
Topo GPS Manual

Release 10.2

Topo GPS

May 04, 2026

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The manual of the topographic maps navigation app [Topo GPS](#) for iPhone, iPad, Apple Watch and MacOS. The complete manual can also be downloaded in [PDF](#) format.

The Topo GPS app can be installed for free from the [Apple AppStore](#) and [Google Play store](#).

If you have questions about the manual you can ask our assistant [Aida](#).

There exists also an [Android version](#) of the Topo GPS manual.

Contents:

MAIN SCREEN

If you open the Topo GPS app a screen with a map will be displayed. This is the main screen. An example is shown below:



Fig. 1: *The main screen of Topo GPS. The red marker indicates your current location.*

On the bottom of the main screen you can find a bar with meters which is the *dashboard*. If you pull the dashboard upwards the *menu* will appear.

The red marker with the arrow in indicates *your current location on the map*.

The label on the upper left side of the map indicates the percentage offline accessible map tiles of the area that is currently displayed. By tapping this label you can *download maps for offline use*.

On the bottom right corner of the map you can find a scale indicator. Using the scale indicator you can quickly estimate the distance between two points on the map. You can also use the *map ruler* to measure distances and angles more precisely.

On the bottom left corner of the map you will find the copyright information of the current map. If you tap this label either a pop-up will appear or directly the map copyright information screen. In the pop-up

you can choose between *copyright information* or *legend*. For some maps also a map error tab appears, which you can use to report feedback on the map.

1.1 Your location

Your location is displayed on the *map* with the position marker:



Fig. 2: *The position marker*

If you are standing still, the position marker points in the direction in which you point your device. If you are moving, the position marker points in the direction in which you are moving.

The arrow in the status bar indicates that the location services are currently in use. This can cause faster battery consumption than usual. Therefore pay attention to the battery level when using Topo GPS.

The default position marker icon is red, you can *change it to another color* via *Menu* > More > Settings > Styles > Position. This might to increase the visibility of the position marker on the map.

To center the map on your location, tap the center button on the left hand side of the *dashboard*.

1.1.1 Recommended iOS Settings

To enable location access for Topo GPS, first make sure that iOS Settings > Privacy > Location Services is enabled. Then in the same screen give Topo GPS access to precise location while using the app. Or go to iOS Settings > Topo GPS.

It is also recommended to go to iOS Settings > Privacy > Location Services > Scroll to bottom > System and enable the settings 'Compass calibration' and 'Movement and distance calibration'.

1.1.2 Current location screen

If you tap the *position marker*, the current location screen will appear. You can also open this screen by pressing long on the *position button* on the *dashboard*.

The current location screen shows details of your current location. In the current location screen you can also save your current location into a waypoint and export your current location with the buttons in the bottom toolbar. An example of the current location screen is displayed below:

In the location information screen you find subsequently the following information:

- *Map*: A map of the surroundings of your current location. You can also zoom and move this map.
- *Coordinates*: The coordinates of the point are displayed in various formats. You can change the displayed coordinate systems by tapping on the '>' on the right hand side. If you press long on a pair of coordinates you can choose for Copy or Share the coordinates in textual format. You can also choose here 'Pronounce' to let your device pronounce the coordinates in the language of your

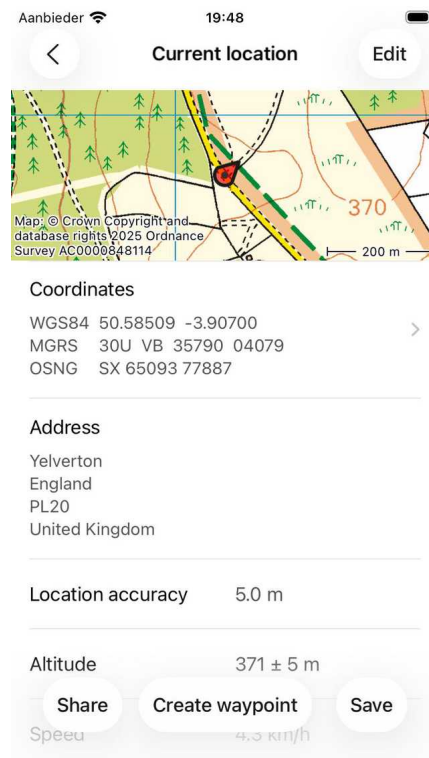


Fig. 3: *The current location screen (top part).*

device or in English. Pronounce could a very useful option if you have to communicate coordinates clearly over an audio connection like a phone. There will be a much smaller possibility for errors and misunderstanding than if you would pronounce the coordinates by yourself. If you are making a phone call with your iPhone and let your device pronounce the coordinates, you yourself will not hear the coordinates being pronounced, but the other party will.

- *Address*: The approximate address of your location. If you move this address will be updated automatically. If you press long on the address you can select and share it. If you press 'Edit' you can disabled automatic lookup of addresses in the current location screen.
- *Location accuracy*: The accuracy of the location determination. This accuracy means that your true location has a high probability of being inside a circle with a radius equal to the accuracy. If the GPS signal is good the location accuracy is 5 m or less.
- *Altitude*: The current altitude of the device above the WGS84 geoid with the accuracy.
- *Speed*: The current speed of the device.
- *Course*: The direction which respect to the true north in which the device is moving.
- *Device heading*: The direction with respect to the true north in which the device is pointing.
- *Timestamp*: The exact time at which the displayed location was obtained.
- *Magnetic declination*: This is the angle between the magnetic north pole and true north pole (geographic north). If the magnetic north lies east of the true north, the declination is positive. If the magnetic north lies west of the true north, the declination is negative.

If you read of a direction from a magnetic compass it is always relative to the magnetic north. To obtain the direction relative to the true north you have to add the magnetic declination to the reading of the magnetic compass. The magnetic north pole changes location over time, therefore the magnetic declination varies

in time and from position to position.

1.1.2.1 Changing current location screen

By tapping 'Edit' on the top right of the current location screen you can edit the order of the elements appearing in the current location screen.

By dragging the handles on the right hand side the order of the elements can be modified.

By tapping 'Displayed coordinate types' the *displayed coordinate types can be set* so that only coordinate systems which are of interest to you are displayed.

1.1.2.2 Saving current location

By tapping 'Save' in the bottom right of the current location screen you can save your current position as a *waypoint*. The waypoint will be given a title based on settings which you can change by tapping 'Edit > Waypoint title' in the current location screen. The automatic waypoint title can be set to either:

- *Time*: The current time
- *Date and time*: The current date and time
- *Number (next: ..)*: A number. If you press 'Reset' it will be reset to 1. This setting is useful if you want to save your location several times and number the waypoints.

If you press 'Save' your current position will be saved immediately as a waypoint and added to the map. A pop-up will show that the waypoint was saved successfully as you can see in the figure below:

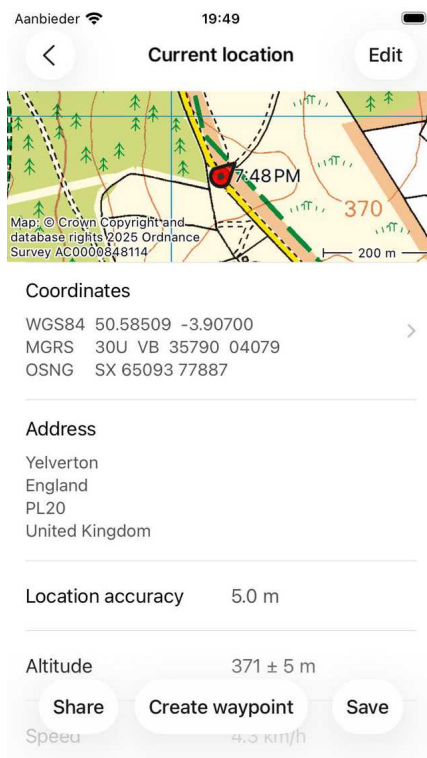


Fig. 4: Saving your current location as a waypoint.

1.1.2.3 Creating waypoint on current location

By tapping 'Create waypoint' in the bottom toolbar of the current location screen you can create a waypoint at the current location. The difference between tapping 'Save' is that it is slower, but now a waypoint creation screen will pop-up in which you can enter the title, description and change the icon. This is the same screen which appears when *creating a waypoint from the map*.

1.1.2.4 Sharing current location

By pressing 'Share' on the bottom left of the current location screen you can share your location. An export pop-up will appear exactly as what happens when *exporting waypoints*.

1.1.3 Current location quick actions

If you press long on the position marker icon, a quick actions screen will appear.



Fig. 5: The quick actions for your current location.

In the quick actions screen for the current location you can choose to view the details, to share your current location, to create a waypoint at your current location, or to save the current location as a waypoint.

1.2 Menu

The menu of Topo GPS can be used to access the most important functions of Topo GPS. The menu is located in the bottom of the main map screen.

To open the menu you have to swipe the dashboard in the bottom of the screen upwards. Or you can tap the handle bar on the top of the dashboard of the screen.

The menu then appears as in the screen below.

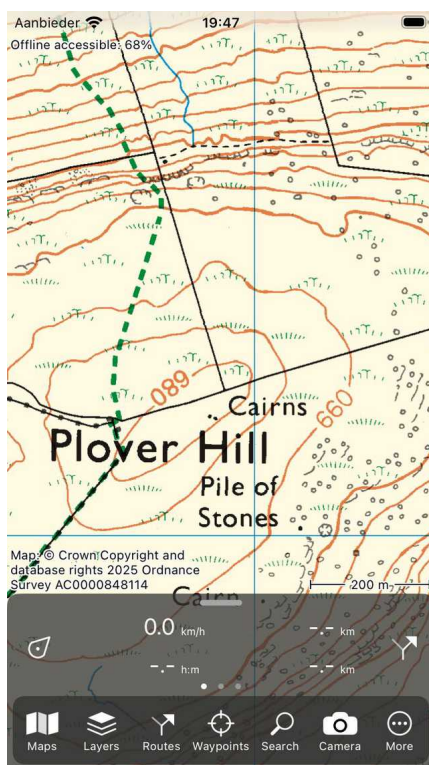


Fig. 6: The opened menu.

The menu contains the following items:

- *Maps* - If you tap this item, the maps popup will be opened. In the maps popup you can *change the current map* and *Export the contents of the current visible map*.
- *Layers* - If you tap this item, the layers screen will be opened. In this screen you can add layers to the map like for example the long distance bicycle route layer.
- *Waypoints* - If you tap this item, the waypoints screen will be opened. Here you can do everything with waypoints like loading them on the map.
- *Search* - If you tap this item the search popup will be shown. Here you can *search addresses and places* and *enter* and *scan* coordinates.
- *Routes* - If you tap this item, *the routes popup* will be opened. Here you can view your saved routes, import shared routes, generate a route, plan a route, and record a route. Because routes are very important in Topo GPS you can also open the routes popup from the dashboard by tapping *the route button* on the bottom right of the screen.
- *Camera* - If you tap this button, the camera will be opened. If you take a photo a waypoint will be created at your current location and the photo will be added to this waypoint.

- More - If you tap this item the more popup will be shown. Via the more popup you can import files, open the *settings* screen, and the Topo GPS info screen.

To quickly access an item in the maps (or other) popup, you just have to tap the maps (or other) button, hold the finger on the screen, and then move it upwards to the popup item you want to use. Then release your finger.

To close the menu you have to swipe the dashboard downwards. You can also tap the handle bar on the top of the dashboard. If the menu is closed the main screen looks as follows:



Fig. 7: The closed menu.

On MacOS, this menu does not exist. Instead the system menu which is in the top of the screen can be used.

1.3 Dashboard

The bottom bar in the *main screen* is the dashboard:

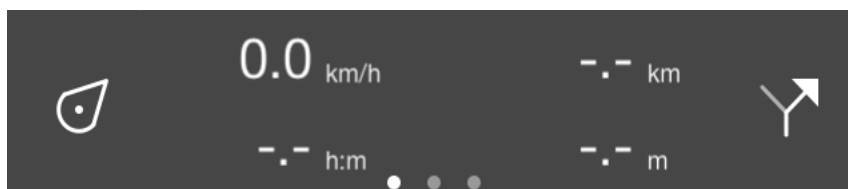


Fig. 8: The dashboard on the bottom of the main screen.

The dashboard consists out of three items: the *position button*, a *panel* with counters and the *route button*. These items are discussed in more detail below. If you swipe the dashboard upward, the *menu* will become visible.

1.3.1 Position button

By tapping the position button on the left hand side of the dashboard you can *center* and *rotate* the map.

If you press long on the position button, the *current location screen* will appear. In this screen you can find the coordinates of your current location among other things.

1.3.2 Route button

By tapping the route button on the right hand side of the dashboard (arrowed icon) the *routes pop-up* will appear. Via this pop-up you can do everything with routes, like loading, planning, generating, and importing routes.

It is possible to change the button on the right hand side of the dashboard via *Menu > More > Settings > Dashboard*. For example if you take a lot of photo's you might want to set it to 'Camera'. All functions are also always accessible via the *menu*.

1.3.3 Panels

In the center of the dashboard you can find a panel with counters. There are three panels

- The *hiking panel*.
- The *cycling panel*.
- The *coordinate panel*.

The circles below the panel indicate the selected panel. By swiping a panel with one finger to the left or the right you can load the next or previous panel.

The units of the meters on the dashboard can be changed via *Menu > More > Settings > Units*. You can choose between metric, imperial, and nautical units.

1.3.4 Hiking panel

The hiking panel is ideal for walking and is shown below:

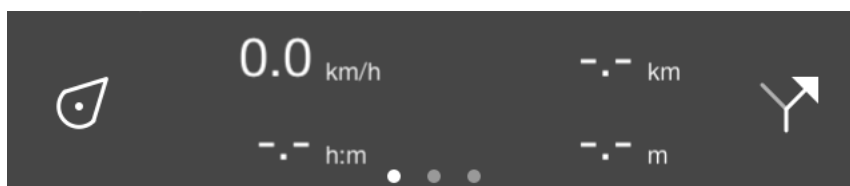


Fig. 9: *The dashboard with the hiking panel.*

The four counters on the hiking panel are subsequently the *speedo/alti/direction meter*, the *route distance meter*, the *record timer* and the *record distance meter*.

1.3.4.1 Speedometer, altimeter and direction meter

The speedometer (km/h symbol top left) indicates the your current speed.

If tap the speedometer the average speed while recording a route will be shown. This is indicated by the symbol 'avg' direct above the 'km/h' symbol.

If tap press the speedometer once more, your maximum speed while recording a route will be shown. This is indicated by the symbol 'max' just above the 'km/h' symbol.

If you finish recording a route and start a new recording, the average and maximum speeds will be reset.

If you press the speedometer once more it turns into an altimeter. Your altitude in meters above sea level will be shown. This is indicated by the symbol 'alt'.

If you tap the altimeter, the direction meter with the symbol 'dir' will be shown. This indicates the current direction with respect to the true north. The direction is the compass direction in which you point your device if you are standing still. If you move it is the direction of movement.

If you tap the direction meter, it will turn in the speedometer.

1.3.4.2 Route distance meter

The route distance meter (-.- km top right) indicates the length of all routes that are *loaded* on the map, including planned routes. If a route has been loaded the symbol 'rte' appears just above the 'km/h' to indicate that this is the distance of a loaded route.

If routes have been loaded and you tap the route distance meter, the map will be centered on the loaded routes.

If you are on a route, the route distance meter will automatically change to distance to go (dtg). If the 'dtg' symbol is shown the meter indicates the distance to the end of the current route. If you tap the meter in that case, the map will be centered on the route that you are currently following.

1.3.4.3 Record timer

The record timer (-:- h:m bottom left) indicates the time you are *recording* a route.

If you tap the record timer you can start, pause and stop a *route recording*. If you are recording a route the symbol 'rec' appears just above the 'h:m' to indicate a recording is active.

1.3.4.4 Record distance meter

The record distance meter (-.- km bottom right) indicates the length of a route that is being *recorded*. By starting a recording you can see with the record distance meter how far you have been traveling. Above the 'km' symbol appears the symbol 'rec' to indicate that this is the recorded distance.

If you tap the record distance meter while recording a route, the recorded route will be centered on the map.

1.3.5 Cycling panel

In the cycling panel your speed is somewhat more emphasized and your altitude can be seen directly. The cycling panel looks as follows:



Fig. 10: The dashboard with the cycling panel.

In the center you will find the *speedometer* that functions in the same way as in the hiking panel. Tapping this meter will also change it.

On the top left you will find the altimeter, that indicates your altitude above sea level in meters. This is indicated by the symbol 'alt'. Tapping this meter can also change it, exactly like the *speedometer*.

In the bottom left the *record timer* is located.

The *route distance meter* is located in the top right.

The *record distance meter* can be found in the bottom right.

1.3.6 Coordinates panel

With the coordinates panel you can straightforwardly read off coordinates from the map. To open the coordinates panel, *slide the panels in the dashboard* to the left. An example of the coordinates panel is displayed below:

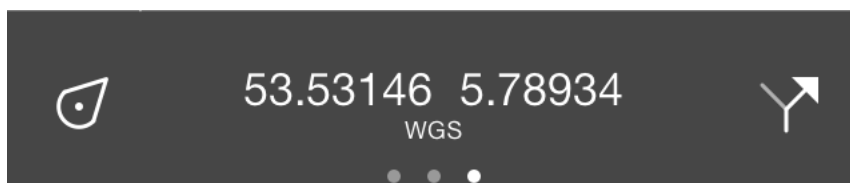


Fig. 11: The dashboard with the coordinates panel.

If the coordinates panel is loaded, a cross appears in the middle of the map, as is illustrated below:

The coordinates that are displayed on the coordinates panel are the coordinates of the point in the middle of the cross. In the example above the coordinates are displayed in WGS84 degree minutes seconds format. Below you can read how to change this format.

By *moving the map* you can position the middle of the cross to the point of which you want to determine the coordinates. To quickly determine the coordinates of your current position, you can center the map by pressing the *position button* on the left hand side of the dashboard.

If you tap the coordinates on the coordinates panel, a pop-up will appear with which you can carry out actions with the coordinates. An example of the pop-up is shown in the figure below:

The following actions are possible:

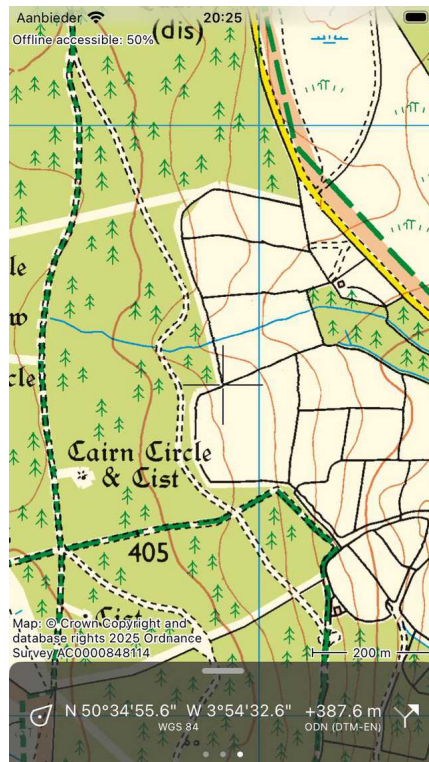


Fig. 12: The map with the coordinates panel.



Fig. 13: The coordinates panel pop-up.

- Copy: The coordinates are copied to the clipboard. You can paste it somewhere in another app. If you have enabled [Universal clipboard](#) then it is even possible to paste the coordinates in another Apple device in this way.
- Share: The textual representation of the coordinates can be shared with another app.
- Export: The coordinates and/or the map can be exported in a specific geodata format like gpx.
- Open with: You can open the coordinates in another popular app. Currently you can choose between Apple Maps, Google Maps or Wikipedia. If you choose a maps app, the maps app will be opened exactly at the location you are currently viewing in Topo GPS. If you choose 'Wikipedia', the Wikipedia app or website will open and will display information of the location nearest to the middle of the cross. This can be useful if you want to look up information about a specific site on the map.
- Coordinates type: Here you can change the kind of the coordinates visible on the coordinates panel. Several types are listed in the pop-up. If the one you need is not shown, you could choose 'More' to open the 'Displayed coordinates types' screen. Here you should enable the coordinates you want to see in the type coordinates pop-up screen. Then go back, tap the coordinates, tap 'Coordinates type', and tap the coordinates type you just have enabled. If the coordinates type you need is not shown in the displayed coordinates types screen, it might not be supported by Topo GPS. Contact support@topo-gps.com about this and we might add it to the Topo GPS app. In the figure below an example is shown in which the coordinates type was changed to MGRS.
- Show height: This option only shows up if you are in the covered region of the [height extension](#), and you have not bought the height extension. If you tap it, you will be brought to the purchase screen of the height extension.

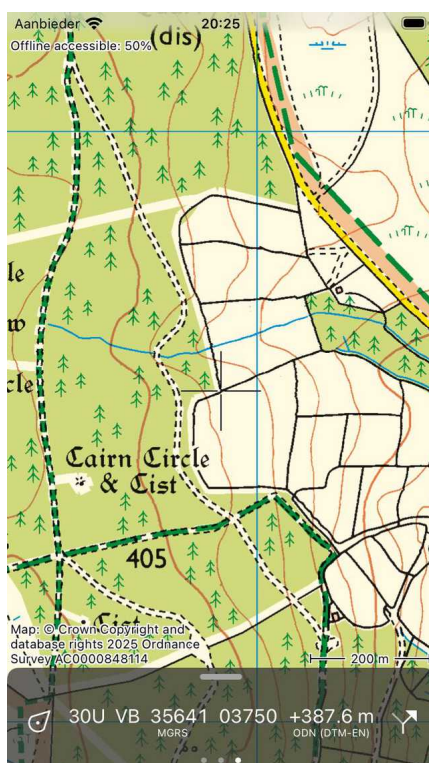


Fig. 14: The coordinates in the coordinates panel were changed to MGRS.

If you have purchased the [height extension](#) the terrain height of the center point will be displayed next to the coordinates, if you are in the covered region of the height extension.

1.4 Screen orientation

By rotating your device you can change the screen orientation from portrait to landscape. An example of landscape mode is displayed below:

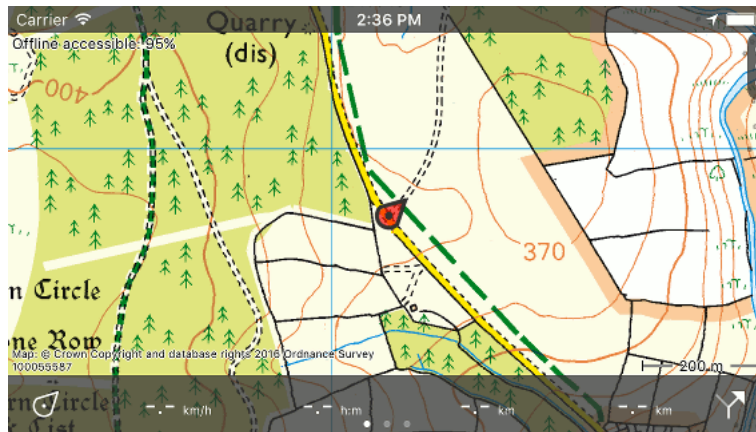


Fig. 15: Main screen in landscape mode.

