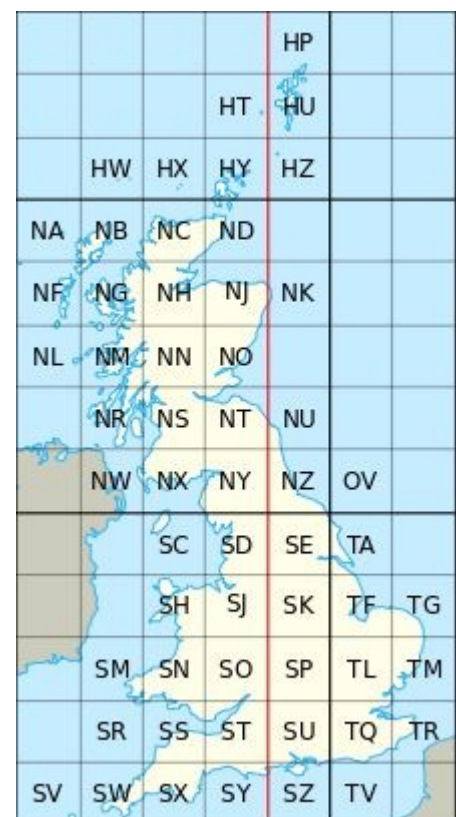
Maps of Ireland and the UK are most often based grids of squares of side 100km.

Each square is denoted by a single letter in the **IG** [Irish Grid]



and two letters in the **BNG** [British National Grid]

Easting and Northing coordinates are given as 5 figure values in metres.



Projections and datums

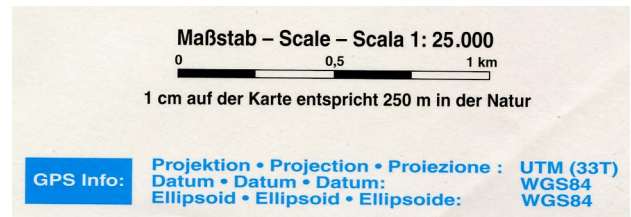
To georeference a map using OkMap Desktop you will need to know the projection/datum used as well as the coordinate system.

OkMap lists a bewildering number of these
e.g. for Ireland there are 6 possible choices.

IRENET95 / Irish Transverse Mercator
IRENET95 / UTM zone 29N
OSNI 1952 / Irish National Grid
TM65 / Irish Grid
TM65 / Irish National Grid
TM75 / Irish Grid

Often, but not always, the information can be found on the map.

In this case, a map of part of Austria, the projection is **UTM 33T** and the datum is **WGS84** [World Geodetic System 1984]



In OkMap the system is simplified and only the UTM number is used together with the letters **N** or **S** [N/S of the equator] e.g. zones **33S**, **33T** and **33U** would all be simply **UTM zone 33N**
So for this map OkMap has this listed as **WGS84 / UTM zone 33N**

WGS84 is the most common datum but in Spain/Portugal maps may have a datum of **ED-50** [short for European Datum 1950] in which case choose **ED50 / UTM zone 29N** or **ED50 / UTM zone 30N** or **ED50 / UTM zone 31N**

Some of the most commonly required projections and datums are given below together with their **EPSG** [European Petroleum Survey Group] codes which can be useful when georeferencing.

Projection / datum	EPSG code
ED59 / UTM zone 28N	23028
ED59 / UTM zone 29N	23029
ED59 / UTM zone 30N	23030
ED59 / UTM zone 31N	23031
TM65 / Irish Grid	29902
OSGB36 / British National Grid	27700
WGS84 / UTM zone 28N	32628
WGS84 / UTM zone 32N	32632
WGS84 / UTM zone 33N	32633

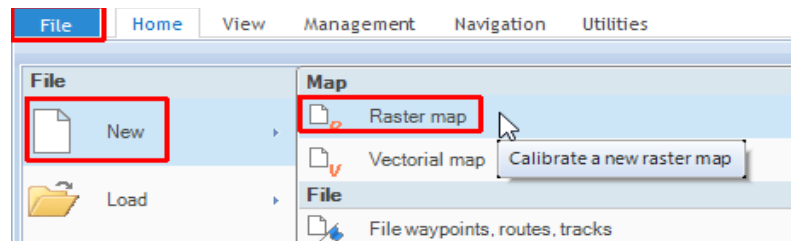
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5. Georeferencing a scanned map

In the following example a portion of an Irish map scanned at home is georeferenced.

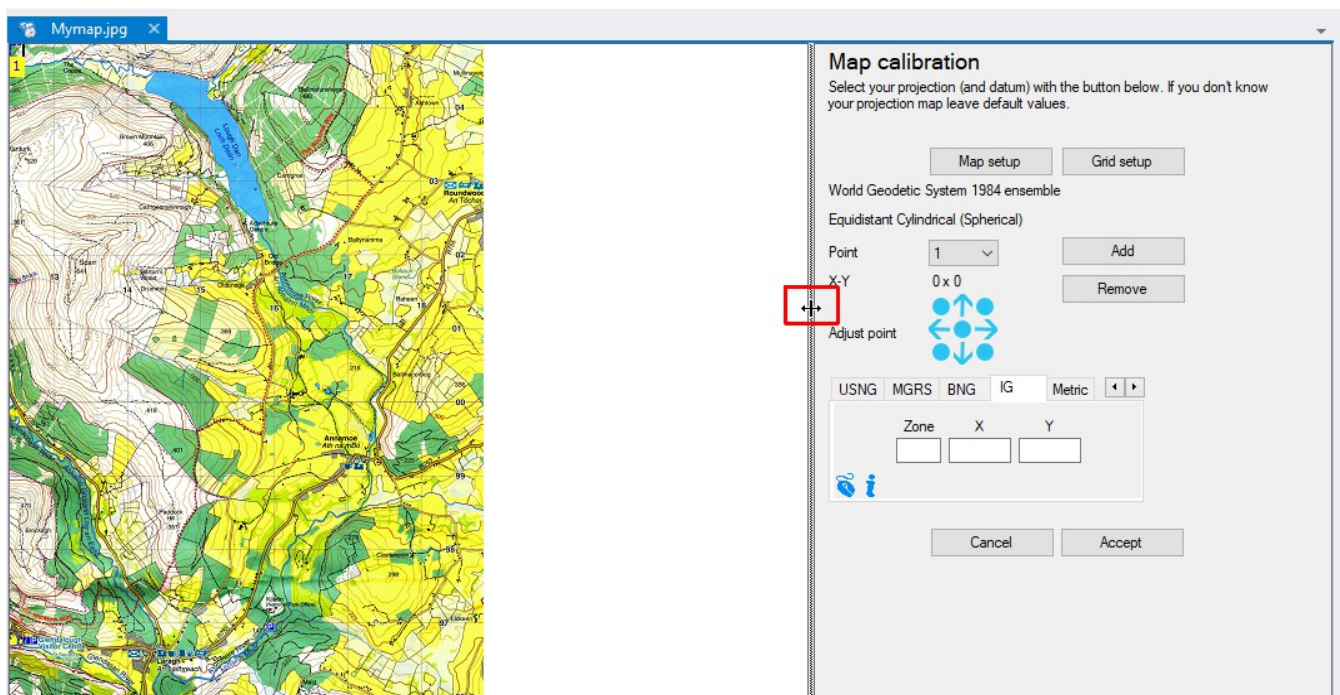
Run OkMap and, in the **Home** tab, first load your **.jpg** raster file by going to

File > New > Raster Map



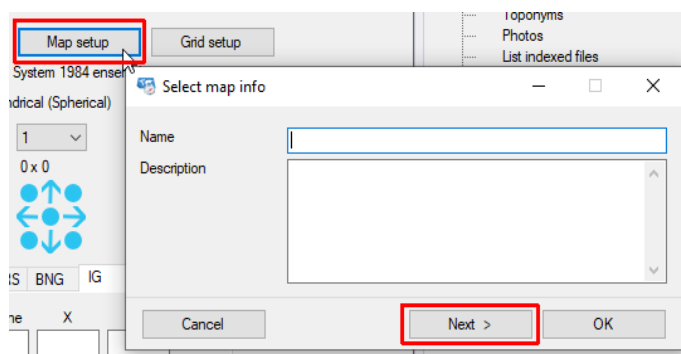
and then, using the resultant **New map** file explorer window, find and open your image file, **Mymap.jpg** say

It will appear shortly

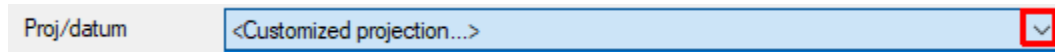


To the right of the map image is the **Map Calibration** window. You will probably need to widen this window to see everything.

Click on **Map Setup** and type in a name [you can just leave this blank] before clicking on **Next**.



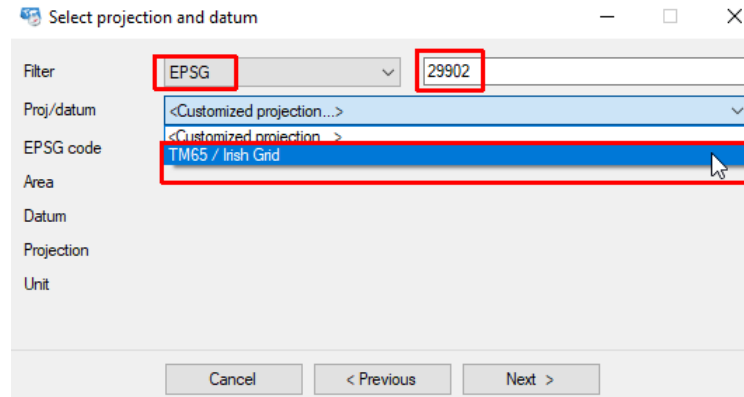
After a considerable pause (be patient !) this will bring up the **Select projection and datum** screen.