If the screen does not rotate if you rotate your device, you should check the 'Control Center'. Swipe down from the top-right corner of your screen to open Control Center. Tap the Orientation Lock button if it is enabled.

Next to that you should disable the Topo GPS setting *Display Orientation > Lock*.

If you do not want the screen to rotate if you rotate your device, you should enable the Topo GPS *Display Orientation > Lock*.

The *main screen* of Topo GPS shows the main map. In this section it is explained how you can *interact with this map*, how you can view the *map legend*, how you can *download maps for offline use* and how you can *change the current map*. Many things regarding the map can be done via the *maps pop-up (Menu > Maps)*.

2.1 Modifying map screen

You can modify the map in the *main screen* by *scrolling*, *zooming*, *centering* and *rotating* the map.

2.1.1 Scroll

To scroll the map you have to hold a finger on the map. When you move your finger, the map will be moved as well. You can also move the map by making a quick swipe with your finger on the map.

For MacOS, you can scroll by pressing and holding the mouse button or trackpad button and moving around. Or put two fingers on the trackpad and move around. Or use the arrow keys. For the last option, the map has to have focus. This can be changed by pressing the tab key.

2.1.2 Zoom

You can zoom the map in or out in two ways:

- *Zooming in*: Tap one finger on the bottom of the map. Or hold two fingers on the map and bring them together.
- *Zooming out*: Tap one finger on the top of the map. Or hold two fingers on the map and move them away from each other.

If you do not like zooming in with one tap on the bottom of the map and zooming out with one tap at the top, you can swap this in the via *Menu > More > Settings > Single tap zoom*. You can also change there bottom/top into left/right.

At some point it is not possible to zoom in further. If you want to enable additional zoom, you can do this by enabling the setting *Menu > More > Settings > Map > Additional zoom in*. The drawback is that then map will become grainy when zoomed in far.

On MacOS, you can zoom with two fingers just like in iOS if you have a trackpad. You can also zoom using the keyboard. It is then important that the map has focus. Please press the 'tab' key to change focus. Using the keyboard you can zoom in and out in the following ways:

- Command +, Command -. Or + - keys. You can tap it one time, but also hold it to zoom further.
- Option key + arrow up, arrow down
- Press and hold shift and press and hold the mouse button / trackpad button and move up or down.
- Double tap (zoom in), hold the option key and double tap (zoom out).

2.1.3 Center

By tapping the position marker icon on the bottom left of the main screen, the map will be centered on your current location. An example is shown in the figure below.

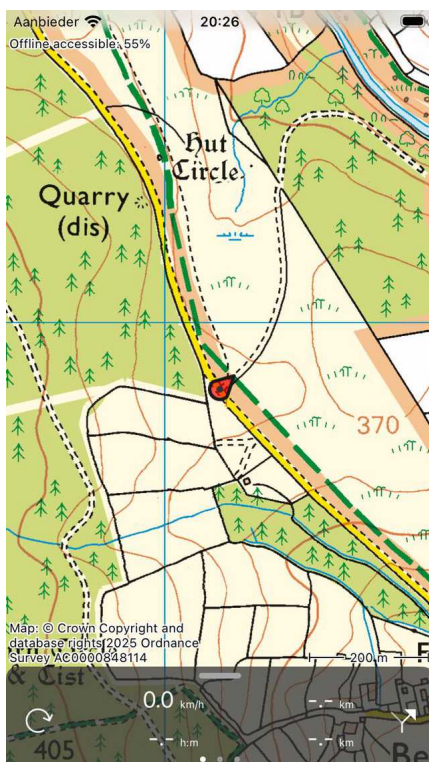


Fig. 1: A centered map.

If you are moving, the map will stay centered automatically. The map will move automatically with your movement.

The map stays auto centered as long as you do not move the map manually. To zoom in or out while keeping the map centered, tap on the bottom or top of the map. Zooming with two fingers will cancel the automatic centering.

Centering the map on your location only works if you have given Topo GPS access to your location. You can do this in the settings app. Go to Settings > Privacy > Location services > Topo GPS.

If you have centered the map on your location, the position marker icon on the dashboard will be changed to a rotation icon.

If you use a keyboard you can also tap 'c' to center the map.

2.1.4 Rotate

You can rotate the map in two ways, *automatically* and *manually*.

2.1.4.1 Automatic rotation

By tapping once on the position marker icon on the bottom left of the screen, the icon turns into a rotation icon as you can see in the figure below. If you tap this rotation icon, the map will be automatically rotated in your direction.

The map is rotated such that the top of the map indicates the direction in which you point your device if you are standing still. If you are moving the top of the map will indicate the direction in which you move. An example is shown in the figure below:



Fig. 2: A rotated map.

Rotating the map can be useful when you are following a route. Left and right on the map are then also left and right in reality. In addition the position maker will stay centered on the map.

If the map is rotated, a north arrow will appear on the top left of the screen. This arrow indicates the direction of the true north on the map. If you press this arrow the rotation will be cancelled.

You can cancel rotation by pressing the position marker button on the dashboard.

If you move the map or zoom with two fingers automatic rotation will be switched off. The current rotation angle will then no longer change and the map will no longer be centered at your current location. To zoom the map in or out while keeping the automatic rotation active, tap on the bottom or top of the map screen.

2.1.4.2 Manual rotation

If you put two fingers on the screen and make a rotation gesture by moving the two finger clockwise or counter-clockwise, the map will be rotated around the point that lies in between the two fingers. An example of a rotated map is displayed in figure above. You can rotate the map in every desired direction.

If the map is rotated, an north arrow will appear on the top left of the screen. This arrow indicates the direction of the true north on the map. If you press this arrow the rotation will be cancelled.

If you zoom the map or move the map the map stays rotated.

Manual rotation can be cancelled by pressing the north arrow. It is also possible to undo the rotation by manually rotating back to the normal situation.

On MacOS, you can only rotate the map using a trackpad.

2.1.5 Long press

If you press long on the map an icon will appear which you can drag to a certain location. If you release it, you can *create a waypoint* on that location. If you accidentally pressed long on the map, drag the icon to the top of or the bottom of the main screen. The icon will disappear and the waypoint creation screen will not be shown.

If you put a second finger on the map after the waypoint creation icon has appeared, the *map ruler* will be shown. You can use the map ruler to measure distances and angles.

2.2 Maps pop-up

If you tap 'Maps' in the *Menu* the maps pop-up will be shown. An example is shown in the figure below:

The maps pop-up contains the following items:

- Export visible map: If you tap this item, the export pop-up will appear. By selecting geodata you can export the waypoints and routes currently visible on the main screen. By selecting map you can export a jpg, png or pdf image of the currently visible screen. By enabling the switch 'Annotate map' you can add notes to this map before sharing it.
- Print map: If you tap this item, you can *print* the visible area of the map.
- Switch to dark/light map: You can change the style of the map to dark or light. A dark style might be useful if you are using Topo GPS at night. The style can also be changed in the settings via *Menu > More > Settings > Styles > Map*.
- Legend. If a legend is available, tapping this item will show the *map legend*.
- Download maps. If you tap this item, you can *download maps for offline use*.
- More maps. If you tap this item, you can change the map and purchase additional maps.
- Other maps. The other maps possibly shown below the 'More maps' items are maps that also can be used in the current visible area. If you tap them, the map will be switched immediately to the chosen map.

The fastest way to interact with the maps pop-up is to tap the 'Maps' item in the menu, hold your finger on the screen, move it to the desired item in the maps pop-up and then release it.

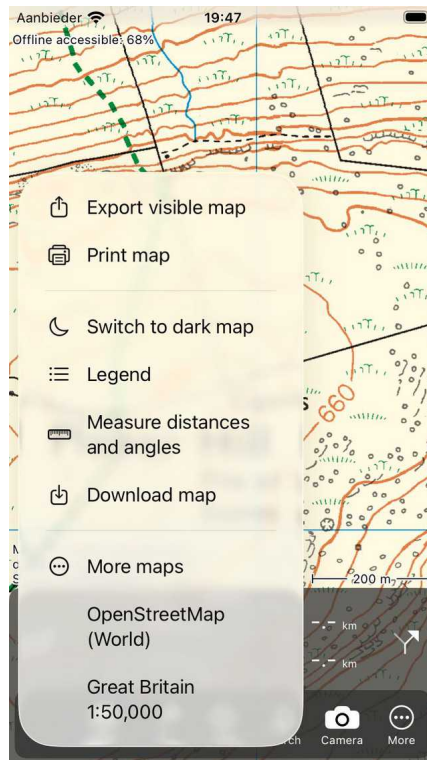


Fig. 3: *The maps pop-up.*

2.3 Exporting visible map

To export the currently visible map and the items on it, first open the maps pop-up via Menu > Maps. Then go to the top, there is the entry 'Export visible map'. If you tap this item, a pop-up will appear, in which you can choose the items you want to export. If routes, points and layers are shown you can select 'Geodata' to export them.

If you want to have a map in pdf, jpeg or png format you have to tick 'Map'. Then you can choose the settings icon in the top right of the share pop-up to set the file formats. If you export a map you can set the 'Annotate map' switch to be able to draw annotations on the map before sharing the map. It can be useful to add helpful remarks here. Finally you can tap the 'Export' button in the bottom of the pop-up to export the items. A share sheet will appear in which you can choose to send the exported items.

An alternative of exporting the visible map is :ref:'selecting a part of the map <ss-map-select>', and then tap the 'Export' button. This allows you to more easily determine the area of objects you want to export.

2.4 Selecting part of map

If you press and hold two fingers simultaneously on the map a gray overlay will appear between the two fingers. If you move your fingers around you can change the size and position of this overlay. In MacOS, press and hold the command key and press and hold the trackpad or mouse button and move the pointer.

If you release your fingers you have selected a part of the map indicated by the overlay area. Now a pop-up will automatically appear as in the image below. In this pop-up you have the following options:

- *Zoom in*: This will zoom the map to the selected area.

- *Export*: This allows you to share the points, routes and layers shown on the map in the selected area. You can also use it to create and share a map in pdf, jpeg or png format of the selected area including the routes, points and layers.
- *Print*: With this option you can *print the map in the selected area*.
- *Saved routes*: This will show you your saved routes which have either the start or end point or both in the selected area.
- *Waypoints*: This will show you the list of waypoints in the selected area.



Fig. 4: A part of the map has been selected.

2.5 Printing maps

If you plan to make an outdoor trip, it could be advisable to print a map of the surroundings. So that you can find your way, even in the case your device breaks down. If you do not want to get distracted by your phone, it might also be enjoyable to make a trip using a printed map. Following a trip with a printed map can also help to improve your navigational skills. It is easy to add remarks on a printed map with a pencil. And if you need a very high level of privacy, you could do all planning first, print a map of the route and points, and leave your smartphone at home.

2.5.1 Printing from the main map

To print a map, first *select the part of the map* that needs to be printed. You can do this by pressing long with two fingers simultaneously on the map. Moving the fingers can change the selection. If you release your fingers, tap 'Print' in the pop-up. Sometimes it could be useful to first *rotate the map*, before making a selection.

Alternatively, if you want to print the area which is currently visible in the maps screen, you could tap Menu > Maps > Print map. On MacOS you could also press Command-P.

If you want to display content on the printed map, like a route, points, or a layer, first load the contents on the main map. Then tap the print button. It might be also useful to add a *coordinates grid*, in order to be able to read off and find coordinates on the printed map with help of a map protractor.

2.5.2 Printing a route

To print a single route, first open the *route details screen* (tap on the route line). Then tap the export icon in the bottom bar to open the export-popup, as shown in the figure below:

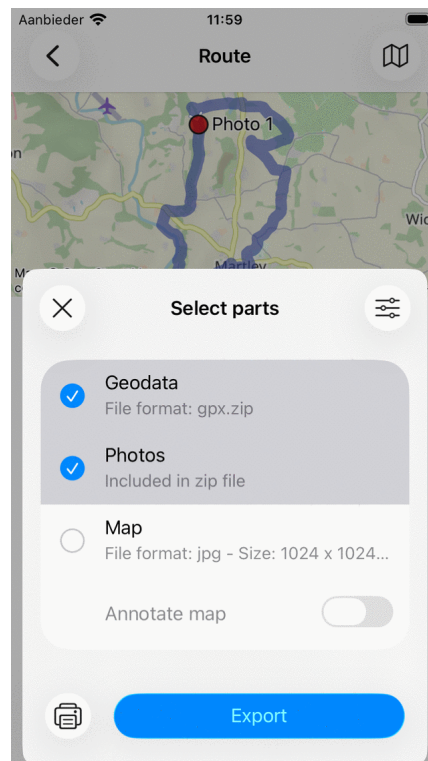


Fig. 5: The export pop-up that appears when exporting a single route. It contains a print button on the bottom left.

Tap the print icon in the export pop-up on the bottom left. After tapping the print button the options dialog will appear, here you can for example set the map scale. More details you can find in the paragraph below.

If you print a route in this way, only the pages of the map that contain the route will be printed. This will save paper over printing the route directly from the main map.

2.5.3 Print options pop-up

If the print button is pressed, in both cases a print pop-up appears, like in the figure below:

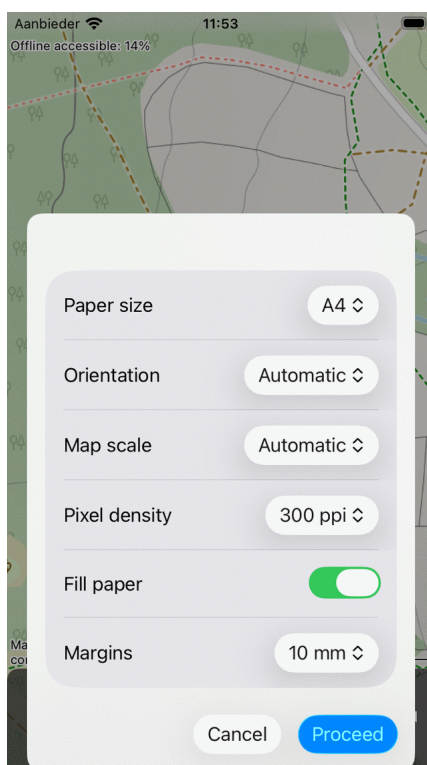


Fig. 6: The print pop-up, that shows the options that one can set for printing a map or route.

In the print pop-up you can set the following options:

- *Paper format*: Here you can choose the paper format which is used by your printer. For example A4, A3 or US Letter. Note that this paper size should normally be the same as in the iOS print dialog. Sometimes it is useful to choose a smaller size here like A6. If one then in the iOS print dialog choose to print four A6 on a single A4 page, one can have four smaller maps on one page. This could be especially useful for printing a route into smaller maps.
- *Orientation*: You could choose to print the map in portrait or landscape orientation, or let the orientation be determined automatically.
- *Map scale*: Here you could choose the map scale. If you choose for the option “automatically” the selected region will be scaled, so that it fits on the paper. If you choose a custom map scale, the map will be printed exactly to scale. For example if you choose “1:25,000”, 1 cm on the printed map is 25,000 cm = 250 m in reality. A commonly used map scale allows you to read off and find coordinates on the printed map if you have added a *coordinates grid*. Sometimes the selected region will be too large to be fitted on one page, then the region will be splitted into multiple pages. If the number of generated pages will become too large, you need to choose a smaller map scale or a smaller region. The supported map scales are 1:100, 1:200, 1:500, 1:1000, 1:2000, 1:5000, 1:10,000, 1:15,000, 1:20,000, 1:25,000, 1:50,000, 1:100,000, 1:200,000, 1:250,000, 1:500,000. If you select the map scale, and you scroll down and tap ‘More’, you can also choose one of the less customary map scales, like 1:87, 1:125, 1:150, 1:250, 1:400, 1:625, 1:750, 1:800, 1:1250, 1:1500, 1:2500, 1:4000, 1:6000, 1:6250, 1:7500, 1:8000, 1:12,000 (1 inch = 1000 feet), 1:12,500, 1:15,840 (1 inch = 0.25 mile), 1:24,000 (1 inch = 2000 feet), 1:31,680 (1 inch = 0.5 mile), 1:40,000, 1:48,000 (1 inch = 4000 feet), 1:63,360 (1 inch = 1 mile), 1:75,000, 1:80,000 and 1:150,000.

- *Pixel density*: Here you can choose the pixel density, in pixels per inch (ppi). A larger pixel density leads to a sharper map, but the file size also becomes larger, and maybe the pixel density might become too high for your printer. Typically 300 dpi or 600 dpi should be ok. You could experiment which this value to see what setting gives a sharper print. Possible values are 150 ppi, 254 ppi, 300 ppi, 508 ppi and 600 ppi.
- *Fill paper*: If you enable this toggle, the paper will be completely filled with a map. If you disable this option, only the selected area will be printed. This could save some ink.
- *Margins*: Here you can set the paper margins (white space near edges). The margins are the same on top, bottom, left and right and can be chosen between 5 mm, 10 mm, 15 mm and 20 mm. On MacOS you can also set different margins for each edge.

If you have set the options in the print pop-up, tap ‘Proceed’ on the bottom right. Then the printed maps will be generated. This can take a while (be patient) because sometimes map tiles need to be downloaded. After the printed pages are ready, the system print dialog will appear automatically, as in the figure below:

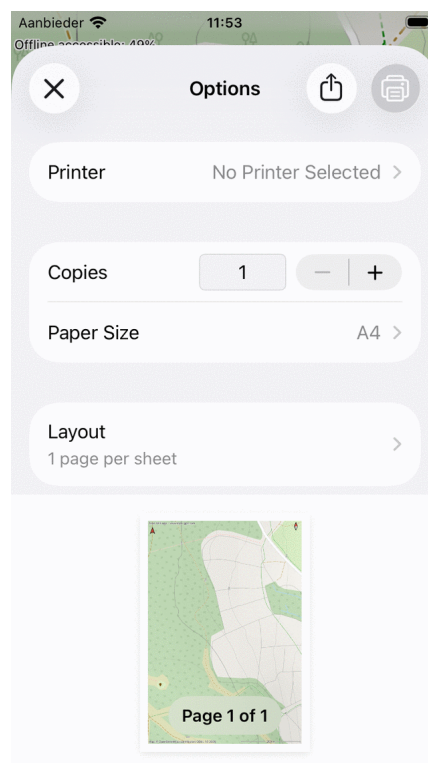


Fig. 7: The system print dialog.

Before you start printing, it is *very important* to make sure that the paper size in the system print dialog is set to the same paper size used in the print pop-up. Otherwise parts of the maps could be missing, or the map will not be printed at the scale you intended. If you have verified this, you could press ‘Print’. Or press the ‘Export’ icon to save the to be printed pages as a PDF.

Make sure to obey the licensing constraints of a printed map. Some printed maps may only be used for personal purposes. Most printed maps have a open data licenses, which implies that they can be shared freely. But also then, always make sure the copright notice on the bottom left hand side of the printed map stays visible.

Sometimes a map may not be printed due to copyright reasons. In that case the printed map will be the OpenStreetMap.

The printed map always contains a red arrow. This arrow points to the true geographic north. This differs

from the magnetic north to which a magnetic compass is pointing.

2.5.4 Creating a PDF

The way of printing a route or map is also a convenient method for creating a PDF. First one can choose the print button in the map selection pop-up, or in the export route pop-up. Then after setting the print options, in print dialog, one can instead of 'Print' press the export icon. That will create a PDF of the selected map or route. This PDF is created using the exact map scale that one has set in the print options pop-up. This PDF can also be send to the printer later or used for other purposes.

2.6 Map legend

A legend gives an explanation for the symbols on the map.

To view the legend, you have to tap the map copyright button. The map copyright button is the button on which it says: 'Map: ...' in the bottom left of the map. A pop-up appears in which you can tap 'Legend'.

Alternatively you can tap 'Maps' in *Menu*. Then tap 'Legend' in the pop-up that appears.

If you open the legend of a typical map you will see the following screen:

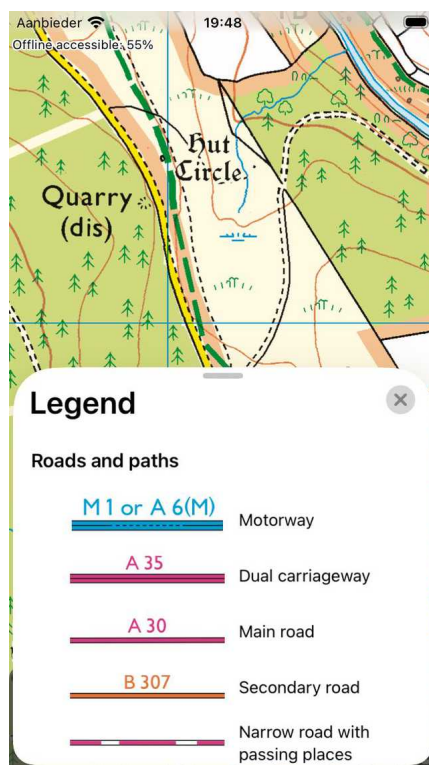


Fig. 8: *The map legend screen.*

The map and the legend are displayed simultaneously, so that you more easily can lookup the meaning of symbols on the map. You can scroll down in the legend to view more symbols. If you pull the handle in the legend pop-up upwards, the legend will be enlarged.

Most legends are translated to the language the Topo GPS app is using.

2.7 Map copyright

To view the copyright information of a map, you have to press the map copyright button on the bottom left of the map screen. This is the button with the label: 'Map: ...'. If a pop-up appears, you need to tap the item 'Copyright'.

The map copyright screen of the topographic map of Great Britain is displayed in the figure below:

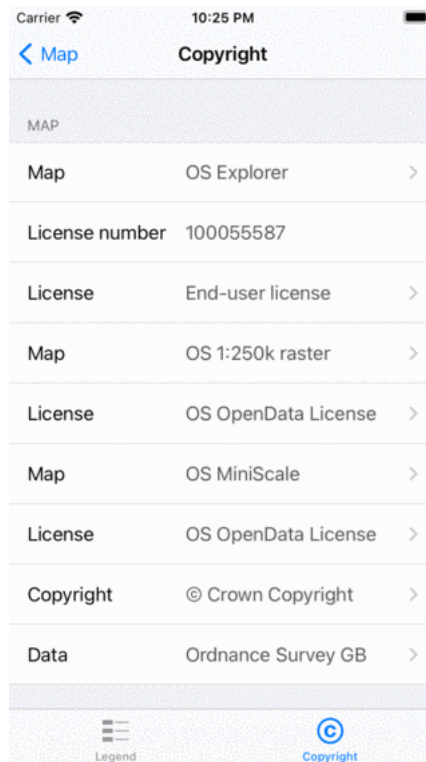


Fig. 9: The map copyright screen of the topographic map of Great Britain.

In the map copyright screen you find details of the publisher of the maps, the source, and the license. Maps which use an Open Data License (like Creative Commons) can be shared. Please always make sure that the copyright remains visible when sharing a map.

2.8 Making maps offline accessible

To ensure that the maps are accessible when you are not connected to internet (offline) you can make maps offline accessible. Offline accessible means that the maps are stored on your device and that you can view them without an internet connection.

2.8.1 Map tiles

The maps in Topo GPS are composed out of map tiles. A small number of map tiles is required to fill the map screen. If one or more of these required tiles are not stored on your device, they will be downloaded automatically. This only succeeds if you are connected to the internet.

If you are connected via a cellular network, downloading of map tiles can only occur if you have enabled cellular access for Topo GPS in the device settings > apps > Topo GPS. In Topo GPS you have to enable *Menu* > More > Settings > Map tiles downloading > Use cellular network.

On the top left of the *main screen* the percentage offline accessible map tiles of the currently visible area is shown. This percentage is the number of offline accessible tiles at all zoom levels relative to the total number of all possible tiles at all zoom levels. An example is shown in the figure below:

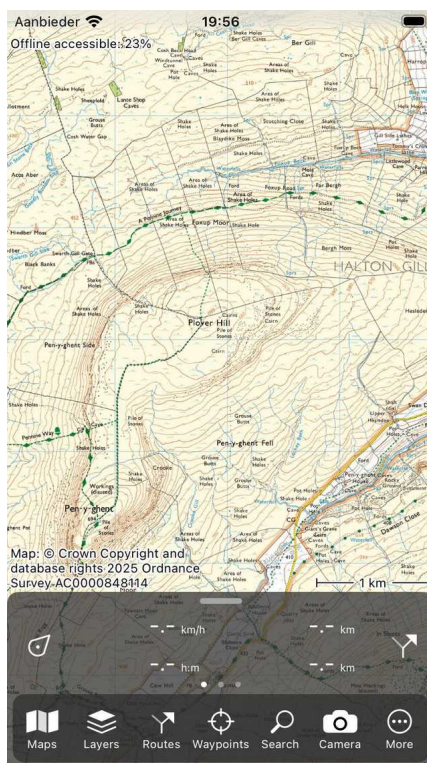
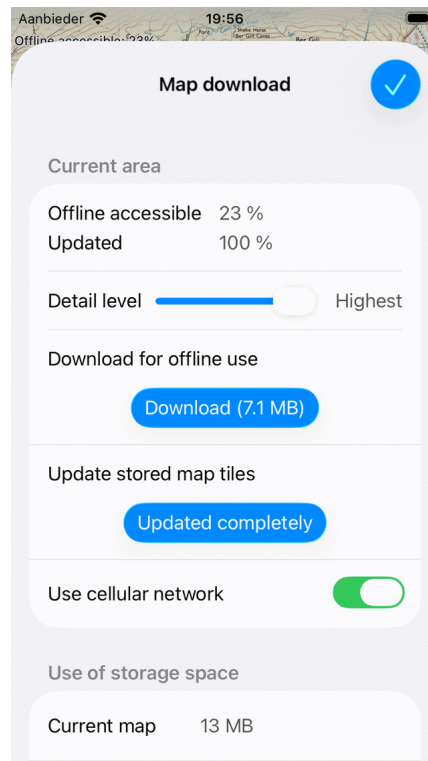


Fig. 10: On the top left of the main screen you can view the percentage of the currently visible area that is offline accessible.

In the figure above the percentage of offline accessible map tiles is less than 100%. By looking at the map screen you might think that all map tiles are already accessible, since the whole map screen is covered with tiles. However, if you zoom in, map tiles with a higher resolution will be loaded. If the percentage is not 100% it can happen that when you zoom in grey tiles or unsharp tiles are shown instead of the higher resolution map tiles.

2.8.2 Downloading map tiles

If you tap the label ‘Offline accessible:’ on the top left of the map screen the map download screen will appear as in the figure below. Alternatively you can tap Menu > Maps > Download map.



In the map download screen you can download map tiles of the area that is currently visible in the map screen. To download all map tiles of the current area, you have to press ‘Download’. The amount of MB indicates an estimate of the size of the download in megabytes.

If downloading of map tiles has been started, the download button shows how many tiles still need to be downloaded. While downloading map tiles, the percentage offline accessible will increase to 100%. You can cancel the downloading of map tiles at any time by pressing ‘Stop download’.

If you return to the map screen and do not move or zoom out on the map, you will see that the percentage offline accessible is 100%. In that case you are certain that you have all map tiles off the area stored on your device. To verify this, you could temporarily put your device on Airplane mode without WiFi access. If you then zoom in or out in regions with 100% offline accessibility, no gray map tiles should appear.

Above the download button you can find a detail level slider. If you open the map download screen the detail level slider is always set to the highest detail level. This indicates that all possible map tiles will be downloaded if you press the download button. If you set this slider to a lower detail level, the tiles necessary for zooming in far will not be downloaded. As a result the download size will be much smaller, and you need less storage space. The offline percentage is then also computed with leaving out the highest resolution tiles. This could be useful if you only need an overview map of a certain area, and do not need to have all map tiles at the highest resolution possible.

We recommend you to download only areas you really need, instead of very large regions. This will save you storage space and download time. If you really need to download a very large area it sometimes helps to split the download into smaller regions.

In the bottom of the ‘Current area’ section in the map download screen is the button ‘Use cellular net-

work'. If you have enabled this switch, you can use the cellular network for downloading map tiles. You also need to give permission to use the cellular network in the Device Settings > Apps > Topo GPS. If these settings are enabled, and you are viewing a part of the map on which map tiles are not stored offline, they will be downloaded automatically over the cellular network. If you have disabled the 'Use cellular network' setting, the cellular network will never be used to download map tiles. This can save you data transfer costs. It might happen however that grey tiles are shown in the map if you had not made all tiles of the area offline accessible.

Instead of downloading the map tiles of a specific region, it is also possible to only *download the map tiles over which a route is going*. For that open the *route details screen of a route*, scroll down to the section 'Tiles on current map' and tap 'Download'.

2.8.3 Updating map tiles

Sometimes the updated map tiles are available for download. If updated map tiles are available and you view them in the map screen, they will be downloaded and updated automatically.

You can update all map tiles of a certain area in the map download screen. For this you have to press 'Download (.. MB)' in the update section of the map download screen. When the percentage updated map tiles equals the percentage offline accessible map tiles, you have updated all offline accessible map tiles. This is the case in the figure above, therefore the 'Download' button has changed to 'Updated completely'.

2.8.4 Storage space

Storing of map tiles on your device costs disk space. In the map download screen you can see how much space has been used.

'Current map' means the total storage of the complete current map.

'All maps' means the total storage of all maps together.

'Free on device' means the amount of available storage space on your device.

If you tap on 'All maps' you will get an overview of the storage space used for each map. If you tap on of the maps in this overview, the map will be opened, and you can then tap 'Offline accessible' > Scroll down > Remove to remove tiles to free up storage space.

2.8.5 Removing map tiles

If you want to remove map tiles, you need to scroll down to the bottom of the map download screen. If you scroll to the bottom of the map download screen you will find a 'Remove' button as you can see below:

By pressing the 'Remove' button you delete all map tiles of the currently visible area in the map screen. In the example above these are all map tiles of the Shetland Islands.

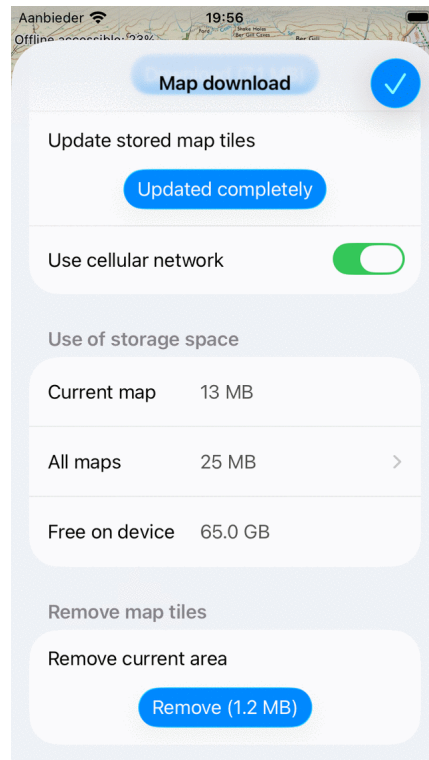


Fig. 11: *Removing map tiles.*

2.9 Changing current map

To change the current map, tap *Menu* > *Maps* to open the *maps pop-up*. In MacOS tap Control-0 (zero).

If there are alternative maps available for the current visible area in the main screen, they are shown in the bottom of the maps pop-up. Tapping an alternative map immediately changes the current map. If you tap 'More maps' in the maps pop-up, the maps screen will be opened. Here (*Menu* > *Maps*) you can also change the current map and *purchase additional maps*.

Suppose the main map is currently the topographic map of Great Britain, as in the example below.

We now want to change it to the OpenStreetMap map. For that we open the maps screen (*Menu* > *Maps* > *More maps*). An example of the map screen is shown below:

The maps screen consists of two sections, the purchases and the *store*. All purchased maps are accessible. If you tap on a map item in the purchases section the map will be opened immediately and you will return to the main screen.

In the example above, the OpenStreetMap map was *purchased*. If we tap the OpenStreetMap item, the main map will be changed to OpenStreetMap and we will return to the main screen automatically as in the example below.

If the newly chosen map has coverage in the previously shown area, the newly opened map is zoomed to the previously shown area. Otherwise, the newly opened map is zoomed to the area it covers.

In MacOS you can also press Control-2 to switch to an alternative topographic map of the region, Control-3 to OpenStreetMap, Control-4 to aerial imagery, and Control-1 back to the topographic map.

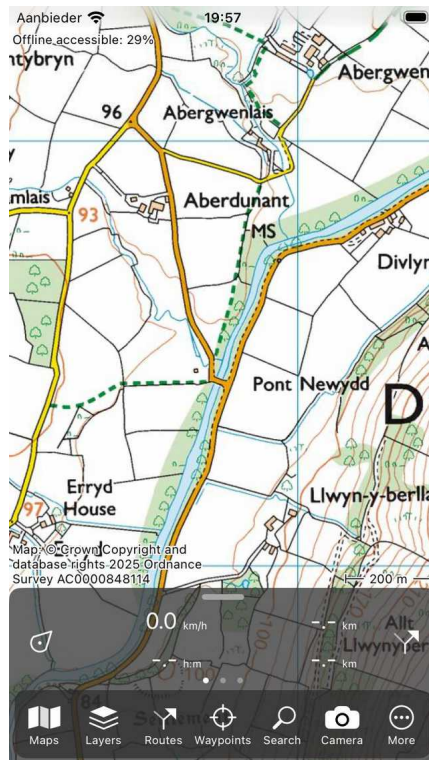


Fig. 12: The main screen with the topographic map of Great Britain.

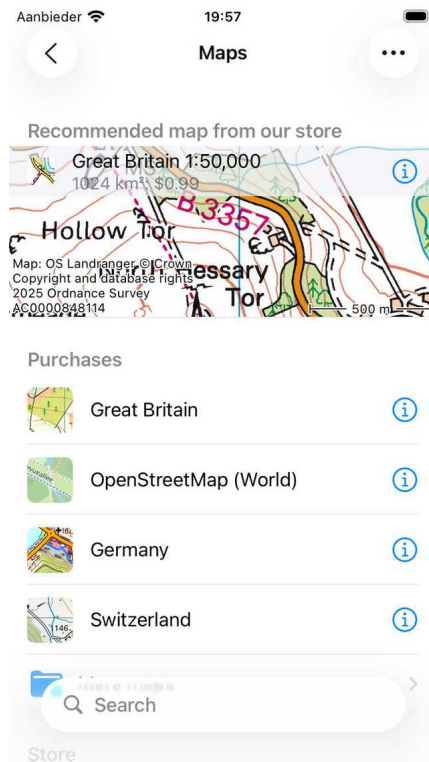


Fig. 13: The maps screen in which you can change the map and purchase additional maps.

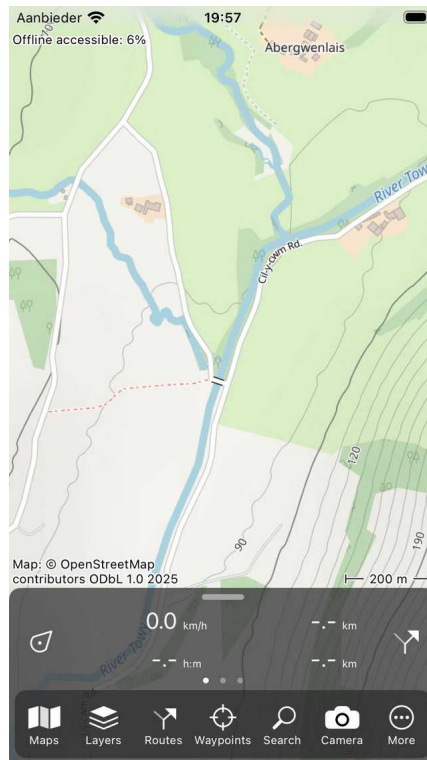


Fig. 14: The map in the main screen was changed to OpenStreetMap.

2.9.1 Scrolling out of covered area

If you scroll out of the covered area of the map, a pop-up will appear in the top of the main screen which suggests you to change the map to a suitable map for that area. In the figure below you can see an example of that pop-up:

In the example above the user has scrolled to the northern border of the topographic map of Switzerland. In the top of the screen the background is gray, because that part is not covered by the map. The pop-up suggests an alternative map, in this case the topographic map of Germany or OpenStreetMap. If you tap one of these maps and you have purchased it, the chosen map will be opened and zoomed to the current visible area. If you have not purchased the chosen map, the purchase window will be shown. In the example below, the map has been changed to the topographic map of Germany.

2.9.2 Automatic map change

If you load a route or waypoints on the map, or tap the center button on the dashboard, the app will check if the items are located on the current map. If not, the map will change automatically to the best suitable map. If the suitable map is not accessible, a screen will appear in which you are presented the suggested map. In this screen you could also *buy the suggested map*.

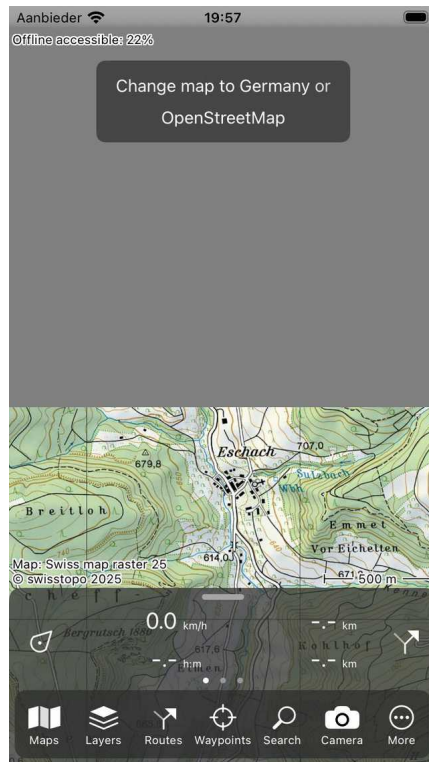


Fig. 15: A pop-up suggests to change the current map.

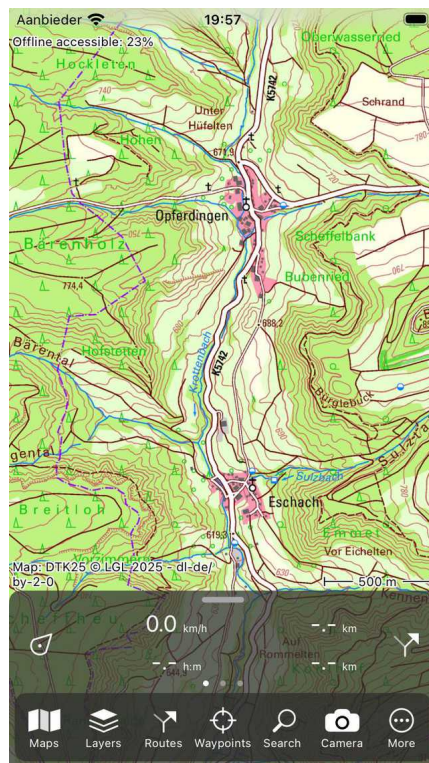


Fig. 16: The current map was changed to Germany after tapping on the suggested map.

2.9.3 Dark map style

You can set the map style in Topo GPS to 'Normal' or 'Dark' in the *settings*. The normal style has light colors. An example of the dark map style is shown below:

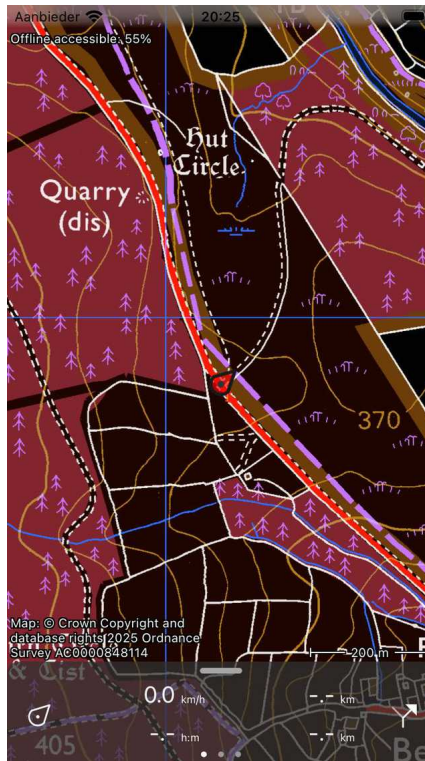


Fig. 17: The dark map style.

If you are using Topo GPS during the night, it might be better to set the map style to 'Dark'. The map is then much darker, making it easier for your eyes to look on the screen. The map legend is also adapted for dark mode. We recommend you to combine the 'Dark' map style setting with the 'Dark' mode display setting of your device. Then also all interface elements will have a dark background.

To set the map style to dark go to Menu > More > *Settings* > *Styles* > Map.

2.10 Purchasing maps

In the maps screen (*Menu* > Maps > More maps) you can buy additional maps. An example of the maps screen is shown below:

The maps screen has a section 'Store'. The maps displayed in this section can be purchased. Tap on an item in the 'Store' section to see the details of the map.

There are three kinds of map purchases in Topo GPS.

- *Full maps*: These maps are a one-time only purchase. You get full access to the entire map including future updates.
- *Partial maps*: In these maps you can select parts of the map and buy the parts you need. This is possible with the topographic maps of Great Britain and Belgium.

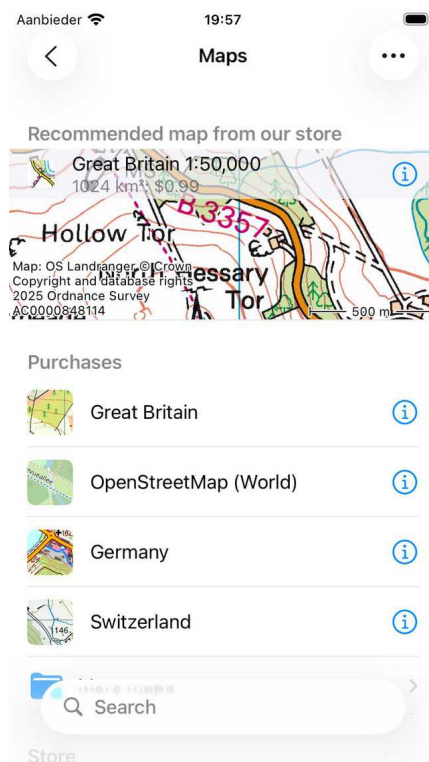


Fig. 18: *The maps screen.*

- *Subscriptions:* In these maps you can purchase a 1 year automatically renewing subscription to get access to the entire map. This is possible with the topographic maps of Great Britain, France, and Belgium.

The differences between the map purchases are due to licensing and royalty constraints. Some maps are provided as open data to us, in that case we do not have to pay royalties to the mapping agency. For other maps we however have to pay licensing fees to the mapping agency depending on the amount of maps sold. Therefore these maps are more expensive.

The sales of the maps and layers is our only source of income. It is not possible to create an account in Topo GPS. We do not know your identity. We do not collect any of your data. We do not sell any of your data. We do not show advertisements. With the money we earn by selling maps and layers we fund the development and maintenance of Topo GPS, we pay for the server infrastructure and data transfer, and we pay the delivery fees and royalties of certain maps.

It is not possible to share your purchases on Apple with Android and vice versa. This is because we need money to fund the development and maintenance of the Android app as well. Also we do not want to spend our time creating a complicated purchases transfer system. Rather we want to develop new useful features for our users.

2.10.1 Purchasing full maps

To purchase a full map, for example Switzerland, go to *Menu* > Maps > More maps > Store, and tap 'Switzerland'. The information screen of map of Switzerland will be opened:

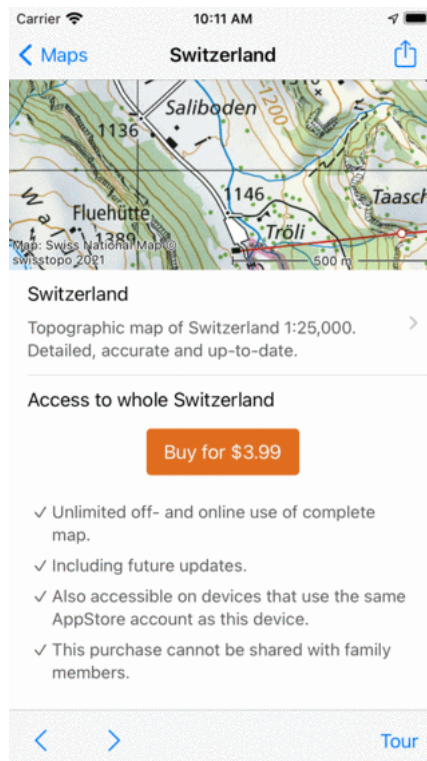


Fig. 19: Map information screen Switzerland

In the information screen of the map of Switzerland, you see a preview map on the top. You can scroll and zoom this map to see if this map suits your needs. You can get a small tour through the map by tapping the 'Tour' button in the bottom toolbar. You can also tap 'Try map'. Then the map will be loaded in the main screen for free. The free trial map will however be less sharp when zoomed in far than a purchased map.

Below the map, you find information about the purchase. If you tap the purchase button with the price a purchase will be initiated. You will be asked by the AppStore to confirm the purchase, and once confirmed you will be return to the main screen and the newly purchased map will be opened:

You can zoom in on the purchased map to see it in more detail as in the figure below:

If you go back to the maps screen (*Menu* > Maps) you will see that the map of Switzerland has now moved to the section 'Purchases'.