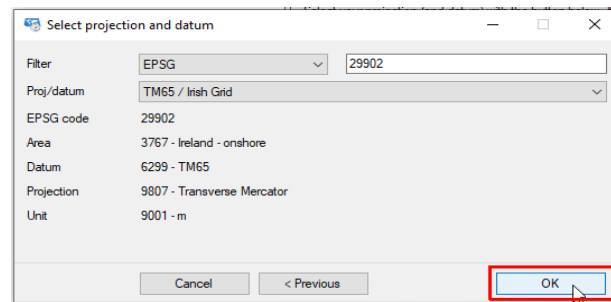
If you click on the drop down arrow you will be presented with a huge number of options.

To reduce this to a manageable number you can filter the options by **Area** and type in the word **Ireland** (more patience required !) you will now get six options of which **TM65 / Irish Grid** should be selected.

A better way to bring up this option by itself is to filter by EPSG code if you know it. [see P. 10 for a partial list]

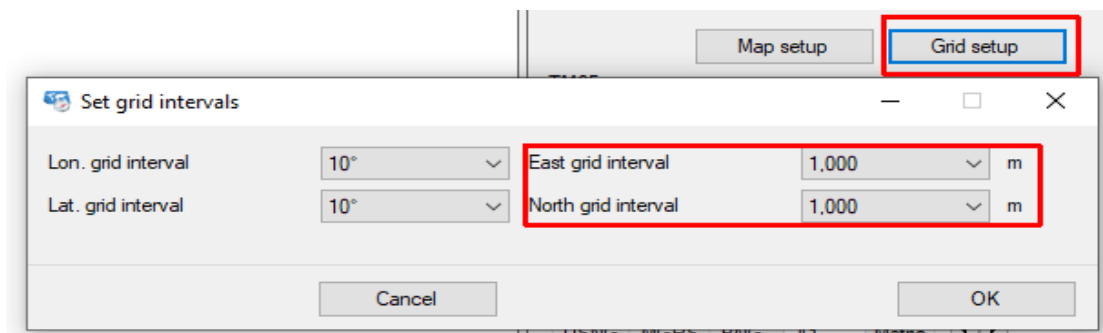


Type in the code 29902 (patience, again) to get the single option **TM65 / Irish Grid** to select.

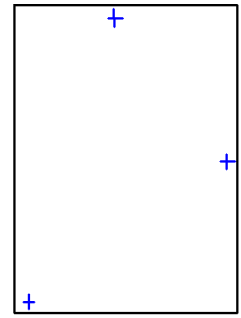


On the resultant screen click on **OK**.

Click on **Grid setup** and make the East/North grid intervals 1.000m i.e. what in Ireland we would write as 1,000m which is 1km.



Have your paper map to hand. To calibrate the scanned map you will now need to select three points at grid-line intersections and forming as large a triangle as you can for best accuracy.



For these three points make a note from your paper map of their coordinates. These can either be **6-digit** or **letter + 5-digit** coordinates. Paper maps should have the full 6-digits for the grid lines at each corner but may omit the first digit for other grid lines.

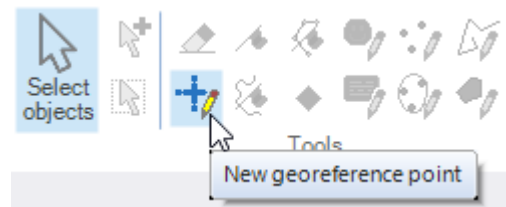
An explanation of the relationship between the OSi **letter + 5-digit** and its **6-digit** equivalent can be found on P.17 below.

Calibrating

Mark the first of the three points chosen as a **grid reference** as follows:

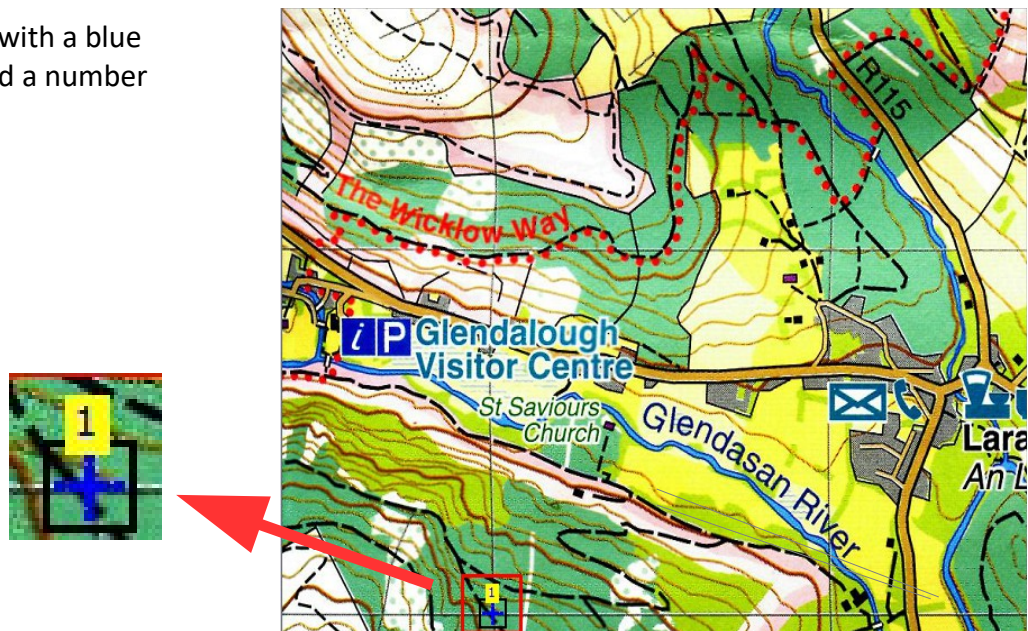
Zoom in close to the first point and, in the **Home** tab, select the bright blue cross-hair icon to mark a

New georeference point



The cursor will change from an arrow to a cross. Move it across to your point and click.

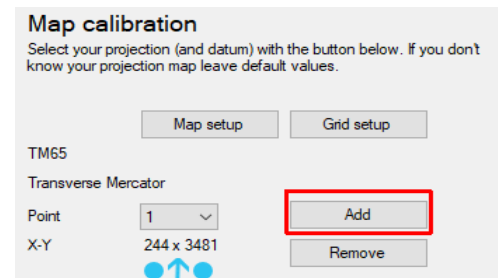
The point will be marked with a blue cross in a black square and a number



Now in the **Map Calibration** window click on **Add**, click again on the bright blue dotted cross-hair and place the next point.

Repeat for the third point

Don't worry about getting the points on exact grid-line intersections – they can be nudged into positions later.



Now, in the **Map Calibration** window, go to the **Point** box and click on **3**, say.

Zoom in onto this point so that it takes up a large part of the screen.



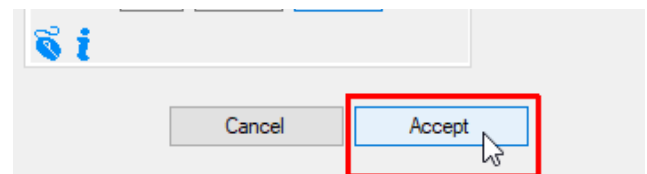
If the cross-hair is not exactly in the centre of the grid-line intersection then nudge it into place using the blue **arrows** in the **Adjust point** area [clicking on one of the blue **circles** will move the point to one of the corners or the centre - not what you want].


Now enter the coordinates of the point, making sure that you have first selected the Irish Grid reference system [**IG**] or the 6-figure reference form [**Metric**]



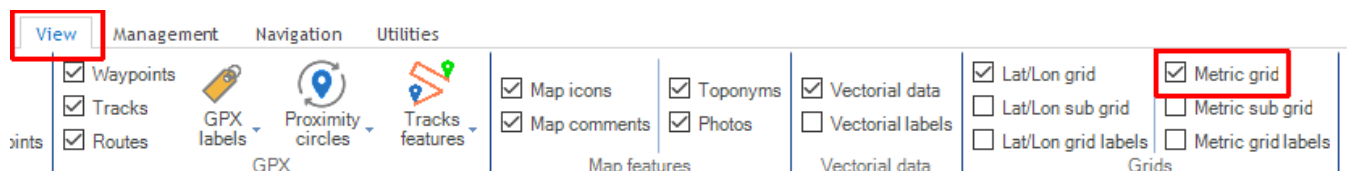
Repeat this for points **2** and **3**.

Then, **and only then** click the **Accept** button at the bottom of the **Map Calibration** window.



A North pointing arrow will appear on the map and the georeferenced grid lines will appear in red. The colour and width of the lines can be changed in the **Grid** tab in **Preferences** []

If they don't appear go to the **View** tab and check the **Metric grid** box

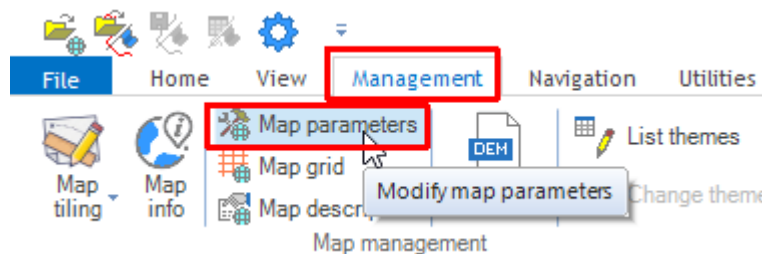


These red grid lines should coincide reasonably well with the grid lines of the map.

It's very unlikely that this will be the case everywhere - it will depend on the state of the map when it was scanned and the quality of the scan.



If this clearly isn't the case then the coordinates of one or more of the three points are incorrect.



The data for the three calibration points can be modified by going to the **Management** tab and clicking on **Map parameters**

You can then check/change the values for each point before clicking the **Accept** button.