The purchased maps are available on all devices that use the same Apple ID on which the purchase was made. If you have enabled family sharing, the purchased maps are also available to your family members. Sometimes you need to tap 'Restore previous purchases' in the bottom of the map screen (*Menu* > Maps) to make these purchases available.



Fig. 20: The map of Switzerland has just been purchased.



Fig. 21: The purchased map of Switzerland in more detail.

2.10.2 Purchasing parts of maps

Maps of Great Britain and Belgium can be bought by part. To purchase part of the map first go to *Menu* > Maps > Store and tap on the desired map. If no purchases have been made yet, the map information screen will be opened, as in the example below:

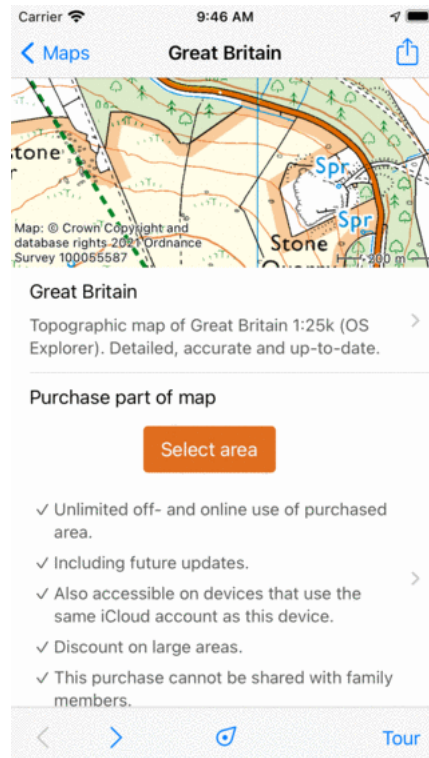


Fig. 22: Map information screen Great Britain

Tap the ‘Select part of map’ button to return to the main screen. Then zoom in to the desired area. As you can see in the example below the map is divided in squares with a price:

The prices are only shown on parts which have not been bought. To buy a part of the map, you can simply tap it to select it. In the bottom bar the price will be shown as you can see in the figure below:

In the example a square of 8 x 8 km is selected. If you need more squares, you can select more, and the price in the bottom bar will increase accordingly. If you zoom in, the squares will become smaller, so that you can select a region more accurately. If you zoom out, the squares will become larger, so that you can select a larger region faster. If you buy a larger region at once, most often a discount is applied.

If you tap the info button (i) in the bottom purchase bar the map information screen will be opened and you can lookup the conditions of the purchase.

If you want to change the selected squares, you can simply tap a selected tile to deselect it. You can also tap the cross in the bottom purchase bar to deselect all tiles at once.

If you want to buy the squares over which a route is going, load the route on the map, and tap the route to open the route details screen. Then scroll down in the route details to the section ‘To be purchased map tiles’. Tap ‘Put into shopping cart’. Then you will return to the main map and the squares of the route will be selected.

If you tap the purchase button in the example above, an AppStore pop-up will ask you to confirm the purchase:



Fig. 23: Prices are shown on squares which have not been bought.



Fig. 24: A square has been selected for purchase.



Fig. 25: An AppStore pop-up asks to confirm the purchase of 64 km² of Great Britain.

If you tap 'Confirm' in the AppStore pop-up the selected area will be purchased. The area will be accessible immediately as you can see in the example below:

After purchasing an area, all map tiles of the purchased area will be downloaded automatically, so that they are offline accessible. Tiles of areas that are not purchased, cannot be made offline accessible. Therefore you can only get Offline accessible to 100% if you zoom in to an area that is fully bought.

The purchases of parts of maps are synchronized with other devices via iCloud. You need to enable the iOS settings Account > iCloud > iCloud Drive > Topo GPS on your devices to see the purchases on your other devices.

2.10.3 Purchasing subscriptions

In addition to buying parts of the map, it is also possible to purchase a 1 year subscription to the maps of Great Britain, France, and Belgium. If you need large areas of the map it might be cheaper to purchase a subscription then to buy parts of the map.

To purchase a subscription, first open the maps screen via *Menu* > Maps. Then tap the info button (i) next to a map. Scroll down to the subscription section. In the example of Great Britain the subscription section looks like:

In the subscription section, you can read the conditions of the subscription. If you press the buy button you are asked to confirm the purchase. Once confirmed, you will return to the main screen and the whole map is accessible.

Subscriptions are accessible on all devices that use the same Apple account. <ANDORID>Subscriptions are accessible on all devices that use the same Google Play account.</ANDROID> Subscriptions cannot be shared via family sharing. To enable a subscription on another device, you might need to tap *Menu* > Maps > Restore previous purchases.

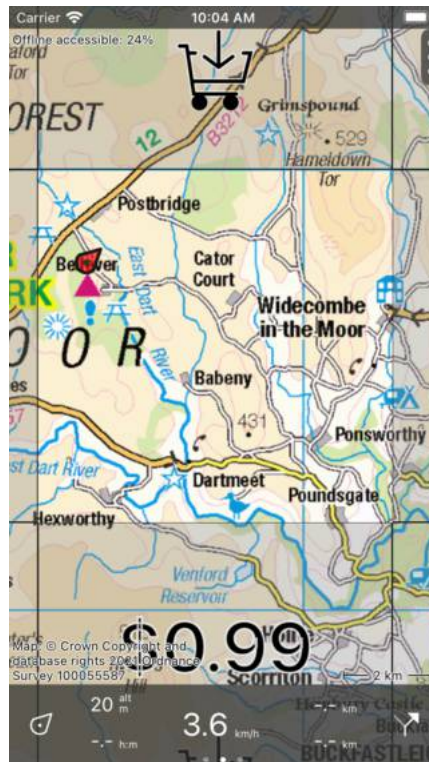


Fig. 26: The selected area has been purchased.

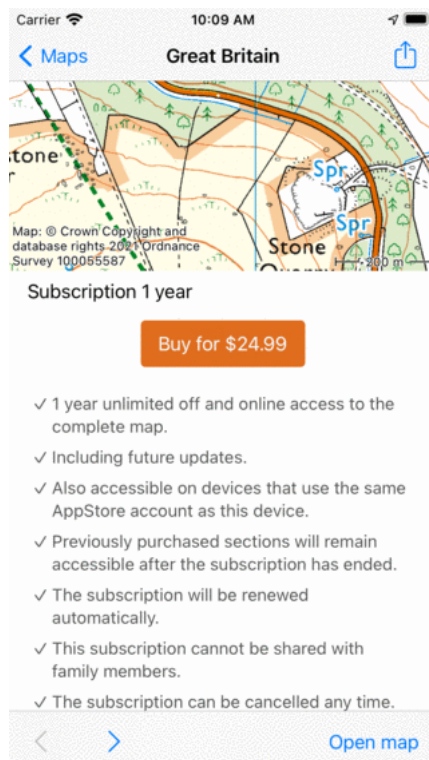


Fig. 27: Subscription information topographic map Great Britain

2.10.3.1 Cancel subscriptions

To cancel a subscription, go to *Menu* > Maps. Then tap the info button (i) next to a map on which you are subscribed. Scroll down to the subscription section. Then tap 'Cancel subscription'. You will be brought to an AppStore page on which you can manage your subscription, and also cancel them. If you cancel a subscription, the map will remain accessible until the end of the current subscription period.

Alternatively, you can also directly go to the AppStore app. Here tap on the top right for account, and then choose 'Subscriptions'. Find the active Topo GPS subscriptions and cancel them if necessary.

Remember most of the map purchases are one-time only, we only sell subscriptions for the maps of Great Britain, France and Belgium.

2.10.3.2 Mobile device management

Organizations sometimes use devices that are centrally managed through Mobile device management (MDM) software. We can provide these managed devices with the desired maps. This functions via a managed app configuration file. The administrator only has to enter the organization name and a licensing key which we will provide. The purchased maps and layers will then be available to all managed devices.

For details and pricing, please contact support@topo-gps.com.

2.11 Gray map screen

The map consist out of of map tiles. Sometimes it might happen that not all tiles are available. Then the map screen will be partly or completely gray as in the example below.



Fig. 28: The map screen is gray, no map is shown.

The reason of a gray map could be problems with the internet connection, or that you have scrolled out of the coverage region.

2.11.1 Internet connection issues

If you are not scrolled out of the region the map covers, the gray screen is caused by internet connection issues. Normally the map tiles should be downloaded automatically. Sometimes, this will not happen, for example if you have only a cellular connection and you have disabled cellular downloading of map tiles.

To see why the maps are not being downloaded, tap the offline accessible button on the top left of the screen to open the map download screen:

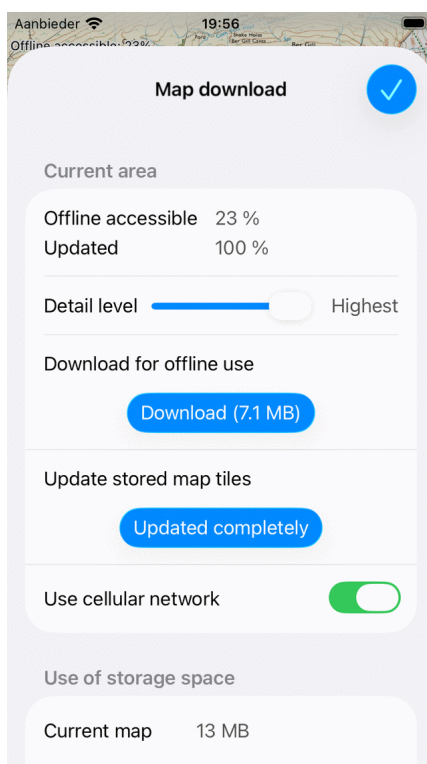


Fig. 29: *The map download screen.*

In the map download screen you could tap 'Download' and see what happens. Also you could enable 'Use cellular network' to allow cellular downloads of map tiles. You also might want to enable cellular access for Topo GPS in the device settings. You can read more about the map download screen in the section *Making maps offline accessible*.

2.11.2 Scrolled out of coverage region

If you are scrolled out of the region the map covers, most often a pop-up will appear in the top of the map which suggests you to change the map. You might also tap the center button on the *dashboard* to return the map to your location. Or *zoom out* to find back the coverage region. Alternatively, you could change the map via *Menu* > Maps.

WAYPOINTS

A waypoint is a location that can be added to the map. The icon and the title of the waypoint are shown on the map. Possible additional information such as photos and a description can be *displayed* by tapping the waypoint. Waypoints can be *loaded* on the map and can be *imported* in and *exported* to various formats.

In the waypoints screen (*Menu > Waypoints*) you can do all sorts of things with waypoints.

3.1 Loading waypoints

To load waypoints that are saved on your device on the map, you first have to open the waypoints screen. You can open the waypoints screen by pressing ‘Waypoints’ in the *menu*. An example of the waypoints screen is displayed below:

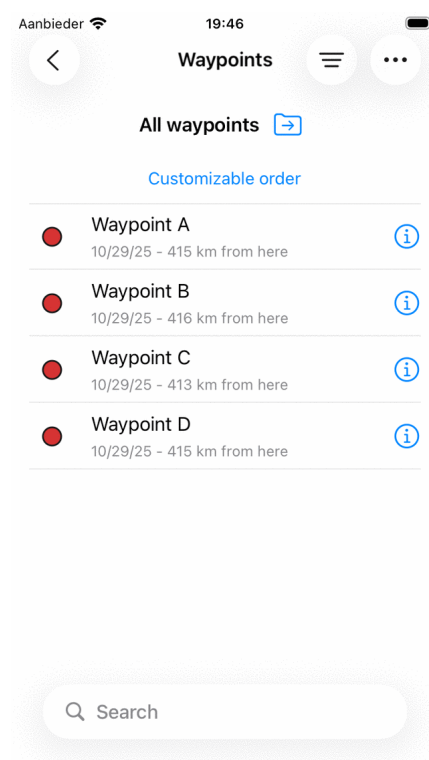


Fig. 1: *The waypoints screen (Menu > Waypoints).*

The waypoints screen shows the list of waypoints that are stored locally on your device. On the left hand side the icon of the waypoint is depicted, in this case a red circle. Next to that you see the title. Below

the title you find information about the location and creation date. If you press an item in the list, the corresponding waypoint will be loaded on the map and you will return to the map screen.

As an example we now will load the waypoint 'Waypoint A'. After pressing the 'Waypoint A' item in the waypoint list, you will return to the map and the situation will then be as follows:

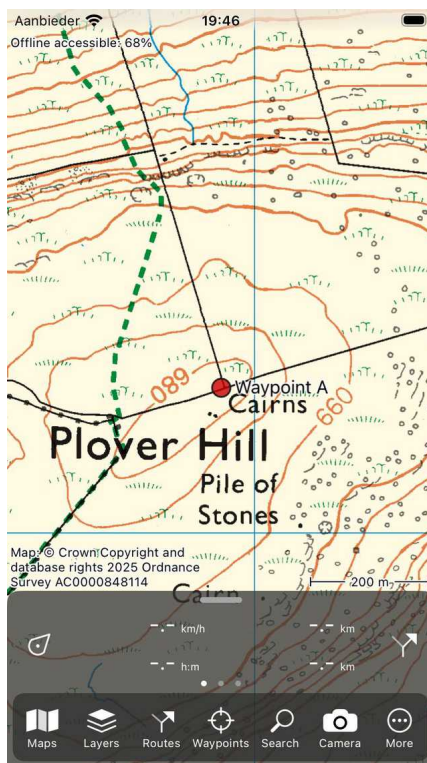


Fig. 2: The waypoint 'Waypoint A' has been loaded on the map.

In the figure you can see that a waypoint is shown on the map with a red circle icon and a title. If you tap the icon of a waypoints you can view the *waypoint details screen*.

Waypoints that are loaded on the map acquire a grey background color in the waypoint screen. An example is shown below:

It is also possible to load multiple waypoints on the map at once. This is explained in detail in the section *Selecting waypoints*. Summarized: press long on a waypoint item in the waypoints screen to open the selection mode. Next select the other desired waypoints by tapping them. Then press the 'Map' button on the bottom of the screen to load the selected waypoints onto the map.

In the next section we will explain how to *remove waypoints* from the map.

3.1.1 Overlapping waypoints

If there are two waypoints near to each other, the icons could overlap when zoomed out far enough. Instead Topo GPS will only show the latest added waypoint and the other waypoint is not shown. The underlying other waypoint will only appear if you zoom in far enough. If the waypoints do not show up when zoomed in maximally, you might try to extend the maximum allowed zoom of the map in the *Topo GPS settings*.

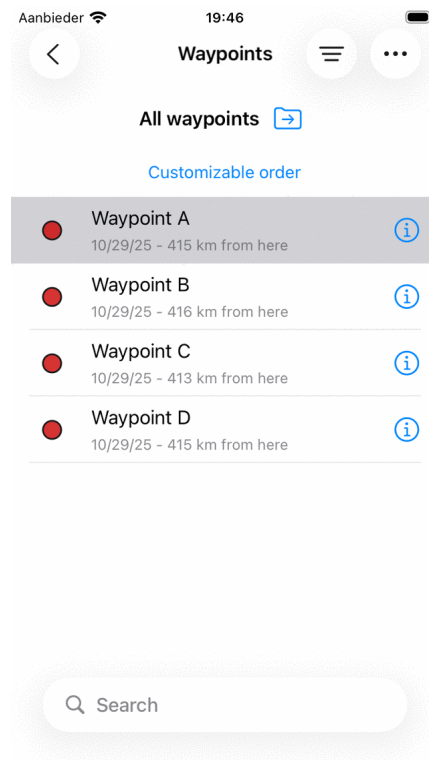


Fig. 3: The grey background color indicates that the waypoint 'Waypoint A' has been loaded on the map.

3.2 Removing waypoints from the map

You can remove waypoints from the map, via the waypoints screen, the waypoint quick actions menu and the waypoint details screen.

3.2.1 Waypoints screen

Via the *waypoints screen* (Menu > Waypoints) you can remove waypoints from the map. An example of the waypoints screen is displayed in the figure below:

The grey background color of the waypoint 'Waypoint A' indicates that it is currently loaded on the map.

If you tap a waypoint item that has a grey background color it will be immediately removed from the map. The grey background color will disappear.

You can also remove all loaded waypoints from the map at once. For this press 'More' (the top right circle with three dots) to open the 'More' menu in the waypoints screen. Then press 'Remove all from map' in the bottom of the menu.

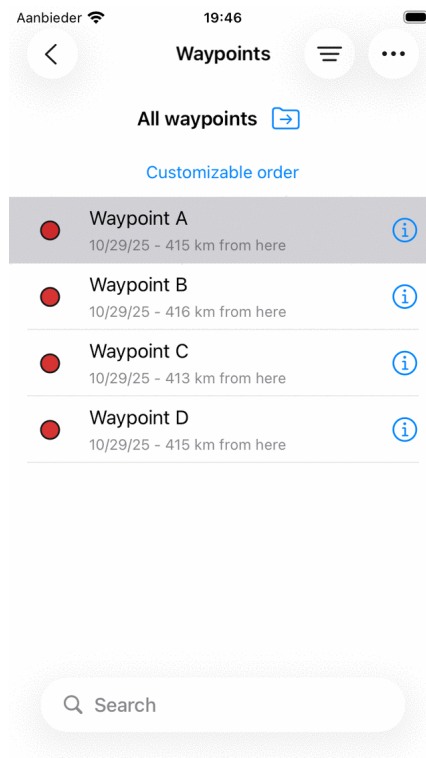


Fig. 4: The grey background color indicates that the waypoint 'Waypoint A' is loaded on the map.

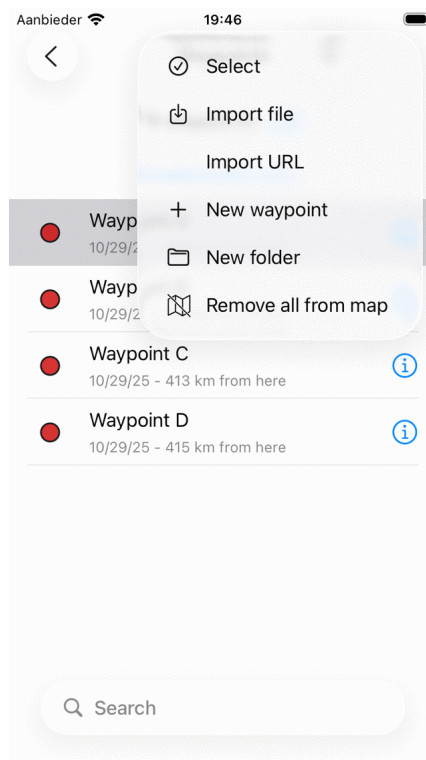


Fig. 5: The more menu in the waypoints screen with the 'Remove all from map' option.

3.2.2 Waypoint quick actions menu

If you press long on a waypoint that is loaded on the map, a menu will appear next to the waypoint. Tap in this menu 'Remove from map' to remove the waypoint from the map.

3.2.3 Waypoint details screen

It is also possible to remove a waypoint from the map via the *waypoint details screen*. Tap the waypoint icon of a waypoint that is loaded on the map to open the details screen. Or tap the info button (i) of a waypoint in the waypoints screen to open the details screen. In the waypoint details screen tap the remove from map icon on the top right.

3.3 Creating waypoints

There are several ways to create waypoints in Topo GPS.

- Pressing long on the map and dragging the icon to the desired location.
- Entering an address in the address tab via Menu > Search > Search address.
- Entering coordinates in the coordinates tab via Menu > Search > Enter coordinates.
- Scanning coordinates with the coordinates scanner via Menu > Search > Scan coordinates.
- Importing a geodata file which contains waypoints via Menu > More > Import file.
- Saving the current location as a waypoint by pressing the position marker and then 'Save' or 'Create waypoint'.
- Taking a photo via Menu > Camera.
- Adding waypoints via the waypoints screen > More > +.

In this section we will explain how to create a waypoint directly on the map.

3.3.1 Creating waypoints on the map

If you press with one finger long on the map an icon will appear. An example is shown in the figure below:

As long as you hold your finger on the map you can drag the icon to the desired location. If you release your finger the waypoint creation screen will appear. In the waypoint creation screen you can set the properties of the waypoint.

In the waypoint creation screen you can optionally give the waypoint a title, set the icon and enter a description. If you do not enter a title, the *automatically suggested title* (which is light grey) is used.

As an example we enter 'A' as a title. If you press 'Save' the waypoint will be saved on your device and loaded on the map with the title as is illustrated in the figure below.

The waypoint that is created from the map is saved on your device and hence will appear in the *waypoints screen*.

If you accidentally pressed long on the main map so that an icon appeared, you can drag the icon to the top or bottom of map screen. It will then be removed and the waypoint creation screen will not pop up. Also if you press 'Cancel' in the waypoint creation screen, the waypoint will not be created.

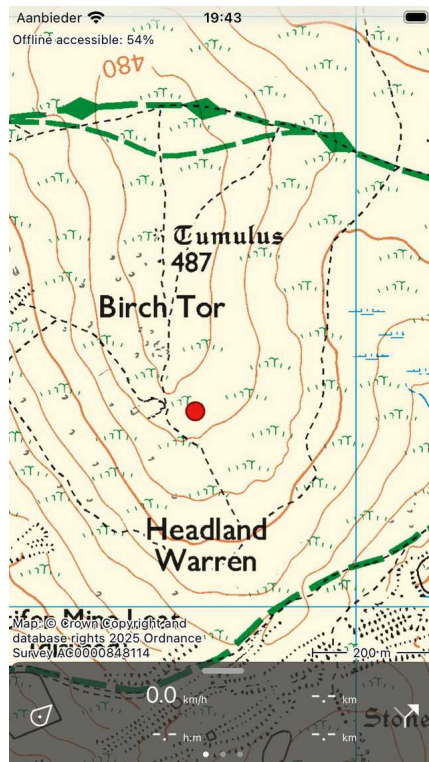


Fig. 6: By pressing long on the map an icon will appear.

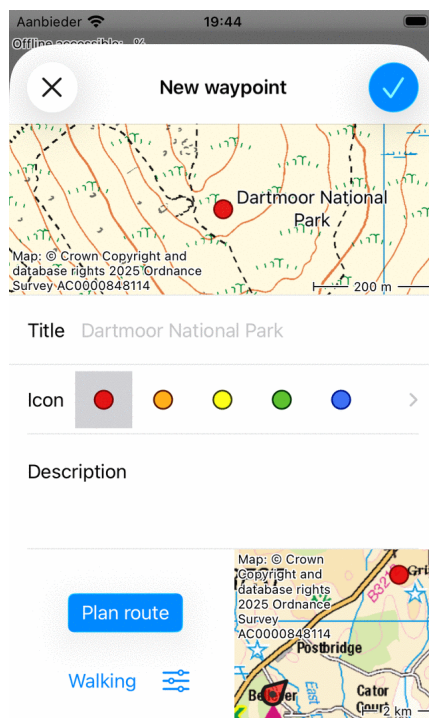


Fig. 7: Waypoint creation screen in which you can set the properties and save the waypoint.

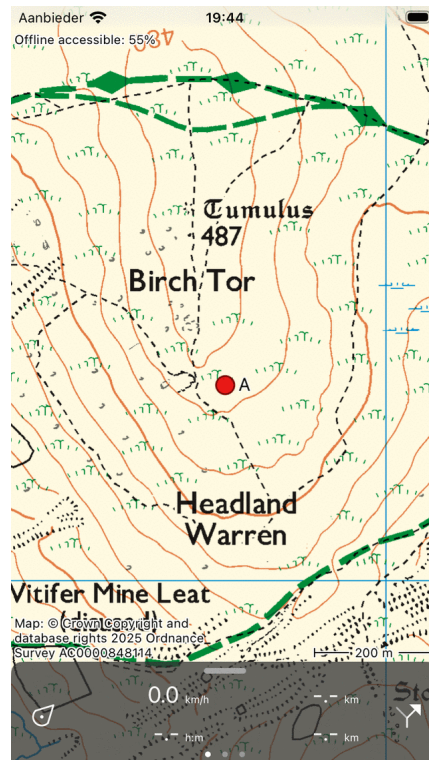


Fig. 8: The waypoint 'A' has been added to the map.

If you have entered a description in the waypoint creation screen, you can view it in the *waypoint details screen*. The waypoint details screen will be opened if you tap on a waypoint that is loaded on the map.

3.3.1.1 Automatic title suggestions

If you are connected to the internet and you have enabled 'Addresses - Find automatically' in the *settings*, an automatic suggestion for the waypoint title will appear in the title box. This title has a light grey color and will be used if no title has been entered. If you wish to have a waypoint without a title please enter a single space in the title field.

If you enter a number in as a title, for example '001', the next time you create a waypoint manually from the map, the suggested title will be '002', etc. This also works with characters, if you enter an 'A', the next suggested title will be 'B', etc. Or if you have entered 'Node_001', the next suggested title will be 'Node_002'. If you do not like the suggested title, you can just enter your desired title, and the next suggested title will be derived from the last input.

3.3.1.2 Setting the icon of a created waypoint

In the waypoint creation screen you can set the icon of the to be created waypoint. In the example above the selected icon is a red circle. By tapping the another icon, it will be used instead. You can scroll to the list of icons to see more icon suggestions. Only the last used icons are shown in the waypoint creation screen. If you want to use a different icon, you can tap the '>' button on the right hand side. Then the *waypoint icons screen* will be opened. Here you can choose from many predefined icons, and you can create your own custom icons.

In the example above we selected a green icon. If you save this waypoint, the next time you create a waypoint from the map this icon is used as the initially used icon for waypoint creation.

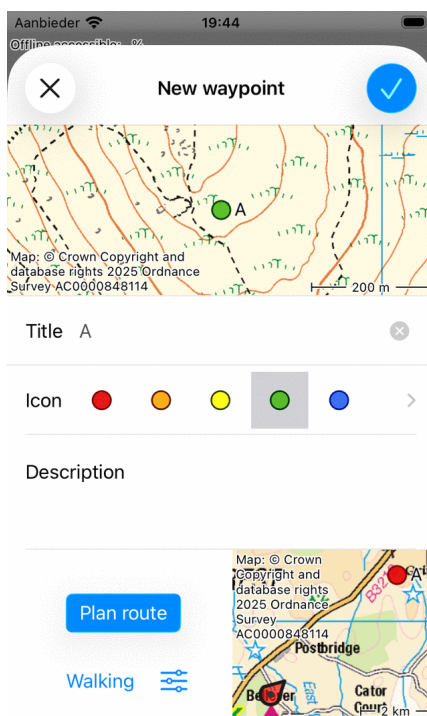


Fig. 9: A green icon was selected.

3.3.1.3 Planning a route to a created waypoint

If you want to plan a route from your current location to a point on the map, you can press long on the map to create an icon on the map and drag it to the desired location. Then the waypoint creation screen will be opened. In the bottom of the waypoint creation screen you see a 'Plan' button with a map next to it. The map shows the newly created waypoint relative to your current location. Below the 'Plan route' button you can see the currently selected transportation mode. In the example above this is 'Pedestrian'. If you tap 'Pedestrian' you can change the transportation mode. You can for example change it to 'Bicycle'. If you press 'Plan route' a route is immediately planned from your location to the newly created point and you will return to the map as is shown below.

The planned route and the waypoint are not saved automatically. To save the planned route press on the route line to open the route planner. Then press 'Save' on the top right to save the planned route. After the route is saved it will appear in the saved routes screen.

3.4 Waypoint details

The waypoint details screen appears by tapping on the icon of a waypoint that is loaded on the map. You can also open this screen by pressing the info button (i) on the right hand side of a title in the *waypoints screen*.

An example of the waypoint details screen is displayed below:

On the top right of the waypoint details screen you find a map icon with a slash. If you tap this button, the waypoint will be removed from the main map. If the waypoint is not loaded on the map, a map icon without a slash is shown. If you tap that icon, the waypoint will be loaded on the map and you will return to the main map.

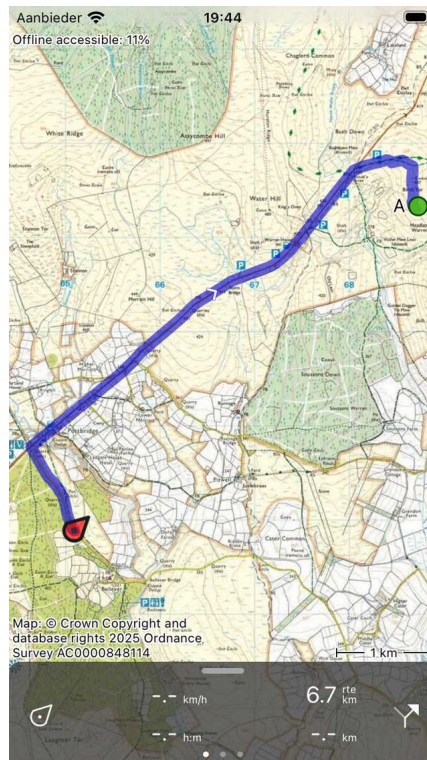


Fig. 10: A route was planned from the current location to a newly created point on the map.

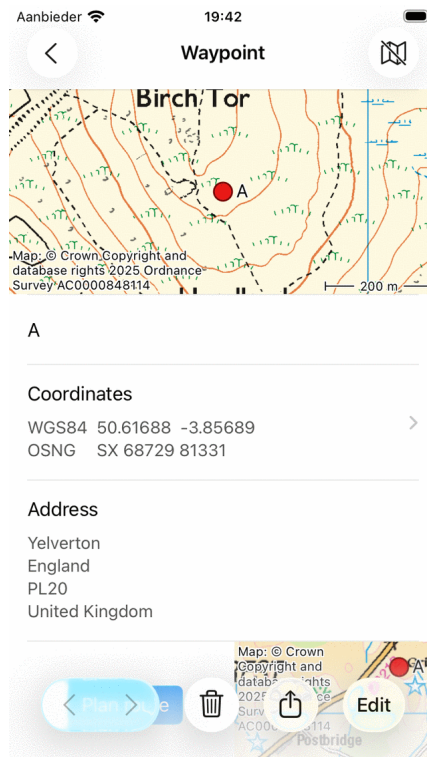


Fig. 11: The waypoint details screen of the waypoint 'A'.

The waypoint details screen contains information about the waypoint, such as the title and the coordinates. If available you can also find here a description, photos, a phone number and/or an URL.

The coordinates of the point are displayed in various formats. You can change the displayed coordinate systems by tapping on the ‘>’ on the right hand side. If you press long on a pair of coordinates you can choose for Copy or Share the coordinates in textual format. You can also choose here ‘Pronounce’ to let your device pronounce the coordinates in the language of your device or in English. Pronounce could a very useful option if you have to communicate coordinates clearly over an audio connection like a phone. There will be a much smaller possibility for errors and misunderstanding than if you would pronounce the coordinates by yourself. If you are making a phone call with your iPhone and let your device pronounce the coordinates, you yourself will not hear the coordinates being pronounced, but the other party will.

The physical address of a waypoint is also displayed in the details screen. If the address of a waypoint is still unknown, Topo GPS will look up this address using a reverse geocoder from Apple. For this you have to enable the option *Addresses - find automatically* in the *settings*. You have also to be connected to the internet.

In the bottom of the waypoint details screen a small map is shown with shows the waypoint relative to your current location. Note that this map will not show up if you have disabled location access for Topo GPS. On the left hand side of the map there is a ‘Plan route’ button. If you tap this button a route will be planned from your current location to the waypoint with the transportation means which is displayed below the plan button. If you tap the transportation mode button below the plan button you can *change the transportation means*.

If you scroll down to the bottom of the waypoint details screen, you can find the creation and modification date and time. Note that if you move the waypoint to another folder, the modification date and time is also updated.

In the bottom of the waypoint details screen you can find a toolbar with the following buttons:

- ‘<’ and ‘>’ button: Allows you to browse through the list of waypoints, or through the waypoints that are loaded on the map.
- Trash button: If you press this button a pop-up will show up asking you whether you would like to *remove the waypoint from your device*.
- Export button: If you press this button the export pop-up will show up which allows you to *export the waypoint*.
- ‘Edit’: Allows you to *edit the waypoint*.

3.4.1 Photos

An example of the *waypoint details screen* with a photo is shown below:

If you tap a photo in the waypoint details screen, the slide show screen will be opened with a larger version of the tapped photo. You can zoom in on the displayed photo by making a zoom gesture with two fingers. If the waypoint has multiple photos, you can browse through the available photos by sliding the current photo to the left or to the right. Sharing the photo is possible by pressing the ‘Export’ icon in the bottom right. If you tap ‘Edit’ on the top right you can add and remove photos.

Tapping the info button in the bottom toolbar of a photo slideshow shows the location a photo was taken and if available the direction in which it was taken on a map. Also additional details like the timestamp and altitude of the photo are shown. An example is shown in the figure below:



Fig. 12: The waypoint details screen with a photo.

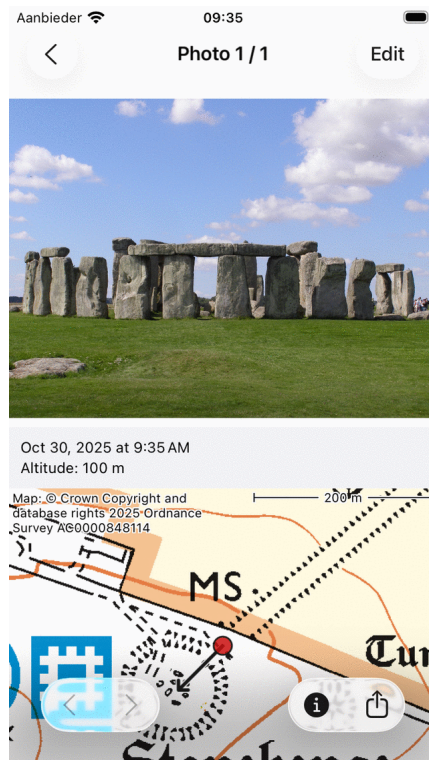


Fig. 13: The info screen in the slideshow shows the location where the photo was taken and the direction in which it was taken.

3.5 Waypoint quick actions

If you press long on a waypoint icon on the main map, a quick actions menu will be shown as in the figure below:

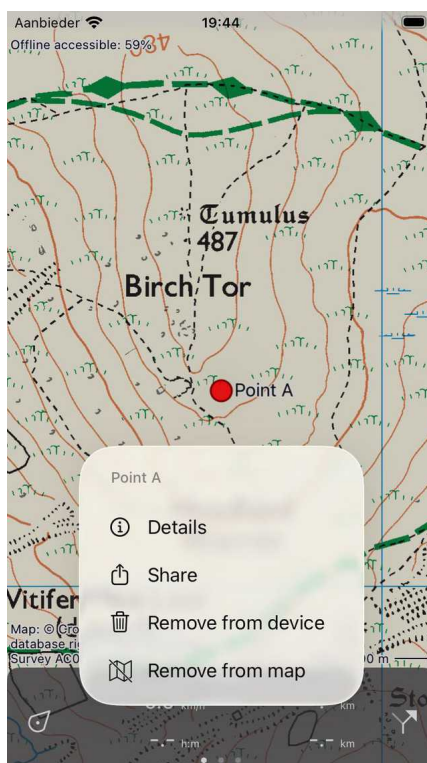


Fig. 14: The quick actions menu that appears when pressing long on a waypoint.

You can use the quick actions menu to view the *waypoint details*, to *share the waypoint*, and to remove the waypoint from the map.

To interact quickly with this popup, press long on a waypoint icon, hold your finger on the screen and move it to the desired item in the popup. Then release your finger.

3.6 Editing waypoints

To edit a waypoint you have to press the 'Edit' button on the bottom of the *waypoint details screen*. If you press this button an edit pop-up will appear like in the figure below:

The pop-up shows five possibilities to modify the waypoint.

- *Change icon*: Allows you to *change the icon of the waypoint*.
- *Move on map*: Allows you to *move the waypoint on the map*.
- *Edit coordinates*: Allows you to *edit the coordinates* of a waypoint.
- *Edit photos*: Allows you to *edit the photos* of a waypoint.
- *Edit text*: Allows you to *edit the title and description* of a waypoint.

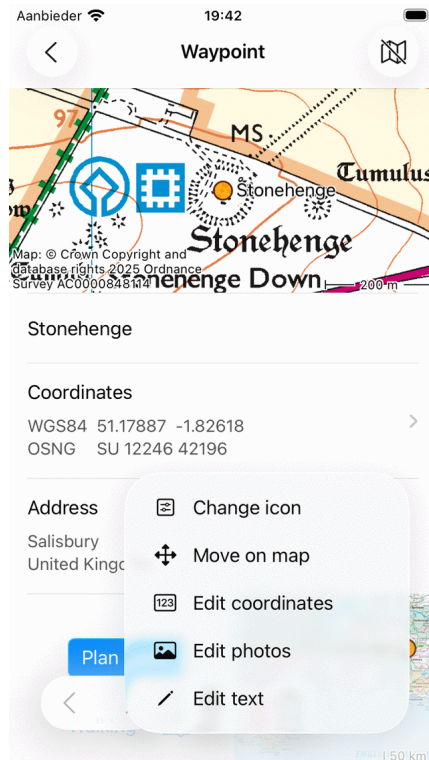


Fig. 15: A pop-up with five possibilities to modify a waypoint.

3.6.1 Editing title and description

By pressing 'Edit text' in the *edit pop-up* you can modify the title and the description of the waypoint. An example is shown below:

To save the changes you have to press 'Save' on the top right of the screen. You return to the waypoints details screen as you can see below:

3.6.2 Editing photos

By pressing the 'Edit photos' button in the *edit pop-up* you can add photos to the waypoint and remove photos from the waypoint. If you press this button the following screen will appear.

In the bottom toolbar of the photos screen you can find three buttons:

- *Folder button*: If you press this button you can import photos from your photo library to the waypoint.
- *Camera button*: If you press this button the camera will be opened. If you take a photo it will be added to the waypoint. You could also use Menu > Camera for this, then a waypoint is automatically created at your current location and the taken photo is added to it.
- *Trash button*: If you press this button you can remove the currently displayed photo from a waypoint.

If you have made changes to the photos of a waypoint you have to press 'Done' on the top right to save the changes. If you press 'Cancel' the photos will not be modified.

The added photos are always copied to Topo GPS. So removing the photo afterwards from your photo library does not remove the photo in Topo GPS. The resolution of the added photo can be set via 'Menu

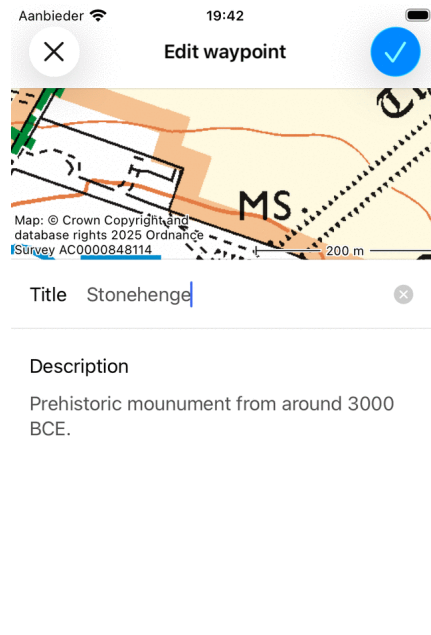


Fig. 16: Modifying the description of the waypoint 'Stonehenge'.

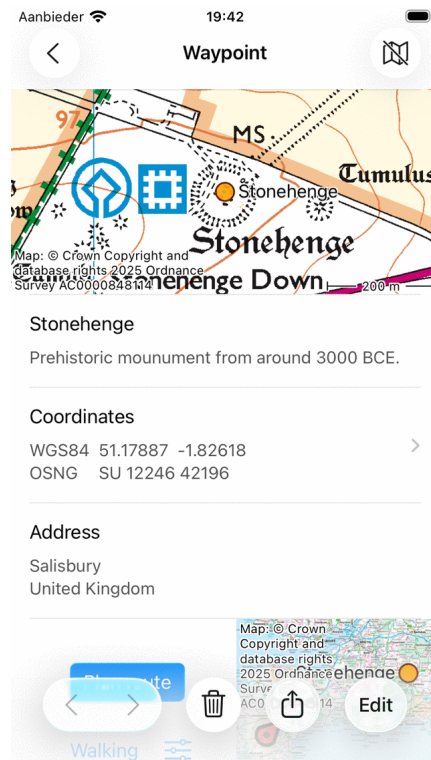


Fig. 17: The description of the waypoint 'Stonehenge' has been modified.



Fig. 18: *The photos screen if the waypoint does not have photos.*

> Settings > Camera > Photo size'. Larger photo sizes will require more disk space.

You can view the added photos in the *waypoint details screen*. Below you see an example of the 'Stonehenge' waypoint details screen with a photo:

If you tap a photo in the waypoint details screen, the photo screen will be opened with a larger version of the tapped photo. You can zoom in on the displayed photo by making a zoom gesture with two fingers. Sharing the photo is possible by pressing the 'Export' icon on the top right. If you press 'Edit' on the top right you can modify the photos of the waypoint. If the waypoint has multiple photos, you can browse through the available photos by sliding the current photo to the left or to the right. Tapping the info button on the bottom shows the location a photo was taken and if available the direction in which it was taken on a map.

3.6.3 Editing coordinates

By pressing 'Edit coordinates' in the *edit pop-up* the same screen appears when entering coordinates. If you press 'Save' on the top right the waypoint will be displaced to the entered coordinates.

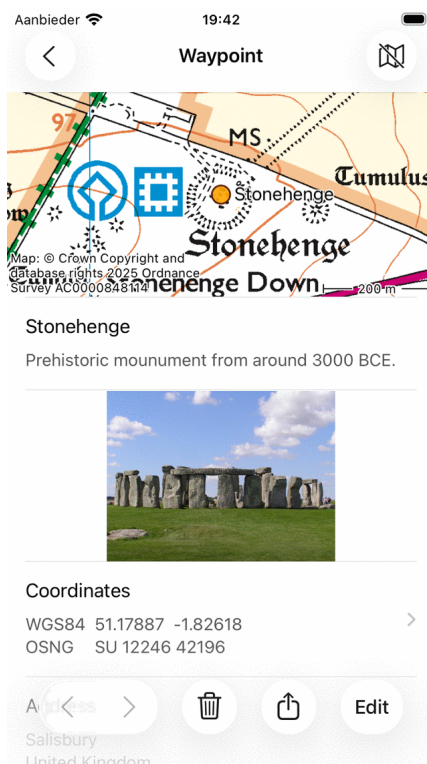


Fig. 19: *The waypoint details screen with a photo.*

3.6.4 Move on map

By pressing *Move on map* in the *edit pop-up* a screen will appear in which you can move the location of the waypoint manually on a map. You have to press long on the waypoint and can drag it to a new location. To save the new location of the waypoint you have to press ‘Save’ in the top right of the screen. Otherwise press ‘Cancel’.

3.6.5 Change icon

If you press ‘Change icon’ in the *edit pop-up* the *waypoint icons screen* will appear. The waypoint icons screen contains a list of available icons. The currently active icon of the waypoint has a grey background. If you tap an icon, the waypoint icon will be changed and you will return to the waypoint details screen. If the desired icon is not shown in the waypoint icons screen, you can *create a new icon* by pressing ‘New icon’ in bottom of the waypoint icons screen.

3.7 Removing waypoints

To remove a waypoint from your device you first have to open the *waypoint details screen*.

You can do this by pressing the info button right of a waypoint title in the *waypoints screen* or by tapping a waypoint that is loaded on the map.

You can remove the waypoint by pressing the trash icon on the bottom of the waypoint details screen. A pop-up will appear in which you have to confirm the removal as is shown below:

If you press ‘Remove’ the waypoint and all its photo’s will be removed from your device.

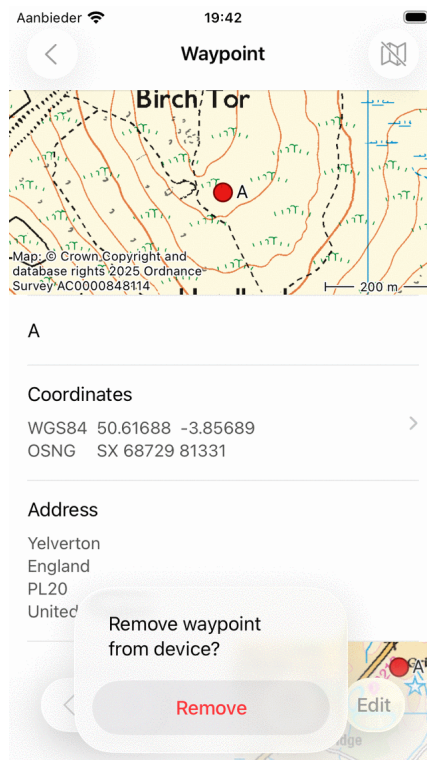


Fig. 20: Removing a waypoint.

If you have enabled *iCloud synchronization of waypoints* the waypoint will also be removed from iCloud and from all devices that are synchronized with the same iCloud account.

It is also possible to remove multiple waypoints at once from the *waypoints screen*. Press long on a waypoint item or tap 'More > Select' to enter the selection mode. Then *select* the waypoints that need to be removed. Next press the trash icon on the bottom of the screen and confirm the removal.

If you only want to *remove a waypoint from the map (and not from the device)* you have to tap the map icon with a slash in the top right of the waypoint details screen.

3.8 Selecting waypoints

In the *waypoints screen* (Menu > Waypoints) you can select waypoints and perform one of the following actions on the selected waypoints:

- Remove selected waypoints
- Move selected waypoints into a folder
- Export selected waypoints
- Load selected waypoints on the map
- Change icon of selected waypoints
- Remove selected waypoints from the map

Selecting waypoints is similar to *selecting routes*.