Note: It may at times seem that OkMap has changed your original values but this is only a rounding error.

e.g. here 03995 rounds to 04000

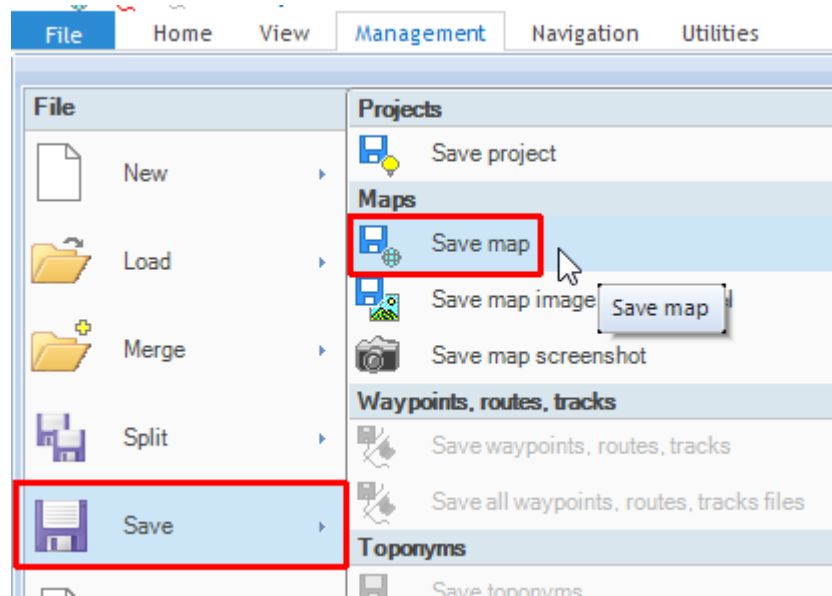
Zone	X	Y
0	16000	04000

Zone	X	Y
0	16000	03995

You can also check by clicking on **Cursor** at the bottom left-hand corner of the screen [between **General** and **Map**] and checking that the georeferencing is correct by moving the cursor arrow onto a known grid-line intersection. The coordinates will be shown at the bottom of the screen in Irish grid form.

General	Cursor	Map	Close			
2550 x 3509	593	2729	Ireland 1965 (Ireland)	T 13882 97918	East: 313,882m North: 197,918m	

Finally go to **File > Save > Save map** and accept the default file name (the same as the **.jpg** file used but with the extension **.okm**).



At a later time this georeferenced map can be reloaded by going to **File > Load > Map** and clicking on the required **.okm** file. This will load the associated **.jpg** file and set up the georeferencing ready for your use.

Note: both **Mymap.jpg** and **Mymap.okm** files must be in the same folder for everything to work.

To send a georeferenced map to someone both files must be included. Since the files are likely to be large you may find that you cannot send them as email attachments. In this case consider using the free version of **WeTransfer** [<https://wetransfer.com>]

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6-figure coordinates and OSi lettered references

On an OSi map the 6-figure grid references are given for the points at the corners of the map. These will help you to decide what the 6-figure reference for any other point will be. Otherwise it can be calculated as follows.

In the national grid, Ireland is described as a square 500 km by 500 km. This is further divided into 25 squares, each of which is of side 100km and each of which is given a letter.

Converting from an OSi lettered reference to a six-figure reference

Taking a scale of 100km = 1 unit the bottom left-hand corner of each square has coordinates such as:

V(0,0) W(1,0) R(1,1) H(2,3)

The OSi squares in the Wicklow area are

N (2,2) O (3,2) S (2,1) T (3,1).

The common **letter + 3-digit** grid reference is converted to the OSi **letter + 5-digit** form by adding two zeroes after each of the two numbers.

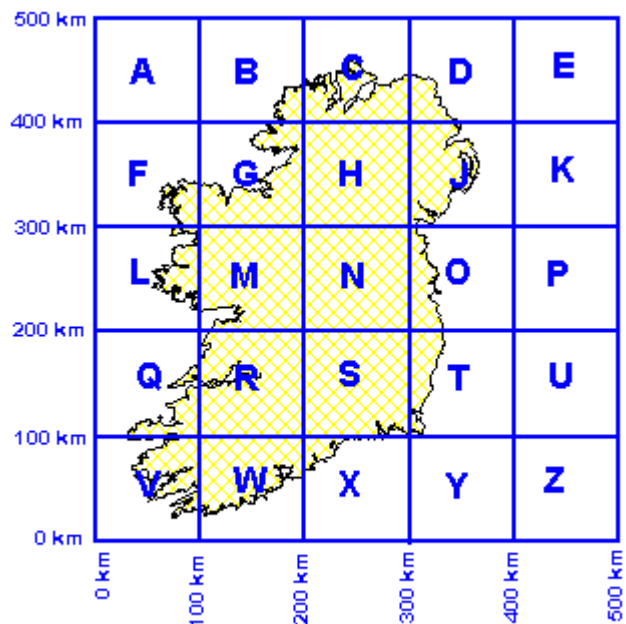
Then the numerals given above for the letter are placed in front of the numbers.

So, for example, a reference: O: 120 140 would translate [using **O (3,2)**] as follows:

3-digit form
O: 120 140

OSi **letter + 5-digit** form
O: 120**00** 140**00**

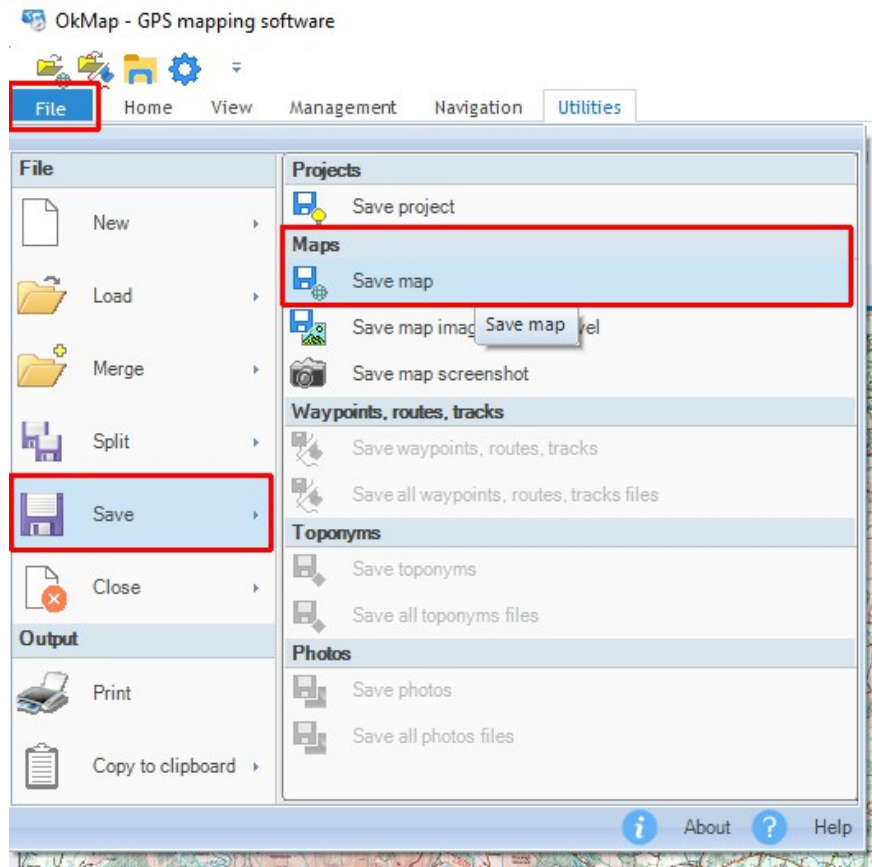
6-digit form
312000 E **214000** N



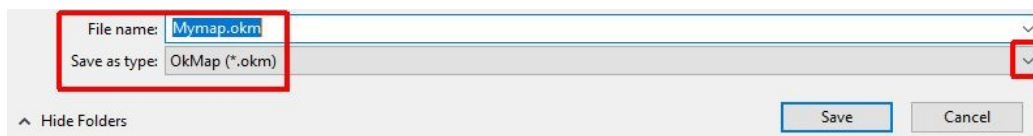
Irish National Grid 100 km Squares

6. Custom maps

Load your georeferenced map e.g. Mymap.okm and go to **File – Save – Save map**



You will be prompted to save it as a **.okm** file. Change this by clicking on the arrow at the left of the **Save as type** box

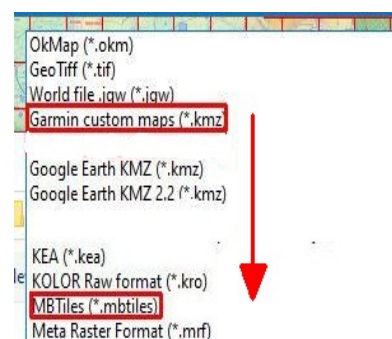


From the popup list chose an option from

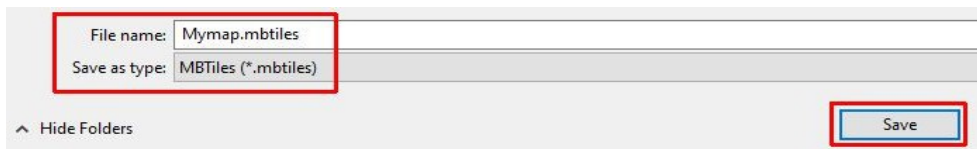
Garmin custom maps (*.kmz)

or, scrolling down,

MBTiles (*.mbtiles)

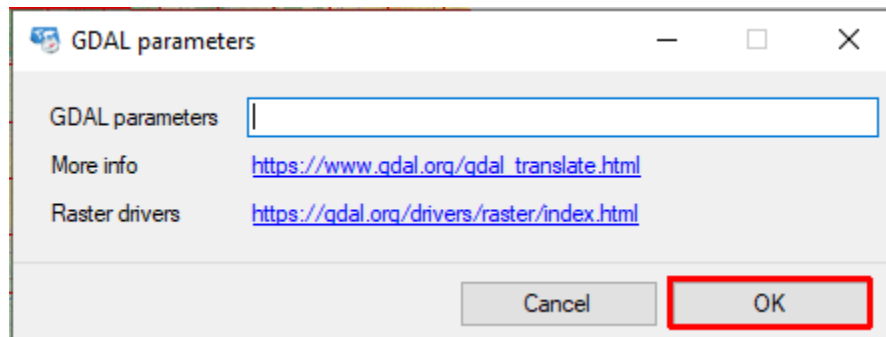



Creating a custom map in .mbtiles format



Having chosen the **MBTiles (*.mbtiles)** option with the file name **Mymap.mbtiles** click on **Save**.