3.8.1 Opening selection screen

To open the selection screen and select the first waypoint, you have to press long on a waypoint item you want to select. Alternatively, you can tap the button ‘More’ on the top right of the screen and then tap ‘Select’.

To select more waypoints, tap a waypoint item in the selection screen. A checkmark will show up and the background of the waypoint item will become grey to indicate that it is selected. An example in which three waypoints are selected is displayed below:

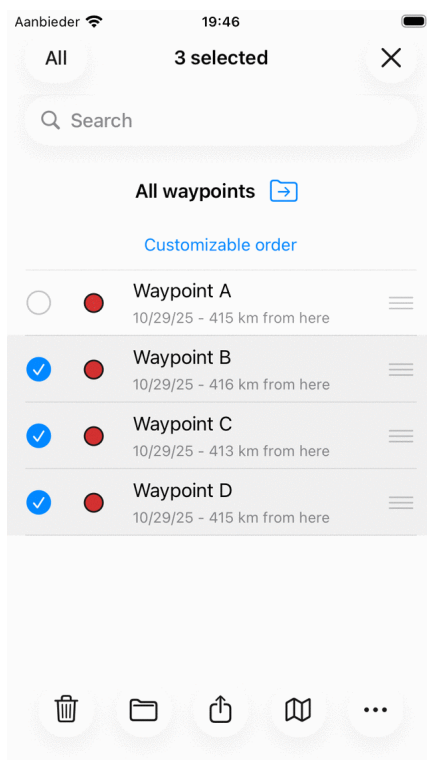


Fig. 21: Three selected waypoints.

The title of the selection screen shows how many items are selected. You can deselect a waypoint tapping a selected one. If you want to select all waypoints in the list, you have to press ‘All’ on the top left. To return to the usual waypoints screen you have to press ‘Cancel’.

To quickly select multiple waypoints you can long press on a item, leave the finger on the list and then go up or down. In the same way you can quickly deselect multiple items.

If you tap ‘All’ on the top left of the selection screen, all items listed will be selected.

It might be useful to first apply *filters*, and *search keywords*, and sort the waypoints, before selecting the required waypoints.

If you select a *waypoint folder*, the applied action will be carried out recursively to the contents of the folder. For example, if you select a folder by pressing long on the folder in the waypoints screen, and then tap the map icon in the bottom of the screen, all waypoints contained in the folder will be loaded on the map.

3.8.2 Performing an action

If you have selected the waypoints you can perform an action with one of the buttons in the toolbar on the bottom of the screen. The toolbar buttons are from left to right:

- *Trash button*: If you tap this button a pop-up will ask to whether you would like to remove the selected waypoints from your device (and iCloud if enabled). If you press 'Remove' the selected waypoints will be removed from your device. This cannot be undone.
- *Folder button*: If you tap this button a screen with the folder tree will be opened. You can select a folder and the selected waypoints will be moved to another *folder*.
- *Export button*: If you tap this button the *export pop-up* will be shown. In this pop-up you can select the kind of data to be exported and change the export settings. If you press 'Export' in the export pop-up the selected waypoints will be exported. Another pop-up with apps and actions will be shown. If you tap an app or action, the result of the export will be handled by the app or action.
- *Map button*: If you tap this button, the selected waypoints will be loaded on the map. The map will zoom automatically to the selected waypoints and you will be returned to the map.
- *More button*: If you tap the more button in the bottom toolbar, a menu will appear from which you can choose the following actions:
 - *Remove from map*: If you tap this button, the selected waypoints will be removed from the map.
 - *Change icon*: If you tap this button the waypoint icons screen will be opened. You can tap an icon in this screen to change the icon of the selected waypoints.
 - *Save as layer*: With this option you can combine the selected waypoints into a separate layer. In the pop-up that appears you can enter a title for the layer. After tapping save, the selected waypoints are copied into a newly created layer. They can be loaded and removed all together at once from the map via Menu > Layers.

As an example we now will load the three selected waypoints from the example above on the map by pressing the map icon. The map screen will appear and the map will be zoomed to the three selected waypoints as you can see in the figure below:

3.9 Waypoint icons

A waypoint is displayed on the map with an icon. If you *create a waypoint* you can choose an icon from the waypoint icons screen. The waypoint icons screen displays the list of available icons on your device. An example of this screen is shown below.

The waypoint icons screen can accessed in several ways when creating or modifying waypoints.

- From the *waypoint creation screen* by tapping the '>' in the 'Icon' row.
- From the *waypoint details screen* by pressing 'Edit > Change icon'.
- From the *waypoints screen* by pressing 'More > Select > More (bottom) > Change icons'.
- From the Enter coordinates screen by tapping the 'Icon' row.

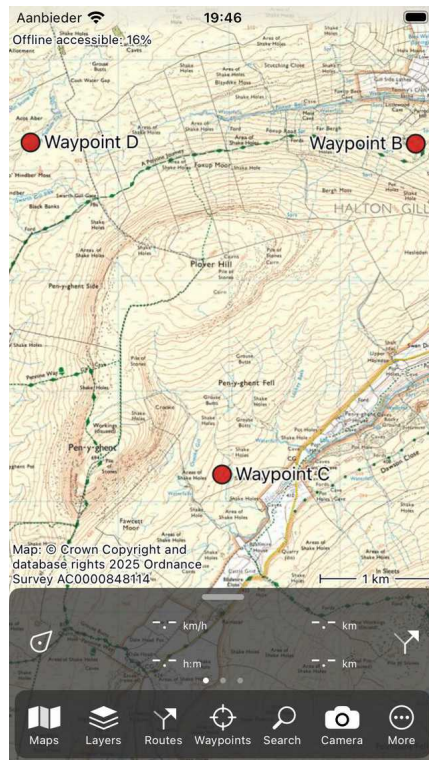


Fig. 22: The waypoints 'B', 'C', and 'D' have been loaded on the map.

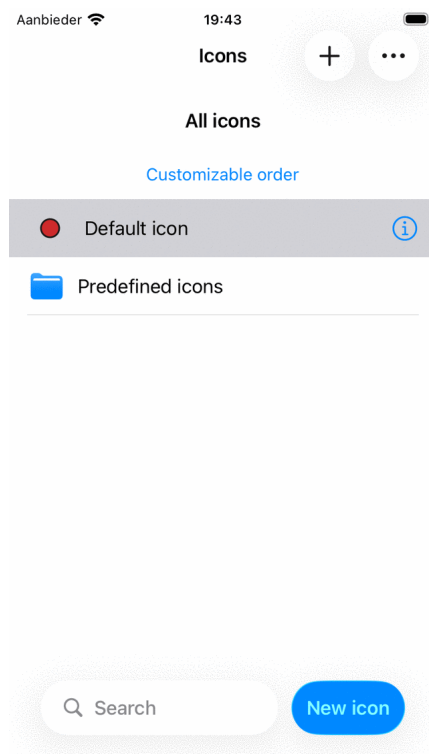


Fig. 23: The waypoint icons screen .

3.9.1 Default icon

In the top of the waypoint icons screen, the default icon is shown. This icon is used for all waypoints for which an icon was not explicitly set.

To change the default icon, tap the info button to open the ‘Edit icon’ screen. If you change the default icon, this will be reflected immediately in all waypoints that are using the default icon. You only need to change the default icon if you want to change the default red circle. Otherwise it is better to use one of the predefined icons or create a new icon.

3.9.2 Predefined icons

If you tap the folder ‘Predefined icons’ in the waypoint icons screen, the available predefined icons are shown. These are several circles, triangles, and squares of various colors. Also a list of icons with various symbols are shown. If you scroll down you can view more.

If the icon of your liking is not among the predefined icons, you can create one yourself.

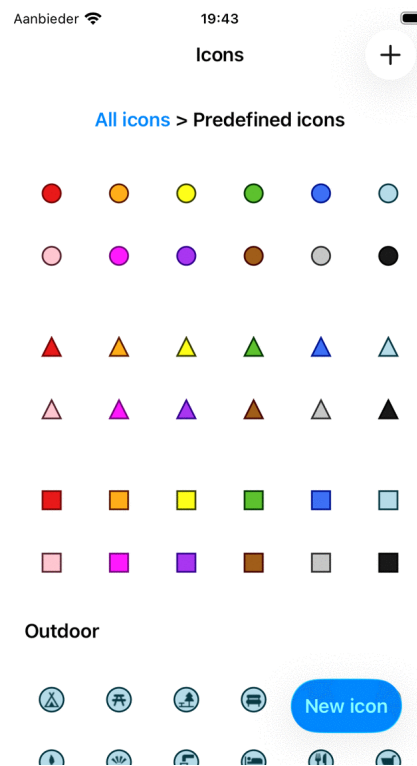


Fig. 24: *The predefined icons screen*

Using a predefined icon saves you the hassle of creating one yourself, but the drawback is that there is less customization possible.

3.9.3 Creating icons

To create a new icon tap ‘New icon’ in the bottom of the waypoint icons screen. The ‘New icon’ screen will be opened as in the figure below:

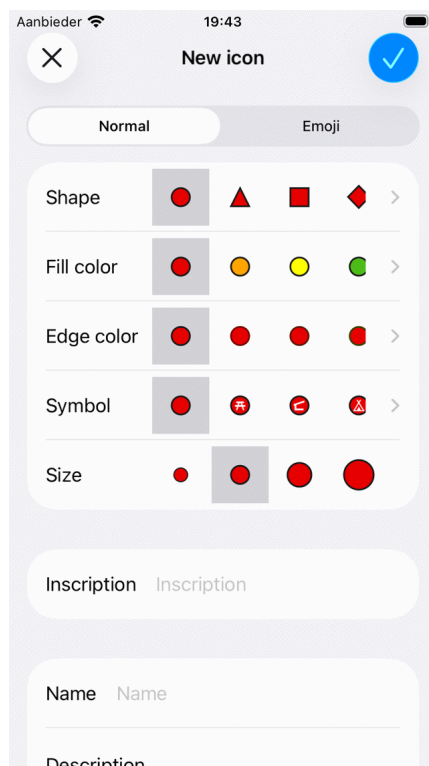


Fig. 25: *The new icon screen*

Using the tab selector in the top of the new icon screen you can choose between creating a normal icon or an emoji icon.

If you choose a normal icon you can change the following properties.

- *Shape*: Tap on one of the shown shapes to change the shape. Scroll to the right or tap ‘>’ to view more shapes. Possible shapes are: circle, ellipse, triangle, square, rectangle, rhombus, pentagon, hexagon, star, badge, and milestone.
- *Fill color*: Tap a fill color to change the fill color. Scroll to the right or tap ‘>’ to choose from more colors. If you tap ‘>’ you can also set the opacity of the fill color.
- *Edge color*: Tap a edge color to change the edge color. Scroll to the right or tap ‘>’ to choose from more colors.
- *Symbol*: Tap a symbol to choose a symbol or none. Scroll to the right or tap ‘>’ for more symbols.
- *Size*: Tap the desired size, you can choose between small, normal, large and extra large.
- *Inscription*: If you enter one or more characters in the inscription field, an inscription (for example an ‘A’) will be shown in the middle of the icon. The color of the inscription is the same as the edge color if the contrast with the fill color is large enough. If not, it is either white or black, depending on which color gives the most contrast with the fill color. You cannot combine an inscription with a symbol. You can also use an emoji as an inscription, if you switch the keyboard to emoji symbols.

The currently selected icon has a grey background.

If you select the emoji tab to create an emoji icon you can choose the emoji from a list of emojis. You can scroll down to view more. It is possible to set the size of the emoji icon by tapping the desired size. The icon then only is an emoji, without a border or background.

After you have set the icon properties, you can give the icon a name and a description. The name and description will be shown in the waypoint icons screen and also in the waypoint details screen of waypoints using that icon.

As an example we now will create an icon for ancient monuments. We choose a milestone as the shape, set the size to large, fill color to pink, and enter 'A' as inscription. Then for the name we enter 'Ancient monument' and as a description information about when to use this icon. The result is shown in the figure below.

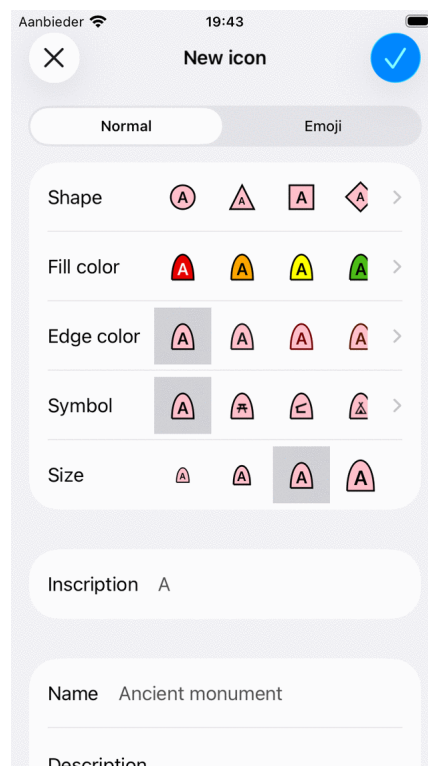


Fig. 26: The new icon screen in which a new icon is about to be created.

To save the icon, press 'Save' on the top right of the new icon screen. Then newly created waypoint icon will immediately shown in the waypoint icons screen as is shown below.

The newly created icon can now be used for *creating new waypoints*, and for *changing the icon of waypoints*.

3.9.4 Editing icons

To edit an stored custom icon in the waypoint icons screen, tap the info button next to the icon. You can change the properties of an icon in the same way as explained above when creating a new icon. Press 'Save' to confirm the changes and to return to the waypoint icons screen. If you make a change to a icon in this way, it will be immediately reflected in all waypoints that are using this icon.

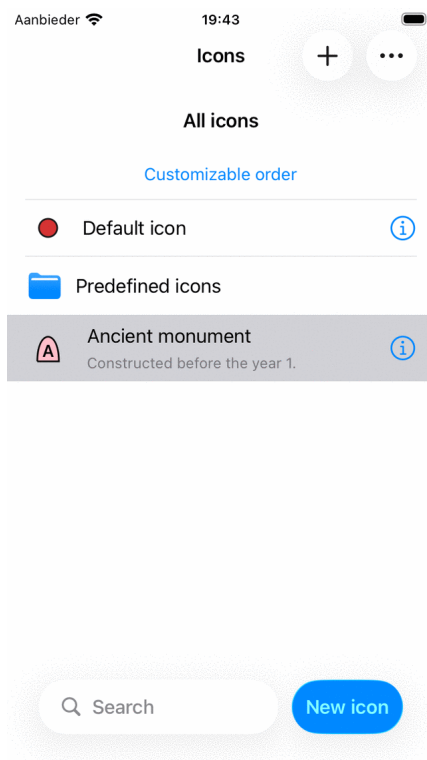


Fig. 27: The newly created icon for ancient monuments in the waypoint icons screen.

3.9.5 Changing icon of a waypoint

To change the icon of an individual waypoint, open the *waypoint detail screen*. Then tap 'Edit > Change icon'. The waypoint icons screen will be shown. Then select the desired icon in the waypoint icons screen. If the desired icon is not in the waypoints screen, tap 'New icon' in the bottom to *create a new icon*. The currently set icon has a grey background. After tapping the desired icon, you will return immediately and the waypoint will use the selected icon.

3.9.6 Changing icon of multiple waypoints

To change the icon of multiple waypoints open the waypoints screen via '*Menu > Waypoints*'. Then press 'More > Select' to enter the selection mode. Select the desired waypoints and press in the bottom toolbar 'More > Change icons'. Then the waypoint icons screen will be opened. Tap the desired waypoint icon. You will return immediately to the waypoints screen and the icons will be changed. If the desired icon is not in the waypoints screen, tap 'New icon' in the bottom of the screen to *create a new icon*.

3.9.7 Removing icons

If you press 'More > Select' in the waypoint icons screen you can select icons to be removed. Then if you press the trash button and confirm the removal, the icons will be removed. If there are still any waypoints that are using the icons that were removed, they will no longer use the removed icons, but the default icon instead.

3.9.8 Organizing icons into folders

It is possible to move the icons in the waypoint icons screen to folders. This is just like with waypoints and routes. In this way you can keep the waypoint icons organized.

Press 'More > Create folder' to create a new folder. To move waypoint icons into a folder press 'More > Select' and select the desired waypoint icons. Then press the folder icon in the bottom to open the folder tree. Select the folder to move the selected icons to the desired folder.

3.9.9 Changing order of icons

If the sort method (below search bar) is set to 'Customizable order' you can customize the order of the icons. Press 'More > Select' to enter the selection mode. By pressing long on the handle on the right hand side you can drag a waypoint icon to the desired position.

3.9.10 Exporting icons

If you tap 'More > Select' in the waypoint icons screen you can select icons to be exported. Then if you press the export button in the bottom right you can export the selected icons. The icons will be exported in the wsf (Waypoint Style Format) file format. This is a special XML file format designed for use in Topo GPS. Another user of Topo GPS (iOS) can open this file with Topo GPS. Then all icons in this wsf file will be imported and shown in the waypoint icons screen.

If you *export waypoints* the icons are also exported if you export the waypoints to gpx, kml/kmz or csv format. The waypoint with the icons can be imported fully into another Topo GPS app on iOS. However not all apps and programs will support the icon structure of Topo GPS. Default kml for example only supports round icons with a fill color. It might therefore be that if you import the exported file into another program or app the icons will not be visible.

3.10 Organizing waypoints

You can keep your waypoints organized by *creating folders* and moving waypoints into folders. It is also possible to change the order of the waypoints appearing in the waypoints screen if they are sorted in customizable order. In addition you can keep waypoints organized by assigning them *specific icons* and *filter them on icon*.

Folders are only visible in the *waypoints screen* if the *filter* (below the search bar) is disabled.

3.10.1 Creating a folder

To create a folder, first open the *waypoints screen* (Menu > Waypoints). Then tap More (top right) > New Folder. The new folder screen will be opened, an example is shown below:

To create a folder, you have to enter a name for the new folder. The default location of the newly created folder is the currently active folder in the waypoints screen. If you want to create the new folder in another folder, you have to tap the 'Location' section and choose a folder. When you are done, tap 'Save' to create the folder.

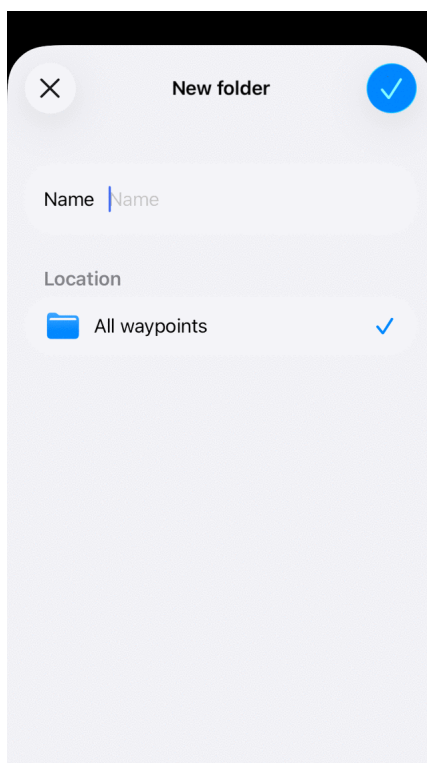


Fig. 28: *The new folder screen*

3.11 Searching waypoints

In the waypoints screen (Menu > Waypoints) you can search waypoints by *entering keywords in the search bar*, and by *applying filters*. Furthermore you can sort the waypoints in various ways.

3.11.1 Searching waypoints with keywords

If you enter a keyword in the search bar in the waypoints screen, only waypoints will be shown which have the keyword in its title, description, street, town, province, two character iso country code, or zip code. Search is case insensitive. If you search in a folder, also all search results in descendant folders will be displayed. If a *filter* is applied, the search will restrict itself to the filtered waypoints.

Below an example is shown in which 'stone' was entered in the search bar. Only the 'Stonehenge' waypoint is shown.

3.11.2 Sorting waypoints

Below the folder/filter bar, the current sort method is displayed in the middle. If you tap the sort button you can change the current sort method between:

- *Customizable order*: The waypoints are sorted in customizable order. If you did not change the order manually, the most recent added waypoints are on top.
- *Closest on top*: The waypoints are sorted according to their distance to your current location, the closest waypoint is on top.

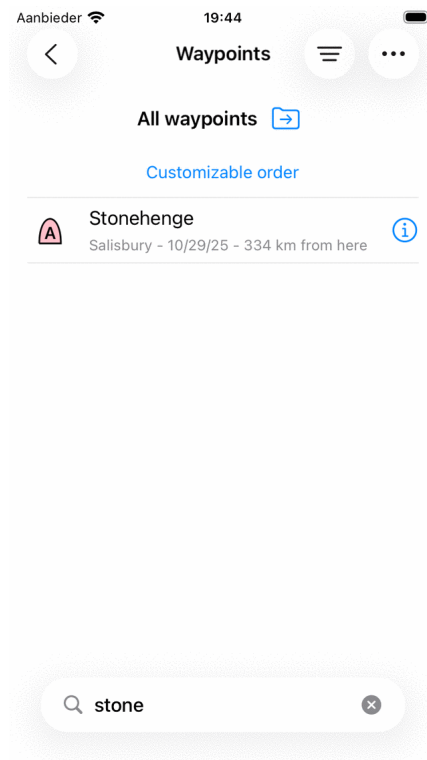


Fig. 29: Searching waypoints with the keyword 'stone'.

- *Closest to center map on top*: The waypoints are sorted according to their distance to the current center of the map, the closest waypoint is on top.
- *Newest on top*: The waypoints are sorted according to their creation time, the newest is on top.
- *Oldest on top*: The waypoints are sorted according to their creation time, the oldest is on top.
- *Most recently updated on top*: The waypoints are sorted according to the time at which they were last changed, the waypoint that was changed most recently is on top.
- *Least recently updated on top*: The waypoints are sorted according to the time at which they were last changed, the waypoint that was changed the longest ago is on top.
- *Alphabetically*: The waypoints are sorted in alphabetical order.
- *Reverse alphabetically*: The waypoints are sorted in reversed alphabetical order.

3.11.3 Filtering waypoints

It is possible to filter waypoints on location and on the kind of icon. To enable a filter, tap the filter button in the waypoints screen. If the filter is enabled, the filter button has a blue background, as in the figure below. If the filter is disabled, it has a normal appearance.

In the figure above you see an example of an enabled filter. Below the navigation bar a description of the currently active filter is displayed. Here the waypoints are filtered on location, only waypoints within 10 km of the current location are shown. If you tap the filter description you can modify the current filter. To disable the filter, tap on the filter button.