There is no need to enter GDAL parameters in the box which then pops up.



Just click on **OK** for the process to start. It will take some time, maybe 5 minutes or more – be patient and wait until the mouse pointer changes from “busy”  back to an arrow.

Creating a custom map in .kmz format for a Garmin

Having chosen the **Garmin custom maps (*.kmz)** option with the file name **Mymap.kmz** click on **Save**.

The process starts immediately.

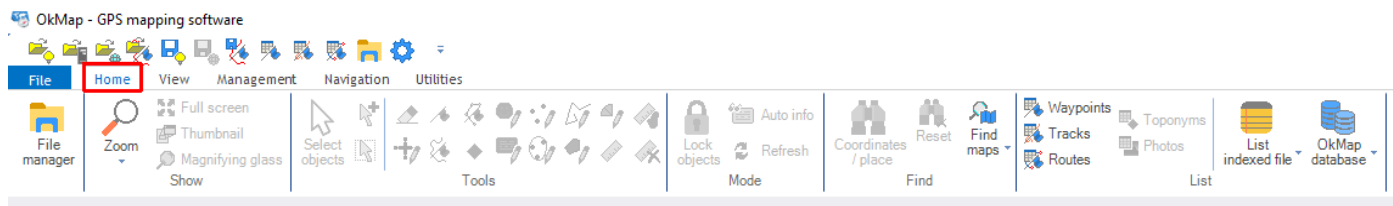
Uploading to OkMap Mobile

Using an app such as **WeTransfer** send yourself the **MBTiles** file and follow the instructions on P. 8-10 of **OkMap Mobile - an introductory guide**.

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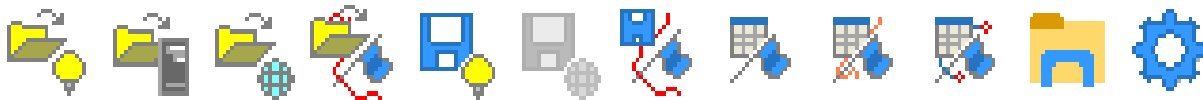
7. Viewing, creating and editing tracks

Finding your way around OMap

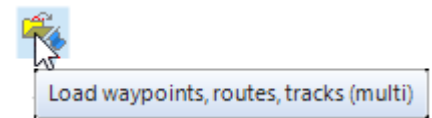


In OkMap you can see a permanently available tab labelled **File** and five others **Home - View - Management - Navigation - Utilities**. Initially, and for most of the time, you will be in the **Home** tab.

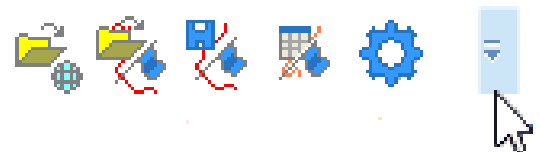
In the top row there are 12 icons which allow quick access to certain operations.



Hovering over any of these gives a written description of its purpose.



In practice there are only five of the twelve which are used with any frequency. Clicking on the icon at the end will allow you to show only these five.



Untick all options except for



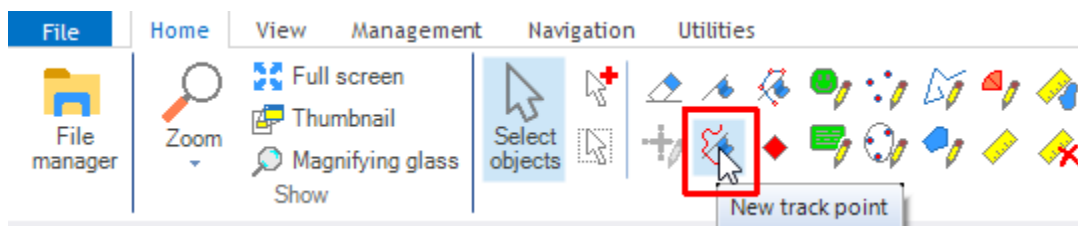
Before trying to make changes to a full recorded track work your way through the simple steps below. This will make it easier to understand the more complex example which follows.

Keyboard shortcuts

There are a number of keyboard shortcuts, using the **Ctrl** and **Alt** keys, available in OkMap.

In use press and hold down the **Ctrl** (or **Alt**) key and then press the second key before releasing both.

Creating a new track

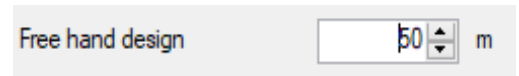


With a map loaded and visible going to the **New track point** icon and clicking will change the mouse-pointer from the usual arrow to a cross-hairs.

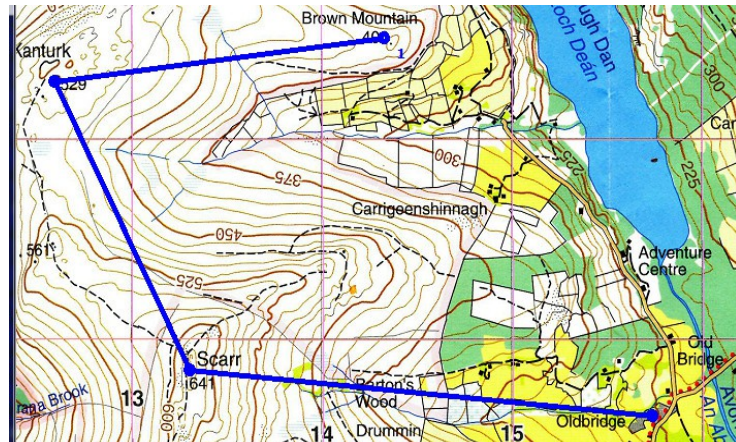
Clicking at a point on the map causes a blue dot [a **trackpoint**] to appear with the number **1** beside it. This is the name of the track. Clicking at another point makes a second trackpoint appear joined to the first. The **1** moves to near this second point. Doing this many more times will create a complete track.


A quicker way, if you have a steady hand, is to hold down the left button of the mouse and then move it freehand. Releasing the button shows all the trackpoints.

You may find that this gives too many trackpoints. If so increase distance between trackpoints in **Preferences - Tracks - Free hand design**

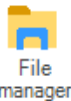


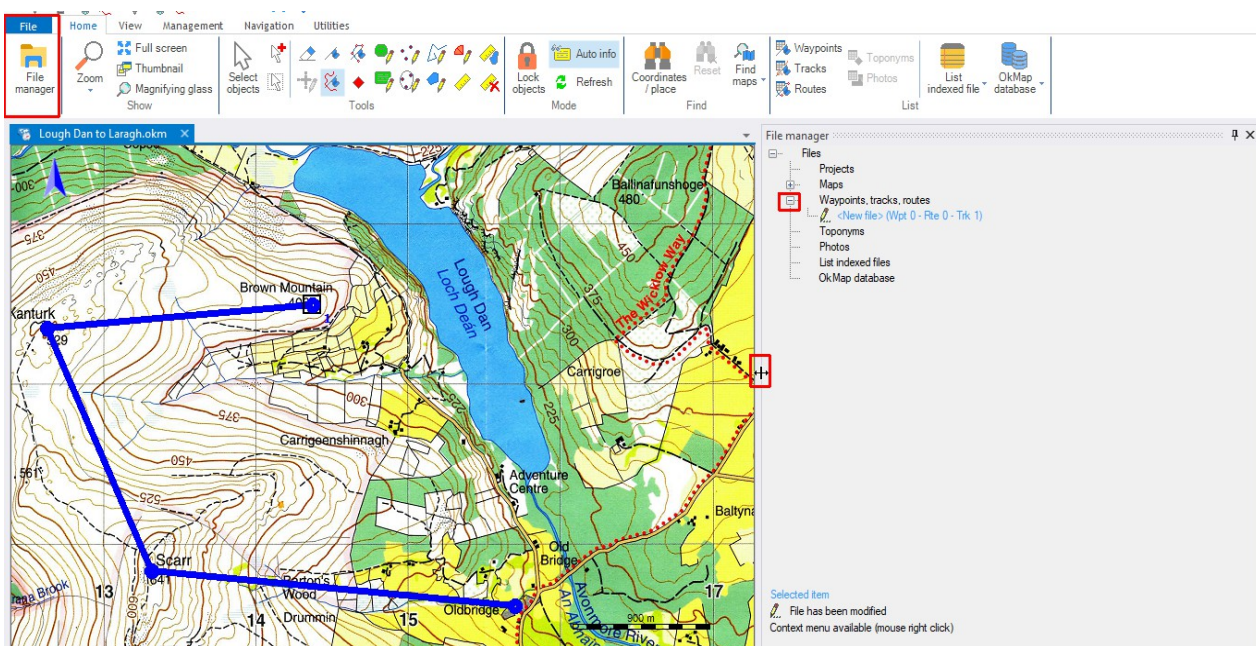
Here's a track for a crow flight which consists of only four trackpoints.



Pressing **Alt-S** or clicking on  will end the creation of a track and change the cursor back to an arrow.

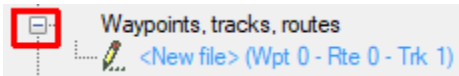
This track, named **1**, will still be **selected** i.e the trackpoints will be shown as blue dots.