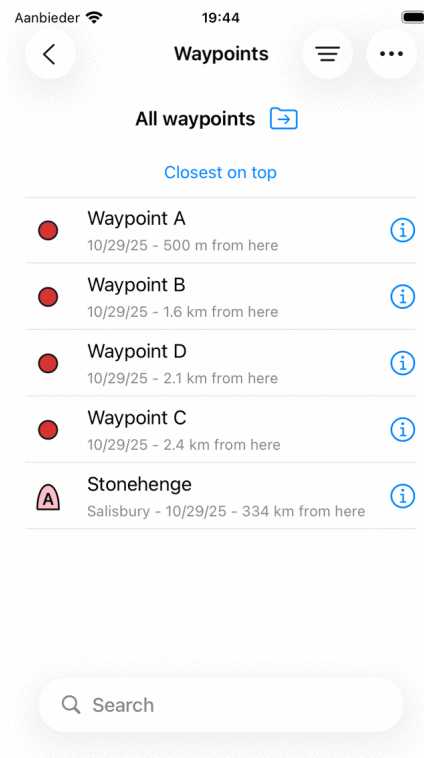


Fig. 30: *Sorting waypoints on distance to current location.*

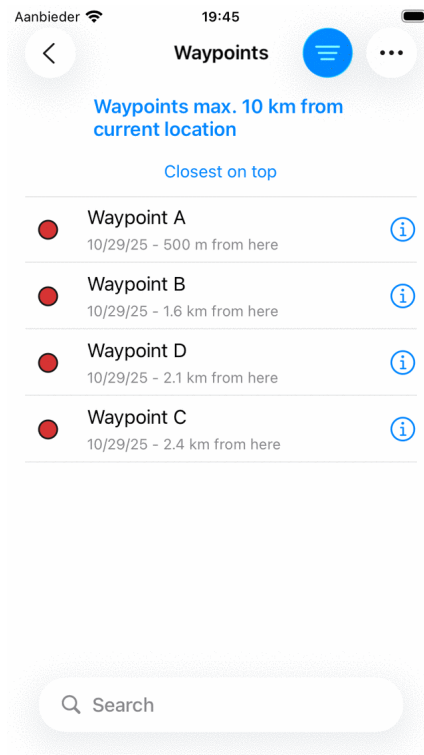


Fig. 31: *A filter is enabled.*

3.11.3.1 Filtering on location

To filter the waypoints on location, tap the filter button to enable the filter. Then tap the filter description to modify the current filter. The following screen will be shown in which you can change the current filter:

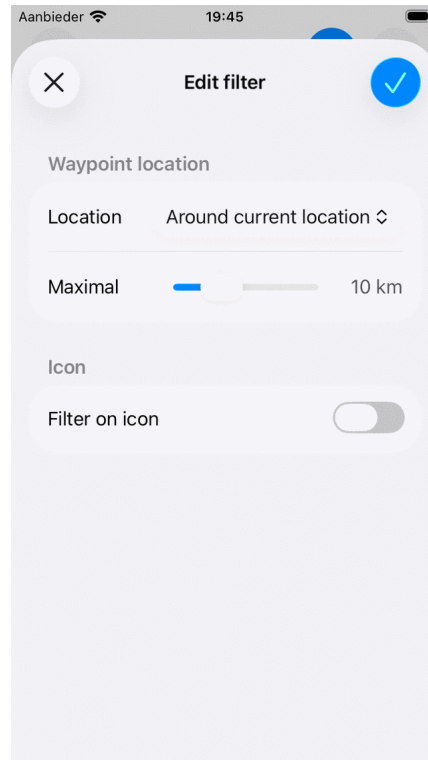


Fig. 32: *Modifying a filter.*

In the section ‘Waypoint location’ you can change the properties of the location filter. In the example above it is set to ‘All waypoints within 10 km of your current location’. The slider can be moved to determine the maximal distance of shown waypoints to a specific point. Above the slider, the location of the location filter is displayed. If you tap it, you could change it to:

- *Everywhere*: There is no filtering on location.
- *Current location*: Only waypoints within a certain distance of the current location are shown.
- *Within selected area*: A map will be shown, which you can move and zoom to the desired area. Only waypoints in the shown area on the map are shown in the waypoints screen.
- *Visible part of map*: Only waypoints that are within the bounds of the currently visible part of the main map are shown in the waypoints screen. In contrast to the ‘Within selected area’ filter, this is a dynamic filter. It changes if you change the position of the map in the main screen.
- *Custom location*: If you enter a custom location or coordinates only waypoints within a certain distance of the entered location are shown.

If you choose ‘Within selected area’, a map with a gray overlay will be shown as in the figure below:

The gray overlay area indicates the area the filtered waypoints must be located in. You can resize the overlay by holding one finger and moving up-down or left-right, and you can zoom, rotate and move the map to change the selected area.

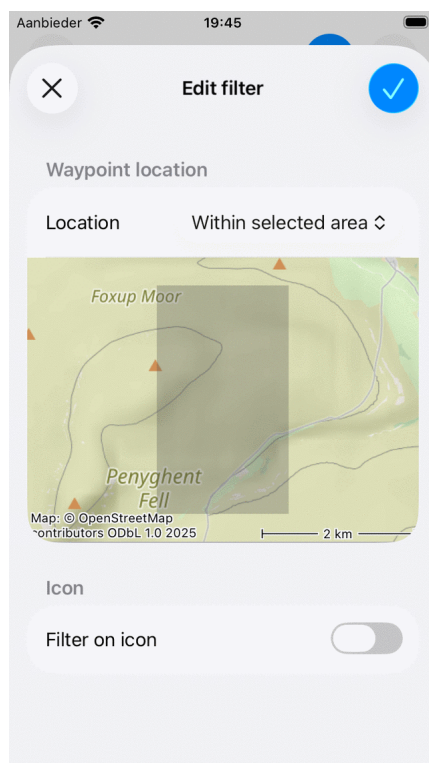


Fig. 33: Setting a 'Within selected area' filter.

If this filter is applied, only waypoints in the selected area in the 'Edit filter' screen will be shown in the waypoint screen as in the example below:

To view all waypoints in a certain area, it is also possible to *select part of the main map* and tap 'Waypoints' in the pop-up.

3.11.3.2 Filtering on icon

To filter the waypoints on icon, tap the filter button in the waypoints screen to enable a filter. Then tap the filter description to modify the current filter. Then in the bottom of the filter edit screen, enable filtering on icon:

In the figure above, filtering on icon is enabled. The icon was set to 'Ancient monument'. To modify this specific icon, tap on the icon. Then the *waypoint icons screen* will be opened from which you can select another icon.

When applying a filtering on icon, only waypoints with a specific icon will be shown in the waypoints screen, as in the figure below. There you see only waypoints with the 'Ancient monument' icon. To indicate that an icon filter is active, the icon on which is filtered is displayed below the search bar left of the filter description.

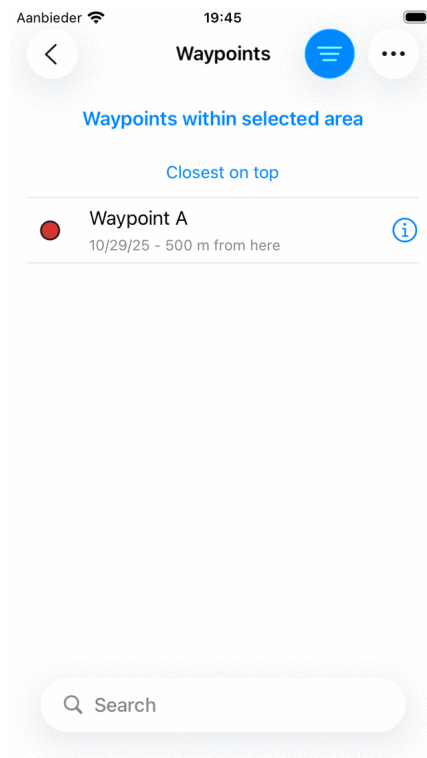


Fig. 34: Only waypoints within a selected area are shown.

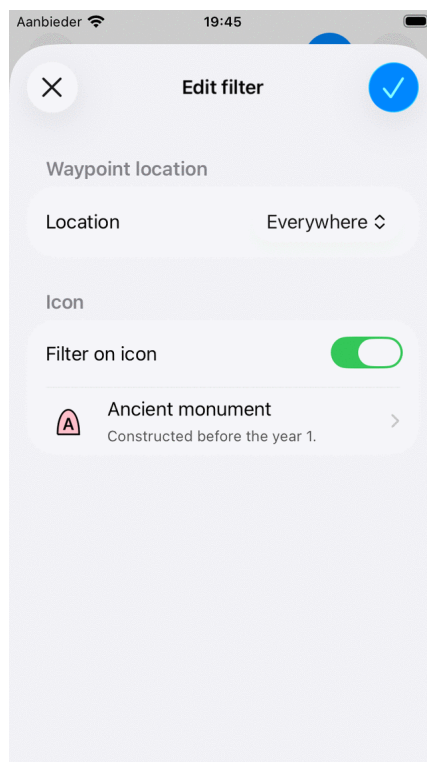


Fig. 35: Filtering on icon is enabled.

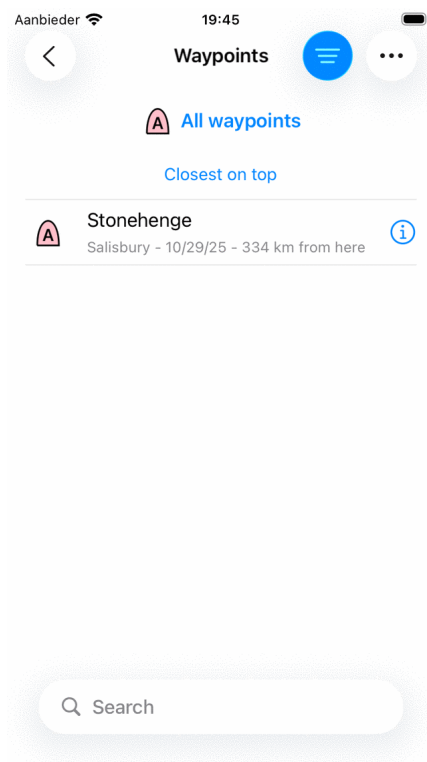


Fig. 36: Filtering waypoints on 'Ancient monument' icon.

3.12 Exporting waypoints

To export a single waypoint, open the *waypoint details screen* and tap the export icon in the bottom toolbar.

To export multiple waypoints, open the *waypoints screen* (Menu > Waypoints). Then open the *waypoint selection screen* by tapping More > Select. It might be useful to apply filters and/or a search term. Select the desired waypoints and folders and tap the export icon in the bottom toolbar.

To export the waypoints that are loaded on the current visible part of the main map screen, tap *Menu > Maps > Export visible items*. Note that you then also might export routes if they are shown on the map.

After pressing the export button the export pop-up will appear in all cases, an example is shown below:

In the export pop-up you can select the kind of data that will be exported. The kind of exported data can be any combination of the following:

- *Geodata*: If you include 'Geodata' a data file containing the waypoint(s) will be exported. The file format is shown in the subtitle of the geodata item. In the example above it is gpx.zip. If you press *settings* you can change the data format. Supported file formats for exporting waypoints are gpx, gpx.zip, kml, kmz, geojson, geojson.zip, csv and csv.zip. If you choose geojson or csv you can also choose the spatial reference system (coordinates type) in the export settings.
- *Photos*: If you include 'Photos' the photos of the waypoint(s) will be exported as well. This item is not available if there are no photos. If you have enabled compression in the *export settings* the photos are included in the zip file or kmz file.
- *Map*: If you include 'Map' a map of the waypoint(s) will be exported. The pixel size of the map and the data format are displayed in the subtitle. You can change the pixel size and the data format in the *export settings*. If you enable the switch 'Annotate map' you can draw remarks on the map

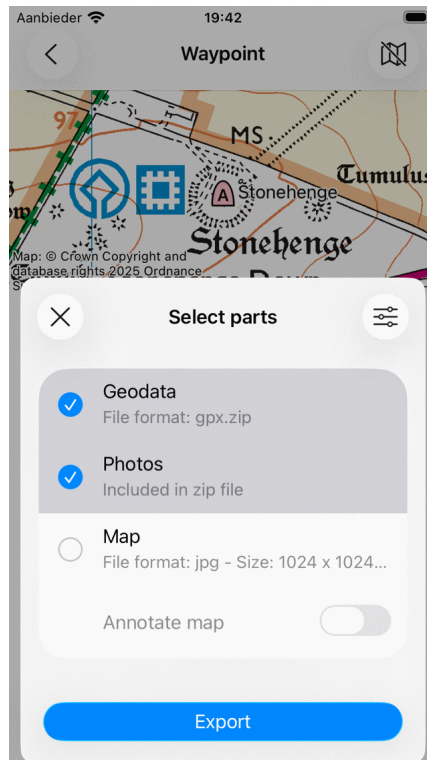


Fig. 37: *The export pop-up.*

before sharing the exported map.

After you have selected the kind of data to be exported you can press 'Export' in the bottom of the export pop-up to export the waypoint(s). Then a regular iOS pop-up will show up in which you can pick an app to send the exported data to. For example, iMessage to send the waypoint to a friend, or the files app to save the waypoint on the cloud.

3.12.1 Export settings

In the export pop-up you can also change the export settings by pressing the 'Settings' button on the top right of the export pop-up.

The first section in the export settings screen is about geodata. Here you can set the data format of the to be exported waypoint(s). By tapping 'Waypoint data format' you can choose between gpx, kml, csv and geojson. You can decide whether you want to compress the data. If you enable compression the exported geodata file will be zip compressed. The file size will be much smaller than without compression.

If you export to csv or geojson, you can also choose the spatial reference system (coordinates system) to be used in the exported data.

The remaining sections deal with the map (image) that can be exported. You can choose the image format of the exported map. You can choose between jpg, png and pdf. You can set the desired pixel width and height with the sliders. To generate a map sometimes map tiles need to be downloaded. You can determine if you want to allow cellular downloads of map tiles.

3.12.2 Exporting all waypoints

To export all waypoints stored on your device, open the *waypoints screen* (Menu > Waypoints). Make sure that the filter is not active (filter button has a blue edge). Go to the root waypoint folder, so that 'All waypoints' is displayed below the search bar. Make sure that the search bar is empty. Then open the *waypoint selection screen* by tapping More > Select. Press 'All' on the top left to select all waypoints and folders. Then tap the export icon in the bottom toolbar to open the export pop-up. Select the kind of data to be exported in the export pop-up and press 'Export'.

3.13 Importing waypoints

It is possible to import waypoints in Topo GPS in the following file formats: gpx, kml/kmz, csv, geojson, jpeg, heic, and heif. Multiple files of these types can also be imported at once if they are compressed as a zip file. If the files are organized into folders in the zip file, this folder structure will be imported as well and visible in the waypoints screen.

Separate photo's will only be imported if they contain a location in the EXIF metadata. For every photo a waypoint will be created at its location and the photo is added to the waypoint. If you want to import multiple photos at once, first create a zip file, add the photos, and then import this zip file.

To import waypoints you could try to tap on a file icon. Most often an app picker will show up. You then have to select 'Open with Topo GPS' or 'Copy to Topo GPS' and the file will be imported in Topo GPS.

Sometimes it is useful to use drag and drop. For that have to press long on the file or item and move your finger to drag it. Then you have to move it into the Topo GPS main map screen. On an iPhone, after you have long press on a file or item, you have to open the app switcher with a second finger by swiping the screen upwards at the bottom. Now still holding the first finger, you can use your second finger to switch to Topo GPS, and if you are at the main map screen you can drop the file here. It will then be automatically imported.

Alternatively you could import the files directly into Topo GPS by tapping *Menu* > More > Import file in the main screen as shown below. Then files app will be opened. Here you can select a cloud storage, like iCloud, Dropbox, OneDrive or Google Drive. Then you can browse through your files and select the files you want to import.

If the waypoints were imported succesfully, you will return to the main map screen and the map will be zoomed to the imported waypoints. In the waypoints screen (Menu > Waypoints) all imported waypoints can be found in a newly created folder.

3.14 Synchronizing routes and waypoints with iCloud

Routes and waypoints can be synchronized automatically with iCloud in Topo GPS. This makes all your routes and waypoints accessible on all your devices. This has two advantages:

- *Convenience*: For example, you plan a hike on your iPad. If you save that route, it will be available on your iPhone within a few seconds. You can go outdoors with your iPhone to walk the planned route. Then if you record your route on your iPhone and save it when finished, the recorded route will be accessible on your iPad as well. Then you can view your recorded route on your iPad.
- *Backup*: With synchronization a copy of all your routes and waypoints will be made on iCloud. If your remove Topo GPS or if your loose your device, your routes and waypoints will not be lost.

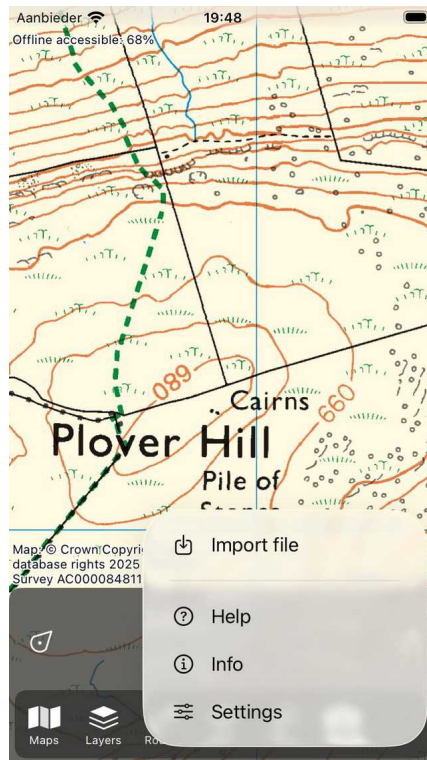


Fig. 38: Tap Menu > More > Import file to import a file.

3.14.1 Required settings

To enable iCloud synchronization of routes and waypoints you have to do the following.

First you have to be logged in to iCloud (Settings > iCloud). If you want to synchronize between devices, these devices should use the same iCloud account.

Next you should enable on all devices the iOS setting: Account > iCloud > Topo GPS, like in the figure below:

Finally you have to enable the Topo GPS *setting* (Menu > More > Settings) Routes and Waypoints - Synchronize with iCloud, as is shown below:

3.14.2 Automatic synchronization

If the settings are correct, no more action is required, synchronization will occur completely automatically. All modifications to routes and waypoints will be sent to iCloud when possible. If routes or waypoints are changed on iCloud, they will be changed on your devices as well.

Below you see an example of iCloud synchronization with an iPhone and iPad. First the routes screen on the iPhone:

Due to iCloud synchronization, the saved routes screen of the iPad contains exactly the same routes in the same order as the iPhone, as you can see below:

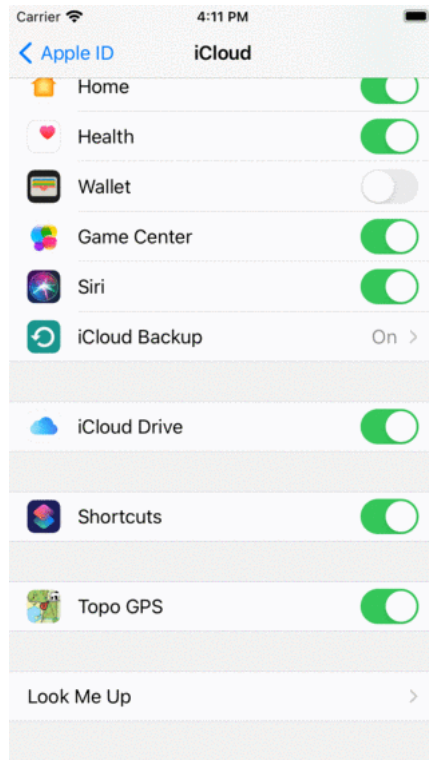


Fig. 39: To synchronize routes and waypoints with iCloud, the iOS setting *iCloud > Topo GPS* should be enabled.

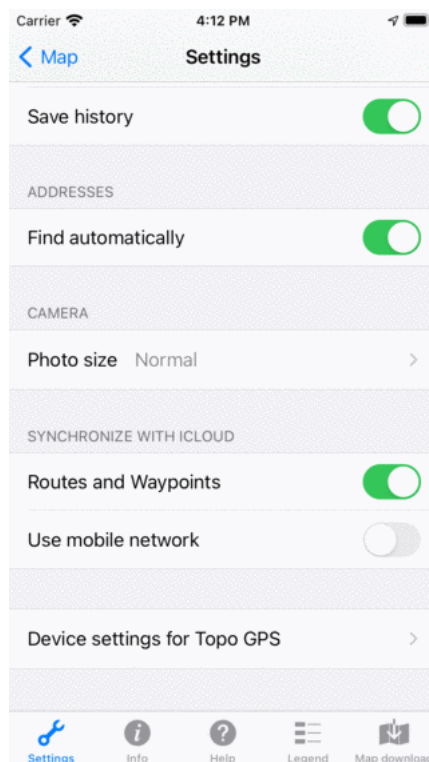


Fig. 40: To synchronize routes and waypoints with iCloud, *Menu > More > Settings > Routes and Waypoints - Synchronize with iCloud* should be enabled.

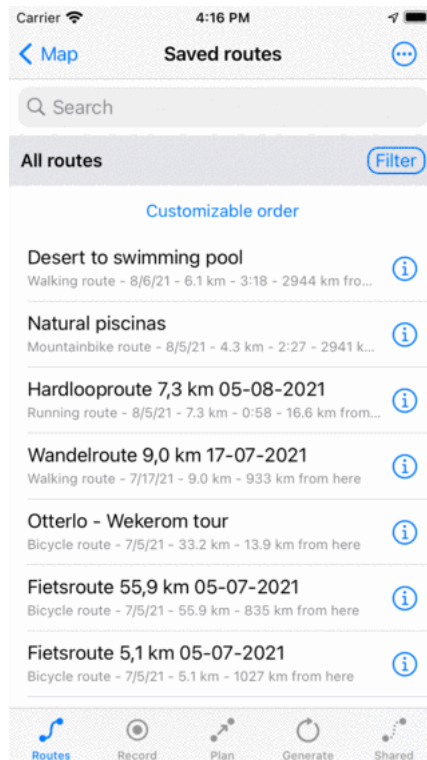


Fig. 41: *The routes on an iPhone.*

3.14.3 Percentage synchronized with iCloud

To see the percentage of routes or waypoints synchronized with iCloud, go to the waypoints or routes screen. Pull the list with waypoints or routes down. On the top the percentage of items synchronized with iCloud will be displayed, as you can see in the example below:

3.14.4 Details of iCloud synchronization

If you enable iCloud synchronization, your routes and waypoints will still be stored locally on your device. This ensures that your routes and waypoints remain always accessible, even without internet connection and if iCloud is unreachable.

If synchronization is enabled, a copy of all routes and waypoints (with corresponding photos) will be made on iCloud.