Clicking on  will open the File manager window on the right of the screen.



Using File manager

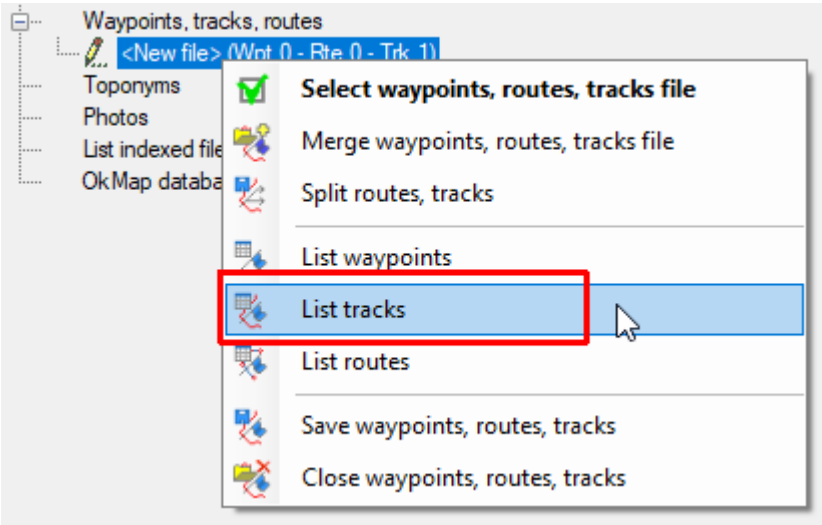
Clicking on the + sign beside **Waypoints, tracks, routes** in the menu will show that there is a **New file** containing one track and no waypoints or routes.



Right-clicking on the file will access a drop-down menu of options and clicking on

List tracks

will open the **Tracks list** window



Tracks list

Filters

Name

Comment

<div><div></div><div></div></div>	Name	Selected	Comment	Description	Source	Link
▶ 1	1	<input checked="" type="checkbox"/>				
*		<input type="checkbox"/>				

<

>

<div><div></div><div></div></div>	Segment number	Point number	Name	Selected	Comment	Description	Source	Link	Symbol
▶ 1	1	1		<input type="checkbox"/>					
	2	1	2	<input type="checkbox"/>					
	3	1	3	<input type="checkbox"/>					
	4	1	4	<input checked="" type="checkbox"/>					
*				<input type="checkbox"/>					

<

>

☐ Auto locate point

Context menu available (mouse right click)

OK

Cancel

Apply

Refresh

The **Name** of the track, 1 , can be changed - OkMap has a limit of 30 characters for the name.

<div><div></div><div></div></div>	Name	Selected
▶ 1	Crow flies-Oldbridge-Brown	<input checked="" type="checkbox"/>

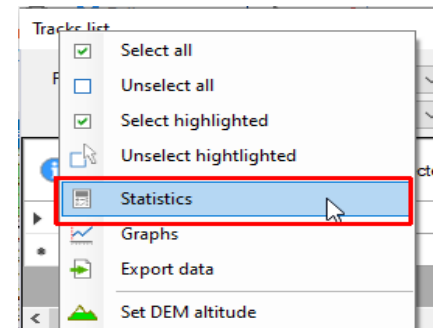


Clicking on **Apply** followed by **OK** at the bottom of the window will show this change.



Returning to the **Tracks list**, right-clicking on the **Name** and selecting **Statistics** will give the information about the number of **Segments**, **Points** and the **Distance traveled (km)**

In this case there is only one segment but a recorded track in which the recording has been paused at intervals may consist of several segments.

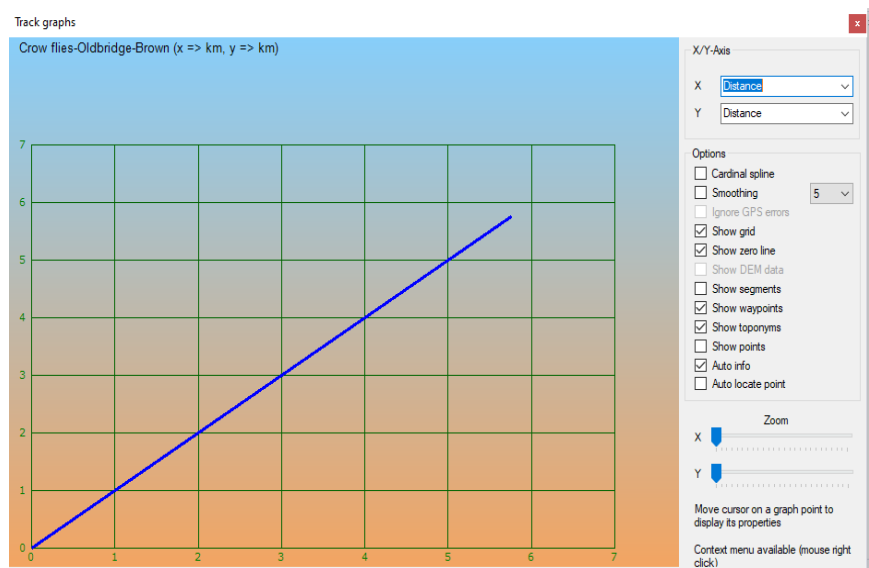
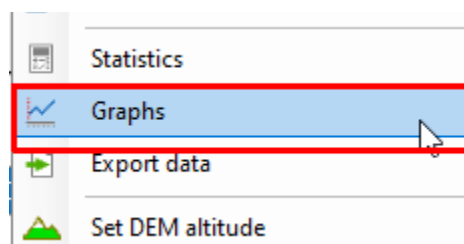


Track statistics

View		Order by		Measure unit		Type	
<input checked="" type="radio"/> Vertical <input type="radio"/> Horizontal							
	Track name	Type	Name	Value			
▶ 1	Crow flies-Oldbridge-Brown	Track	Description				
2			Comment				
3			Segments	1			
4			Points	4			
5		Distances	Distance traveled (km)	5.76			
6			Distance traveled flat (km)				

Selecting **Graphs** instead of **Statistics** will usually show a graph of the elevation recorded at each point.

In this case no elevation has been recorded.



This can be seen by scrolling from left to right as shown below so that for each point its **Coordinates**, **Elevation** and the **Date time** of recording are shown.

	Segment number	Point number	Coordinates	Elevation (m)	Date time	Mag. var.	Geoid height	Fix
1	1	1	O 15643 01629					
2	1	2	O 13258 01846					
3	1	3	O 12528 03332					
4	1	4	O 14228 03516					
*								

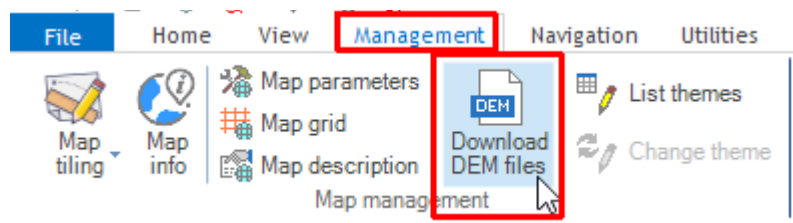
☐ Auto locate point
 Context menu available (mouse right click)

OK Cancel Apply Refresh

Digital Elevation Model [DEM] files

DEM files store the elevations of points on the Earth's surface and can be downloaded from a various web sites.

In the **Management** tab of OkMap clicking on **Download DEM files** will suggest a file to be downloaded which will contain the elevations of points on the map displayed.



Download DEM files

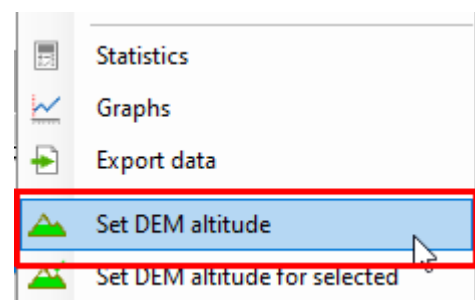
	Path	File	Size	Status	Download %
1	/srtm/version2_1/SRTM3/Eurasia	N53W007.hgt	796,203	Not available locally	

If the **Status** is **Not available locally** clicking on **Download** at the bottom of the window will start the process. It may take a minute or two.



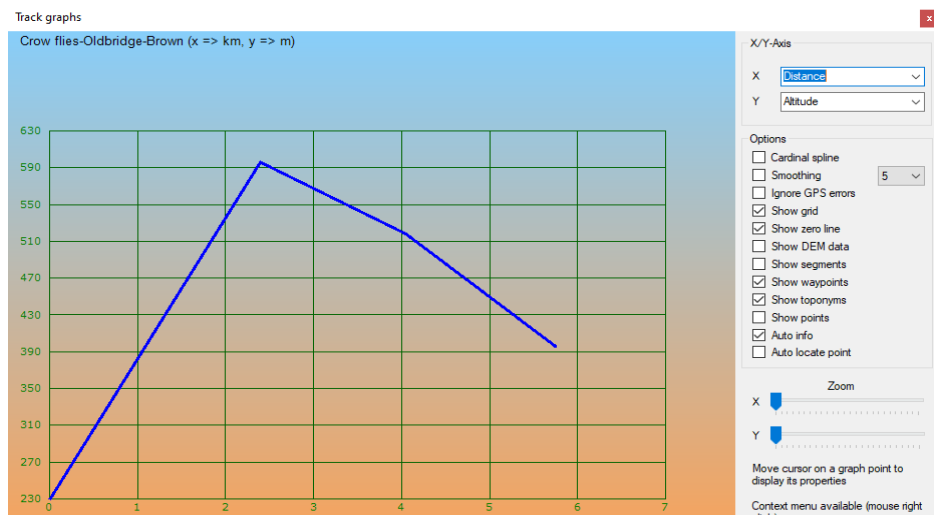
Once the download is complete and the **Tracks list** window is on view again then right-clicking on the **Name** allows **Set DEM altitude** to be selected.

This will then fill the **Elevation** column as shown below.



	Segment number ▲	Point number	Coordinates	Elevation (m)	Date time
▶ 1	1	1	O 15643 01629	▼ 229.0	
2	1	2	O 13258 01846	▼ 596.0	
3	1	3	O 12528 03332	▼ 518.0	
4	1	4	O 14228 03516	▼ 395.0	
*				▼	

Selecting the **Graphs** option will now show a proper elevation graph.



Saving and closing the track

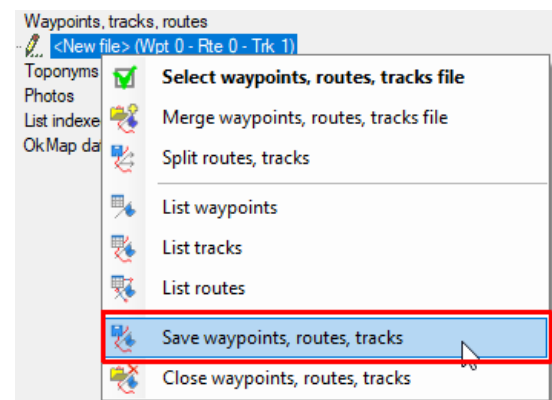
Right-clicking on the file in File manager and selecting **Save waypoints, routes, tracks** will bring up a standard File save window.

Typing in a name for the file e.g.

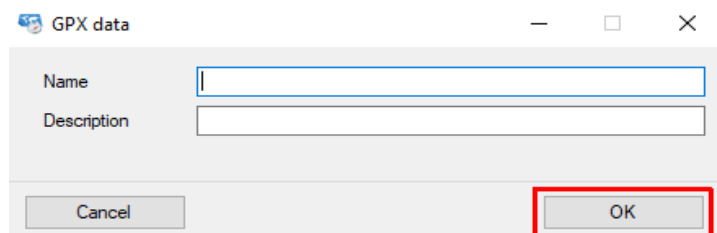
Oldbridge-Scarr-Kanturk-Brown.gpx

Note: this will be the name for the **file** which contains the **track** called **Crow flies-Oldbridge-Brown**

This file could contain further tracks.



and clicking **OK** on the next window without typing anything into the **Name** and **Description** boxes will save the file.



Having saved the file then selecting **Close waypoints, routes, tracks** will finish the process.

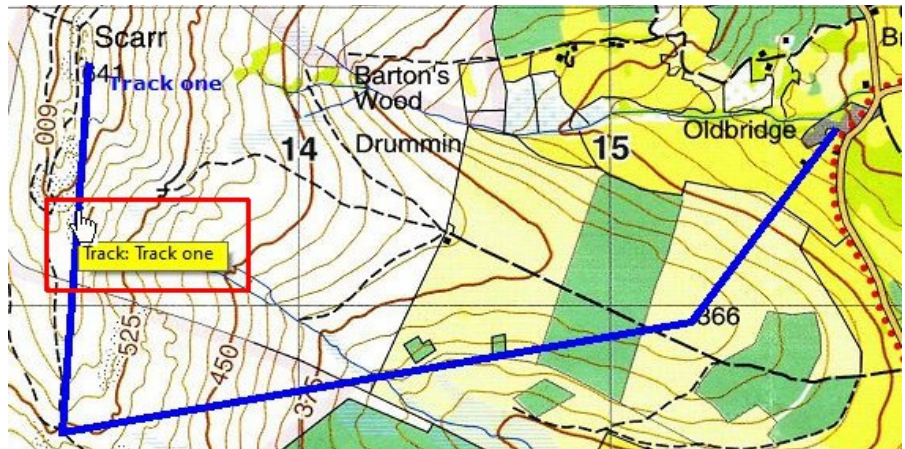
Editing tracks

Selecting and deselecting a track

Moving the mouse-pointer onto a track will change it from an arrow to a hand and the track name is shown.

Clicking will then select the track and show the trackpoints as dots.

Clicking at any point on the map which is **not** on the track will **deselect** the track – the dots disappear.



Two or more tracks can be selected by holding down the **Ctrl** key while selecting the tracks.

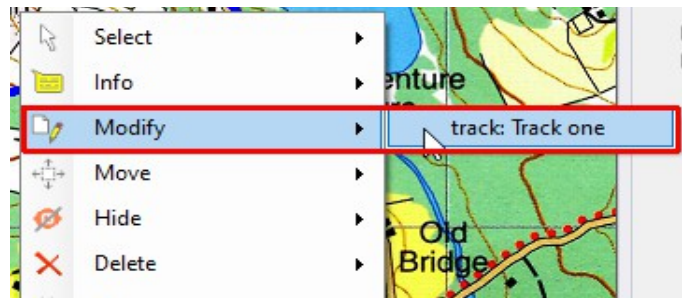
Modifying a track – renaming it and changing its colour

Right-clicking on a track brings up a context menu.

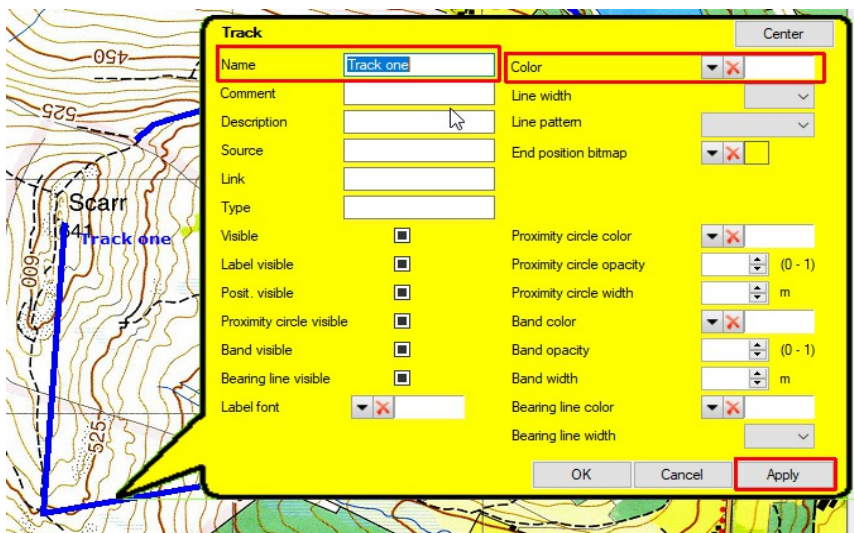
Selecting

Modify > track: Track one

will bring up a window in which you can change various properties including its **Name**.



You can also change the track **Color** – to red, say.




It is important to click first on **Apply** and then **OK** to effect any changes made. If the **Apply** button is off-screen click on **Center** at the top right of the box to make it visible.

Creating a second track.

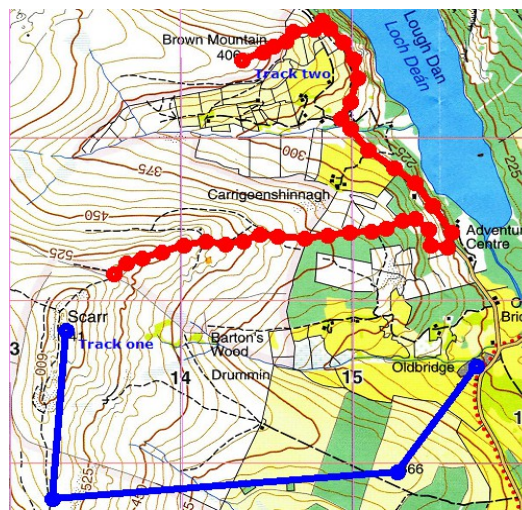
Make sure that the first track is **deselected** - i.e the trackpoints are **not** shown – by clicking anywhere not on the track. If this is not done any new trackpoint will be added to the end of the first track.

Change the cursor back to a cross hairs by going to the **New track point** icon 

Click on the starting point for your new track and create a separate new track whose name, by default, will again be **1** [if you hadn't renamed the first track the default second track would be **2**].

Finishing with **Alt-S** or by clicking on  the track can then be renamed and its colour changed.

The result might look like this - perhaps **Track one** is being followed by a crow while **Track two** is being followed by a group of hikers.

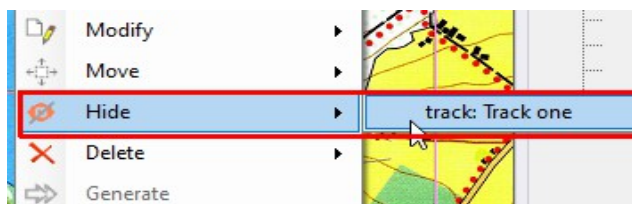


Hiding and unhiding tracks

Selecting a track and right clicking on it brings up a context menu. Go to

Hide > track: Track one

click and it will be hidden.

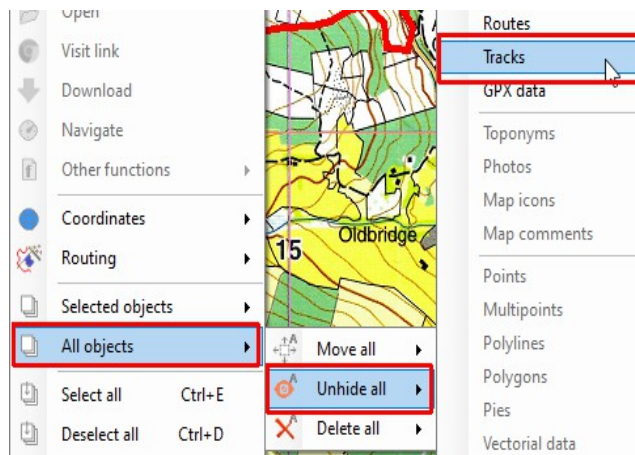


Right-clicking anywhere on the screen which is not part of a track brings up the context menu.

Going to

All objects > Unhide all > Tracks

and clicking will reveal all previously hidden tracks.

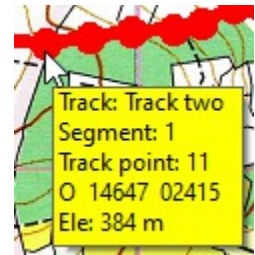


Selecting trackpoints

Select the track to show the trackpoints as dots.

A single trackpoint can be selected by moving the arrow until a small window pops up with details about the point and then clicking on the point.

A black square is drawn around it to show it has been selected.



You can also just click on the point without waiting for the window to pop up.

To select a group of trackpoints hold down the **Shift** key and use the mouse-pointer to draw a box around the required points.



Alternatively select the points one by one while holding down the **Ctrl** key.

You can also combine these two methods.

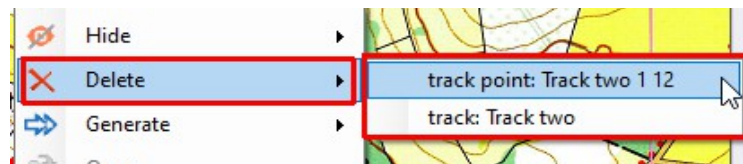
e.g. use the **Shift** key to select a "box" of points and release - then hold down the **Ctrl** key to add more points.

e.g. use the **Ctrl** key to select a number of points - then keeping the **Ctrl** key down use the **Shift** key to select a "box" of points.

Deleting trackpoints or tracks

Right click on the selected trackpoint and select

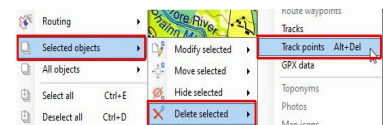
Delete > track point: <.....>



Note: there is also the option to delete the complete track.

To delete a selected group of trackpoints right-click on one of them and select

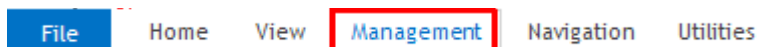
Selected objects > Delete selected > Track points



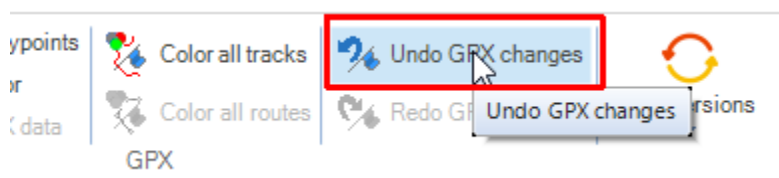
Undoing an editing action

Before continuing it is important to know how to try to recover from a mistake.

First switch from the **Home** tab to the Management tab

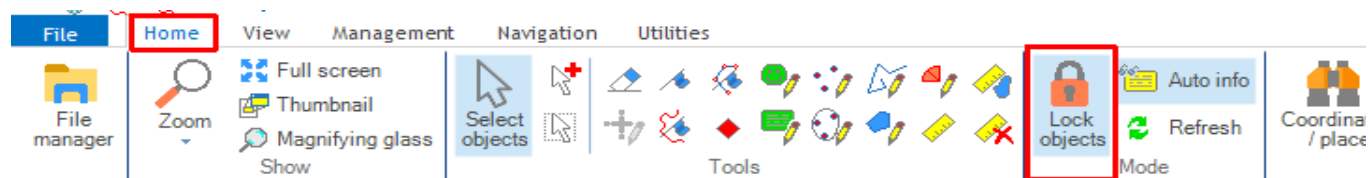


and then click on **Undo GPX changes** which can be found to the right.



Return to the **Home** tab.

Moving trackpoints or tracks - locking and unlocking objects



Initially objects on the map, such as trackpoints and tracks, are **locked** to the map. To confirm this go to the **Home** tab and check that the **Lock objects** icon has a pale blue [= **selected**] background

By holding down the left-button the mouse-pointer changes to a hand which can move the map **and** the objects together up/down or left/right.



Changing the pale blue background to white [= **unselected**] by clicking on the **Lock objects** icon  will **unlock** all objects on the map

Pressing **Alt - L** will do the same. Repeating either process will toggle between the **locked/unlocked** states.

Now, if the left-button is held down, when the mouse-pointer is on a trackpoint it changes to a move cursor and the point can then be moved into a new position.



Similarly if the mouse-pointer is on a selected track, with all the trackpoints showing, the whole track can be moved.

This can easily happen inadvertently.

In this case it's probably best not to try to move the track back with the mouse-pointer. It can be tricky to find the original position. Instead just follow the above instructions for **Undoing an editing action** to undo the last action.

Note: While objects are locked on the map the map itself together with all objects can still be moved provided the mouse-pointer is not on a track or a trackpoint.

Editing using the Tracks list window

Tracks list

Filters: Name Comment

	Name	Selected	Comment	Description	Source	Link
1	Track one	<input type="checkbox"/>				
2	Track two	<input type="checkbox"/>				
*		<input type="checkbox"/>				

	Segment number	Point number	Coordinates	Elevation (m)	Name	Selected	Comment
1	1	1	O 13205 02431	489.0		<input type="checkbox"/>	
2	1	2	O 13278 02498	466.0		<input type="checkbox"/>	
3	1	3	O 13369 02528	453.0		<input type="checkbox"/>	
4	1	4	O 13485 02565	443.0		<input type="checkbox"/>	
5	1	5	O 13612 02608	431.0		<input type="checkbox"/>	

☐ Auto locate point
Context menu available (mouse right click)

OK Cancel Apply Refresh

	Name	Selected	Comment	Description	Source	Link
1	Track one	<input type="checkbox"/>				
▶ 2	Track two	<input checked="" type="checkbox"/>				
*		<input type="checkbox"/>				

The upper half of this window shows a list of all the tracks created. In this case there are two i.e **Track one** and **Track two**

A track can be deleted if its row is highlighted, as shown above, and the **Delete** key **on the computer** is pressed.

	Segment number	Point number	Coordinates	Elevation (m)	Name	Selected	Comment
▶ 1	1	1	O 13205 02431	▼ 489.0		<input type="checkbox"/>	
2	1	2	O 13278 02498	▼ 466.0		<input type="checkbox"/>	
3	1	3	O 13369 02528	▼ 453.0		<input type="checkbox"/>	
4	1	4	O 13485 02565	▼ 443.0		<input type="checkbox"/>	
5	1	5	O 13612 02608	▼ 431.0		<input type="checkbox"/>	
6	1	6	O 13710 02660	▼ 420.0		<input type="checkbox"/>	

☐ Auto locate point
Context menu available (mouse right click)

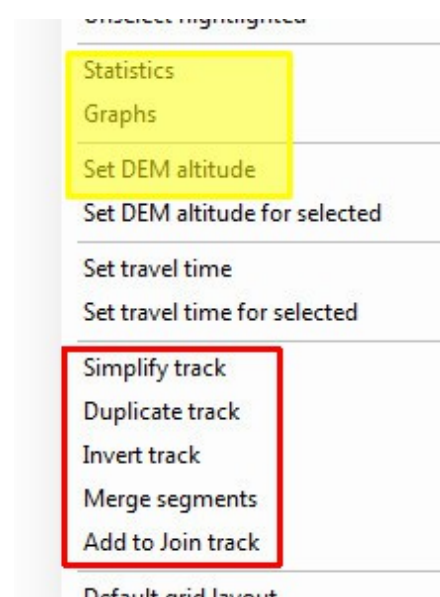
OK Cancel Apply Refresh

The lower half of this window shows a list of all the trackpoints of the track selected in the upper half. Again any point or points can be deleted if the rows concerned are highlighted and the **Delete** key **on the computer** is pressed.

Right-clicking on a track **Name** in the upper window brings up a context window.

The options **Statistics**, **Graphs** and **Set DEM altitude** have been considered above.

There are five more commonly used options.



Joining two tracks

Consider the two tracks - **Track one** for the crow and **Track Two** for the group of hikers - shown on P.8

If the crow decides to join the hikers we can combine these into a single track as follows.

Right-click on **Track one** to bring up the context menu and select **Add to Join track** . You will see a new track called **JOIN** in the window. Click on **Apply**.

Now right-click on **Track two** select **Add to Join track** and click on **Apply**.

You will now have three tracks - **Track one**, **Track two** and (overlapping these two) **JOIN**.

In the **Tracks list** window delete **Track one** and **Track two** (as described above) leaving the single track **JOIN**. If you look at the lower half of the **Tracks list** window you will see the track **JOIN** consists of two separate **segments** on the map.

Merging segments

Right clicking on **JOIN**, selecting **Merge segments** and clicking on **Apply** will create a new track called **U.JOIN**.

This will have only one segment with the last point of the first segment connected to the first point of the second segment.

JOIN can now be deleted and **U.JOIN** can be renamed appropriately, say **Oldbridge to Brown**.

[Be careful of the order in which you “lay down” the **JOIN** track. **Merging** will connect the end point of the first track “laid down” to the start of the second “laid down”. If they are “laid down” in the wrong order it will soon be apparent.]


Inverting and copying track

The **Oldbridge to Brown** track created above is the track followed by the crow from Oldbridge to Brown Mountain. Right-clicking and selecting **Invert track** will create a track called **I.Oldbridge to Brown** which is the same as **Oldbridge to Brown** but in reverse.

You will probably want to rename it as **Brown to Oldbridge**

Selecting **Duplicate track** instead of **Invert track** will create **C.Oldbridge to Brown**, a copy of the track.

Simplifying a track

A recorded track may contain over a thousand points. To make editing easier select **Simplify track** which creates **S.Oldbridge to Brown**, a file with fewer points. The number of points can be set under **Preferences** [click on ] in the **Tracks** tab

Moving the Coordinates and Elevations columns

Maximize the **Tracks list** window so that it is as wide as possible.

The first two columns, **Segment number** and **Point number**, are fixed.

If the **Coordinates** column is not visible use the scroll bar at the bottom of the window to make it so. Move the cursor to the top of the column, press and hold down the left mouse button and drag the column to its new position.

	Segment number	Point number	Name	Selected	Comment	Description	Source	Link	Symbol	Type	Coordinates	Elevation (m)
▶ 1	1	23		<input type="checkbox"/>						▼	O 15294 02761	216.0
2	1	20		<input type="checkbox"/>						▼	O 15481 02366	218.0
3	1	21		<input type="checkbox"/>						▼	O 15506 02457	218.0
4	1	30		<input type="checkbox"/>						▼	O 14938 03523	229.0
5	1	22		<input type="checkbox"/>						▼	O 15397 02621	234.0

☐ Auto locate point
 Context menu available (mouse right click)

OK Cancel **Apply** Refresh

Release the mouse button and the column will now be shown in its new position.

Repeat for the **Elevation** column then click on **Apply**.

Now in future these two columns will appear in these positions whenever the **Tracks list** is opened.

An example

When editing a GPX file to modify a track you should always work on **copy** of the file leaving the original unchanged.

It's a good idea to create a folder called something like **Temp files** in your **GPX files** folder.

Copy the original file to be edited, **Knockree to Maulin to Knockree.gpx**, say, into this folder and then rename it as **Knockree to Maulin to Knockree- new.gpx**

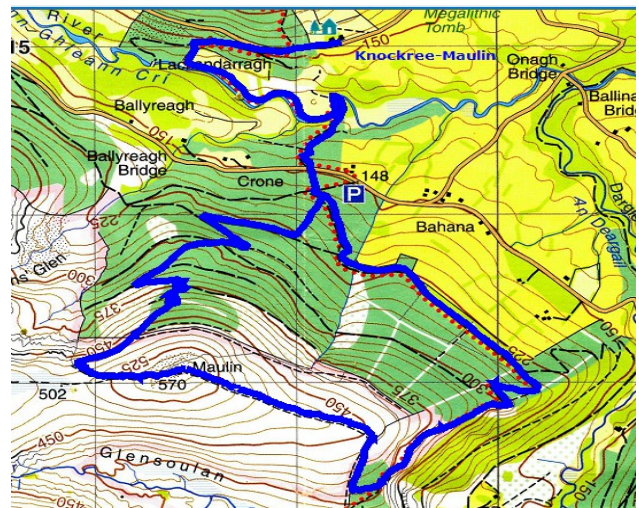
The original will be unchanged and you can now work on this copy.

When you have finished and are completely satisfied save the final version into the **GPX files** folder not the **Temp files** folder which you can delete.

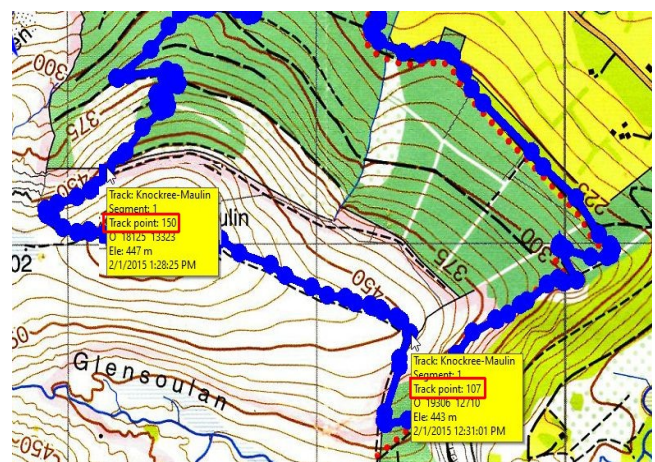
In this example part of a track from Knockree to Crone and over Maulin, is shown.

The **Name** of this track is **Knockree – Maulin**,

Suppose that you want to go around Maulin instead of over it.





By zooming in and hovering over the points you can determine that the section to be replaced is between **Track point 107** and **Track point 150**.



The first job is to create two new tracks, one from the start at Knockree to point **107** where the ascent of Maulin starts and the other from point **150** back to the finish at Knockree.

Using the **File manager** create two duplicates of the track **Knockree – Maulin** and rename ones **start** and the other as **finish**. **Delete** the track **Knockree – Maulin**

	Name	Selected	Comment	Description
1	finish	<input checked="" type="checkbox"/>		
2	start	<input checked="" type="checkbox"/>		
*		<input type="checkbox"/>		

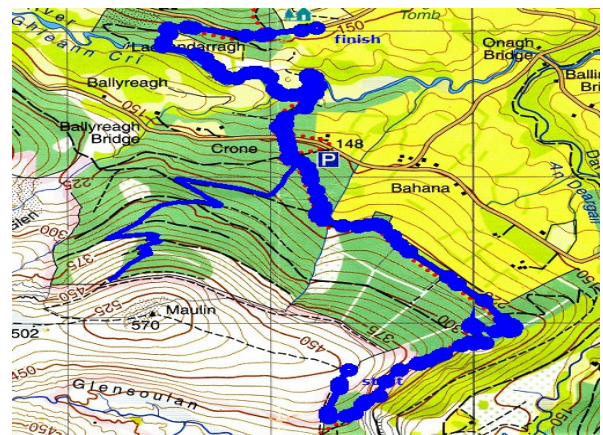
	Segment number	Point number	Coordinates	Elevation (m)	Name
106	1	106	O 19263 12619	432.0	
107	1	107	O 19306 12710	443.0	
108	1	108	O 19270 12751	443.0	
109	1	109	O 19251 12764	445.0	
110	1	110	O 19195 12785	451.0	
111	1	111	O 19185 12794	452.0	

With the **start** track selected highlight the points from **108** to the end by first highlighting row 108 and, holding down the **Shift** key, scroll down to the end before releasing it.
Now delete these points by pressing the **Delete** key on the computer. Click on **Apply**.

In a similar manner, with the **finish** track selected delete all the points from **1** to **149** and click on **Apply**.


Click on **OK** to see the **start** and **finish** tracks

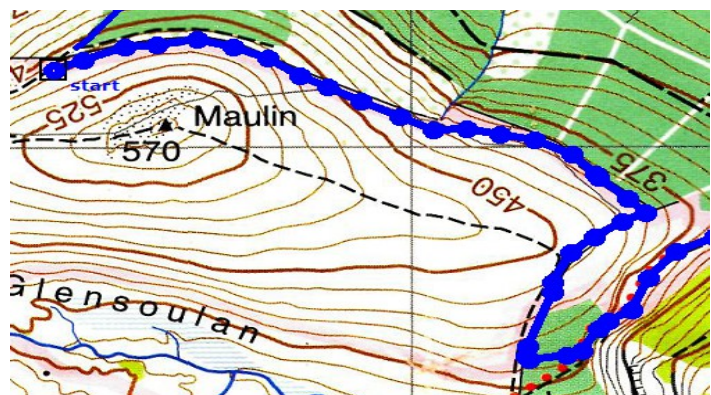
Here the **start** track has been selected and all its trackpoints are shown.



Now it's necessary to extend the **start** track to join the **finish** track along the chosen route around Maullin.

Zoom in, making sure the **start** track is still selected so that any new point added will be from the end of the **start** track.

Click on the new track point icon  and start adding points between the end of **start** and the beginning of **finish**.



In the File manager add **start** to **JOIN** followed by **finish**. Then delete both **start** and **finish** and **merge** the two segments of **JOIN** before **setting DEM altitudes**. Finally rename it and save the file.

Some other options in File manager

Combining two or more GPX files

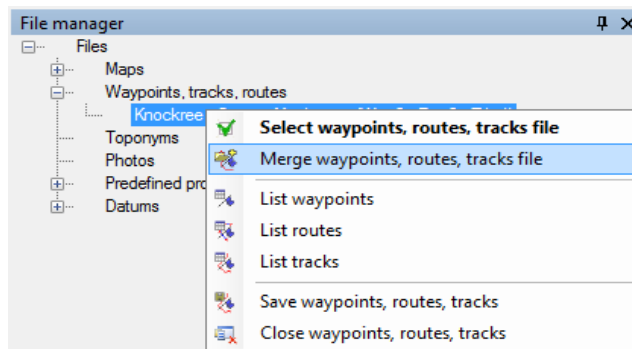
If you have two tracks saved in two different GPX files you might want to combine them into one file before doing any editing.

Load the first file, **Test track one.gpx**, say.

In File manager right click on it and choose

Merge waypoints, routes, tracks file

This will open a file selector box and you can select the file to merge, **Test track two.gpx**, say.



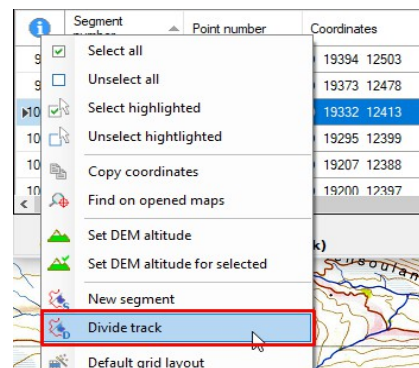
Save the resultant file with a new name, **Test two tracks .gpx**, say.

Dividing a track into two separate tracks

On **Test track** by selecting trackpoint **100**, say, right-clicking, choosing **Divide track** and clicking on **Apply** you will divide **Test track** into two tracks.

Test track now contains all the trackpoints from **1** to **100**

A second track will have been created, called **N.Test track**, that contains all the rest of the points which will have been renumbered starting from **1**.



Deleting points which are off the map

File manager is useful when you forget to stop recording your track and, as a result, have recorded your drive back too.

Typically this mean you want to delete a lot of points which are off the **okm** map you are using [this won't be the case if you are using a web map]

Find and make a note of the number of the point where your hike ended - you'll probably have to zoom in a lot to see it.

Now use File manager to select all the rows from this point to the end and delete them.

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