Suppose that you have a number of devices which each contain a number of routes and waypoints. Now, enable iCloud synchronization on all these devices. On each device the combination of all routes and waypoints will now be accessible. In case similar routes were available on different devices, it could happen that some routes appear multiple times in the routes screen after synchronization. You can remove this duplicates manually, and this only has to be done once.

If you remove a route or waypoint from a device, they will be also removed from iCloud and all other devices automatically.

If you edit a route or waypoint on one device, and at the same time also at another, a synchronization conflict could occur. Topo GPS then always synchronizes the route that has last been modified and does not give a warning.

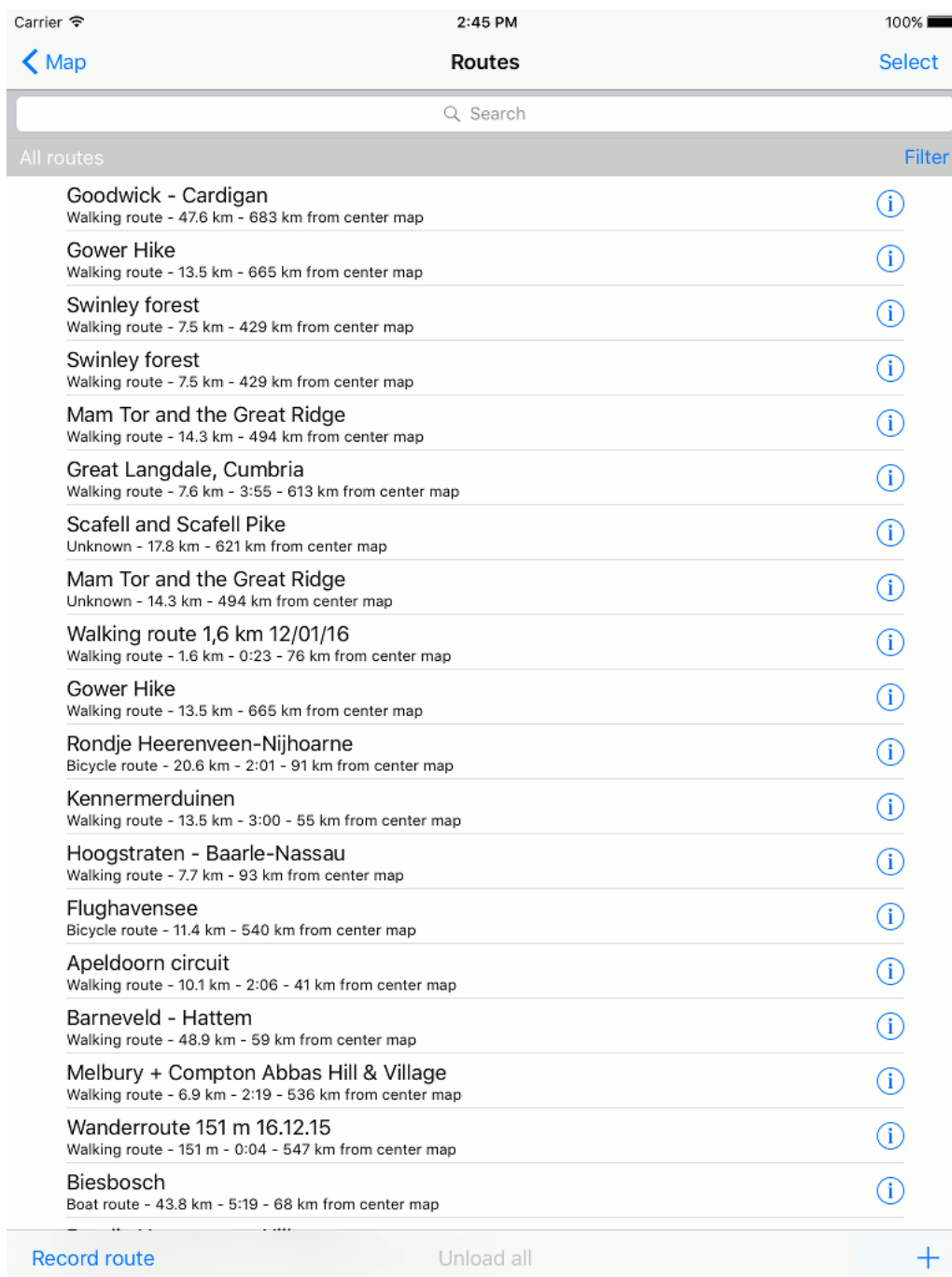
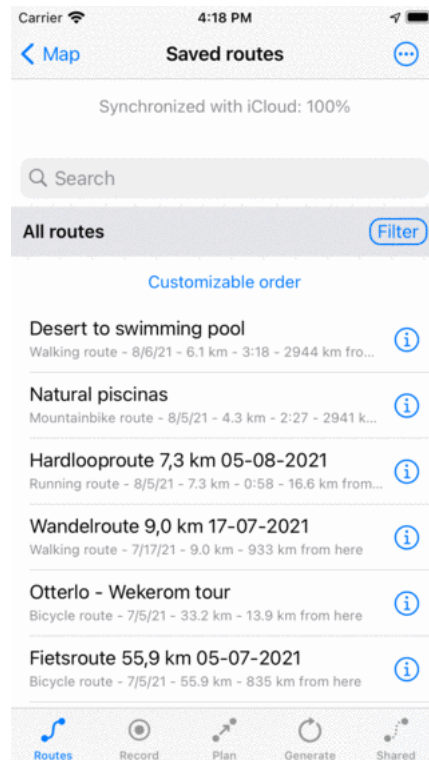


Fig. 42: The routes screen on the iPad contains exactly the same routes as the iPhone due to iCloud synchronization.



The speed at which routes and waypoints are synchronized and become available on other devices depend on the quality of the network connection and the battery level. In good circumstances a route/waypoint will be available on another device within 10 seconds, but sometimes it can take longer.

If you open the routes/waypoints screen all not synchronized modifications will be synchronized. By opening the routes/waypoints screen you can hence force a synchronization.

If you would like to synchronize routes and waypoints on a mobile network (be aware this can lead to increased data traffic and battery usage) you have to enable the Topo GPS setting: Synchronize with iCloud - Use mobile network. Also the iOS settings iCloud > Use mobile data should be enabled.

The routes and waypoints that are synchronized with iCloud, are only accessible from within the Topo GPS app with your iCloud account. People using other iCloud accounts and the developers of Topo GPS cannot see your routes and waypoints. You will not find your routes in iCloud Drive.

3.14.5 Disabling iCloud synchronization

If you do not longer want to synchronize your routes and waypoints with iCloud, you can disable synchronization in the Topo GPS *settings*. If you disable iCloud synchronization a pop-up will appear, as is displayed below:

You have to choose whether to keep or remove all routes and waypoints from iCloud. In both cases all routes and waypoints will be kept locally on your device. Locally no routes and waypoints will be removed.

- *Keep*: The routes and waypoints will be kept on iCloud, and synchronization via others possible devices can continue as normal.
- *Remove*: All routes and waypoints will be removed from iCloud. On other possible devices on which iCloud synchronization is still enabled, an alert will appear. This alert will tell the user that all its routes and waypoints have been removed from iCloud. The alert shows to options. The user

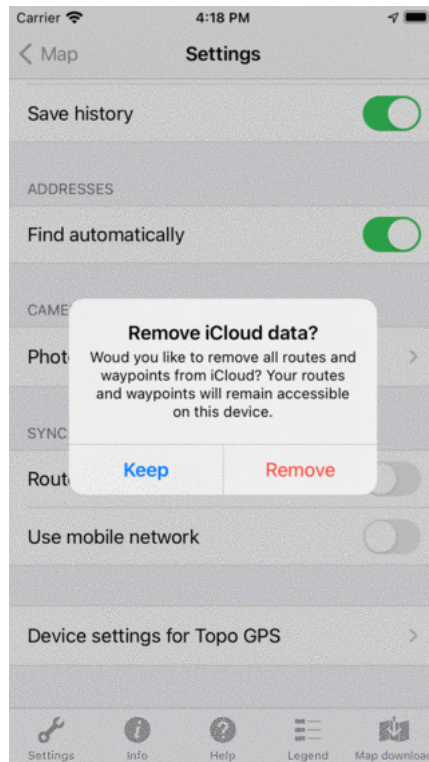


Fig. 43: *If you disable iCloud synchronization, you will be asked whether you want to remove all routes and waypoints from iCloud or to keep them on iCloud.*

could decide to remove all routes/waypoints locally. Or to resynchronize all locally stored routes with iCloud.

ROUTES

A route is a collection of points that can be *shown as a curve on the map*. A route can have possible additional information (like photo's and a description) that can be shown in the *route details screen*.

In Topo GPS you can *import, plan, generate, record, and export* routes. This can all be done via the *routes pop-up*. You can open the routes pop-up by either tapping the *route button* on the dashboard or by tapping *Menu > Routes*.

4.1 Routes pop-up

Routes can be created, imported and shown on the map via the routes pop-up. The routes pop-up can be opened by tapping the *route button* on the dashboard. This is the button in the bottom right of the *main screen*. Alternatively you can open the routes pop-up by tapping *Menu > Routes*.



Fig. 1: *The routes pop-up (Menu > Routes).*

The routes pop-up contains the following items:

- *Record route / Stop recording*: If you tap this item you can *start or stop recording a route*.

- *Generate a route*: If you tap this item you can *generate a route*.
- *Plan a route*: If you tap this item you can *plan a route*.
- *Shared routes*: If you tap this item you can find *routes shared by other Topo GPS users*. You can browse through these routes and import them on your device.
- *Saved routes*: If you tap this item, the routes screen is opened. This screen shows the routes that are stored on your device locally. Using this screen you can for example *load routes on the map* and export your routes.

To quickly interact with the routes pop-up, press the the route button or Menu > Routes, then hold your finger on the screen and move it to the desired item in the pop-up. Then release your finger.

4.2 Loading routes

To load a route on the map, you first have to tap the *route button* on the dashboard or Menu > Routes to open the *routes pop-up*. Then tap the 'Saved routes' item to open the saved routes screen. The saved routes screen contains all routes that are locally saved on your device.

An example of the the saved routes screen is displayed below:

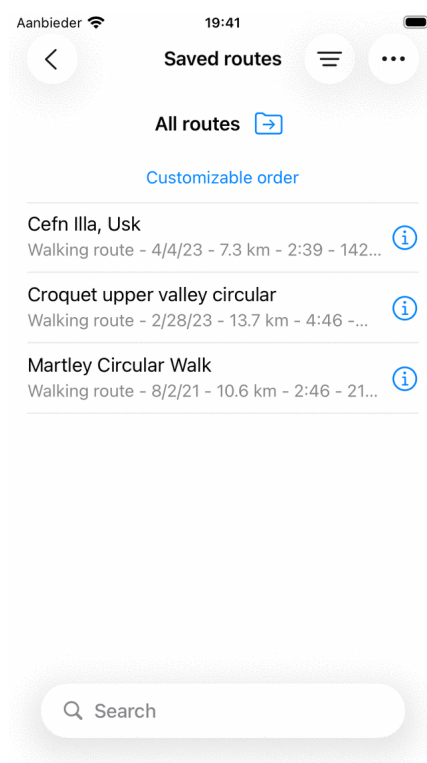


Fig. 2: An example of the 'Saved routes' screen.

A list of routes is shown in the saved routes screen. In the example above there are three routes.

Directly below the titles of the routes you can see the route type and the length of the route. If the route is recorded, the duration is displayed as well. Also the distance of your current location to the start or end point of the route is shown.

To load a route on the map, you have to tap the title of the preferred route.



Fig. 3: A route has been loaded on the map.

As an example we now will now load the last route in the list. The result is shown in the figure below.

The map moves and zooms automatically so that the complete route is visible on the map. The blue line indicates the route. The white arrows on the blue line indicate the direction of the route. The circular distance markers on the route line indicate the distance on the route.

The length on the top right of the *dashboard* indicates the sum of the lengths of all routes that are currently loaded on the map. For this the symbol 'rte' is used. If you are located on the route, the label 'dtg' (distance to go) is shown instead. It indicates the distance till the end of the route.

If you want to see the route in more detail, you can *zoom in* on the map.

If you are following a route, it possible to get a notification when you accidentally leave the route that you are following. This is useful, because you will be noticed in time that you are going in the wrong direction. For this, you need to enable the option 'Notifications - Deviate from route warning' in the Topo GPS Settings. Next you need to allow Topo GPS to send notifications in the device settings. Also we would advise you to *record* your route, so that you can also get a notification when the app is in the background. Notifications are send only once if you deviate from a route more than 25 m.

If you tap the route line in the main screen, or the info (i) button on the right hand side of the saved routes screen, the *route details screen* will be opened. In the route details screen you can find more information about the route, like for example the title, description and a height profile.

You can alter the color, width, and transparency of the route line in the *route details screen* by tapping Edit > Edit line style.

If you open the routes screen again, you can see that the loaded route has obtained a gray background color, as in the example below:

A gray background color in the routes screen indicates that the route is currently loaded on the map.

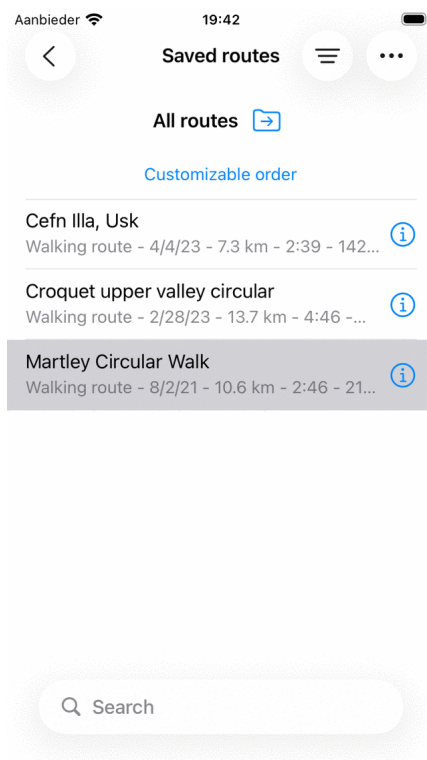


Fig. 4: In the route screen it can be seen that the last route has been loaded on the map.

It is also possible to load multiple routes on the map. This can be useful if you want to combine or compare different routes. If you tap another route in the routes screen it will be added to the map, just as the first loaded route. The route line color will be different from the first route.

It is also possible to load multiple routes at once. Tap long on a route in the routes screen to *enable the selection screen*. Then select the desired routes and tap the map icon in the bottom toolbar.

In the next section it is explained how to *remove a route from the map*.

4.3 Removing routes from map

A route can be removed from the map via the saved routes screen and from the route details screen.

4.3.1 Routes screen

Tap the route button on the dashboard to open the *routes popup*. Then tap the item 'Saved routes'. The saved routes screen will be opened, an example is shown below.

The routes with a gray background are currently loaded on the map. If you tap a gray item, it will be removed immediately on from the map.

It is also possible to remove all loaded routes from the map at once by tapping: More (top right in the saved routes screen) > Remove all from map.

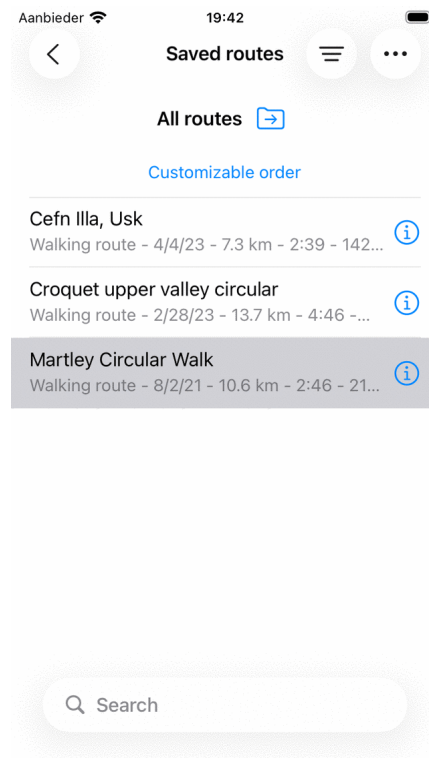


Fig. 5: An example of the routes screen with one loaded route.

4.3.2 Map

If you tap a route line of a route that is loaded on the map, the *route details screen* will be opened. You can tap the remove from map icon in the top right of the route details screen. The route will be immediately removed from the map and you will return to the main screen.

4.4 Recording routes

When recording your route all the locations your are visiting are collected. If you finish the recording, you can save the locations as a route.

To record a route you need make sure that Topo GPS is given access to your precise location while using the app in the iOS Settings > Privacy > Location Services > Topo GPS.

4.4.1 Starting a recording

To start a route recording, you have to open the *routes pop-up* (Menu > Routes) and tap the item 'Record route'. A pop-up will appear in which you are asked whether you want to start a recording as in the example below:

If you tap 'Start' in the pop-up, the route recording will be started.

Alternatively, you can also start recording a route from the *main screen*, by tapping the *record timer* on the dashboard.



Fig. 6: Starting the recording of a route.

4.4.2 Recording route

If you have started a recording, you will see that a red line will appear on the map if you are moving. This red line indicates your movement. An example is displayed in the figure below:

The *record timer* on the dashboard indicates the duration of the current recording. In the figure above this is 1h06m. If you tap the timer you can *end the recording*.

The *record distance meter* on the dashboard indicates the length of a recorded route. In the example above this is 2.9 km. If you tap the record distance meter the map will be zoomed to the recorded route.

You can modify the color, width and transparency of the record line via *Menu > More > Settings > Styles > Record line*.

While recording you can safely lock your device or switch to another app. This will not interrupt the recording. In the top of the screen you can see that Topo GPS is using your location in the background. In some devices the clock gets a blue background, on other devices the whole status bar turns blue. If you tap the blue clock or the blue statusbar, you will return to Topo GPS.

If you tap on the line of the recorded route on the main map, the record screen will be opened. You can view a live altitude and speed profile. You can tap these *profiles* to view them in more detail.

If you have *loaded* one or more routes on the map, you can record a route at the same time. An example is shown below:

On the dashboard the 'dtg' symbol is shown, this is the distance to go to the end of the blue route, which is 1.9 km in the example above. The 'rec' symbol on the dashboard indicates the length of the recorded route, which is 2.9 km in the example above. If you tap the 'rec' symbol, the map will be zoomed to the recorded route. If you tap the 'dtg' symbol, the map will be zoomed to the blue route.

While recording a route, every second your location is determined in the most accurate way possible.

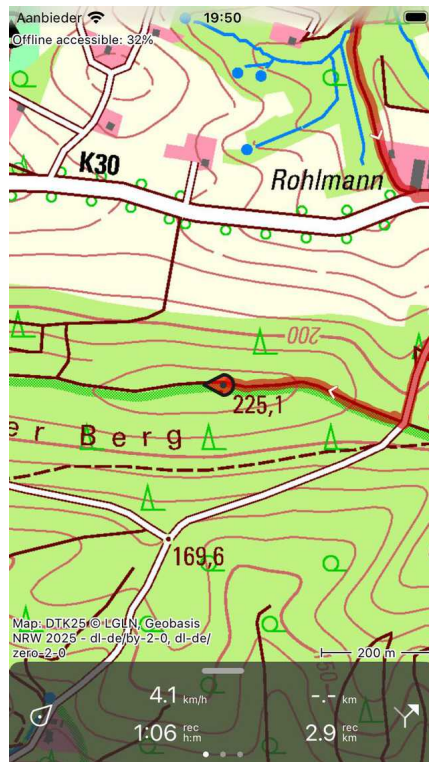


Fig. 7: Recording a route. The red line indicates your movement.

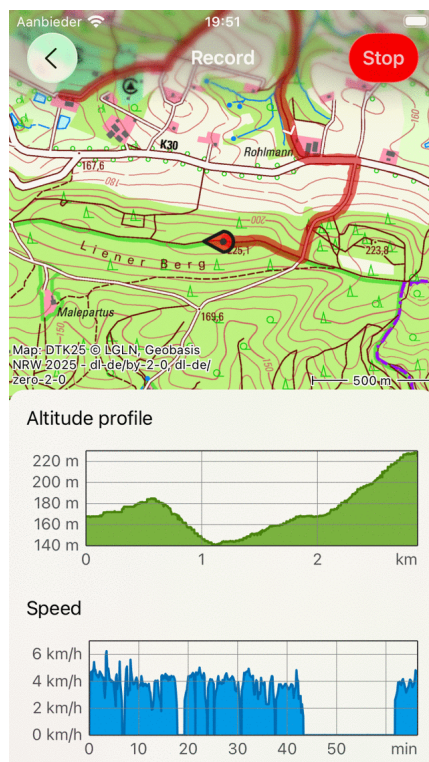


Fig. 8: The route record screen with live altitude and speed profiles.



Fig. 9: Recording and showing a route.

4.4.3 Battery usage

Recording a route will cost a considerable amount of energy. Therefore regularly check your battery level while recording to make sure your device is not running out of power. *Pause* or *finish* a recording when you are no longer moving. On a typical modern iOS device recording costs about 6-8% of battery per hour. With a full good quality battery, it is possible to record a trip of up to 10 - 12 hours long. For longer recordings, you need to recharge your battery, for example with a powerbank.

The amount of battery usage really depends on the quality and size of your battery, and on the other things you are doing while recording. Turning off the screen can make a considerable difference. You could also enable the switch 'Cover camera' in the *Switching off display section* of the settings.

If you have saved the recorded route, you can inspect the amount of battery percentage used in the *additional route details screen*. To open the additional route details, open the *route details screen*, and then tap the title section just below the map.

4.4.4 Ending recording

You can end the a recording of a route by tapping the route button or Menu > Routes to open the routes pop-up. Then tap 'Stop recording'. Alternatively, tap the *record timer* on the dashboard or tap 'Stop recording' in the record screen. The record screen can be opened by tapping the line of the recorded route on the map.

A pop-up will appear asking you to stop the recording like in the example below:

If you press 'Stop' the recording will be ended and a screen is presented in which you can *save the recorded route*.



Fig. 10: Ending recording a route.

4.4.5 Pause recording

If you press 'Pause' in the pop-up which appears when *ending a route recording*, the recording will be paused.

The *record timer* on the dashboard will be set to '–:–' during a pause. The *record distance meter* will show the recorded distance as you can see below:

4.4.6 Resume recording

To resume a paused recording you have tap *record timer* or the 'Resume recording' button in the top of the record screen. The following pop-up will then appear:

If you press 'Resume' the recording will be continued. If you press 'Stop' the recording of a route will be finished and you will be given the possibility to *save the recorded route*.

4.4.7 Saving recording

If you have *stopped the recording of a route* a screen will appear in which you can save the recorded route. An example is displayed below:

In this screen you can subsequently enter the title, the author and a description.

Based on the start and finish point of the route an automatic suggestion for the route title will be made. This suggestion appears in the title field if you do not enter a title yourself. If you do not enter a title, the suggestion will be used when saving the route. If you tap at the end of the suggested title, you can modify the suggested title.

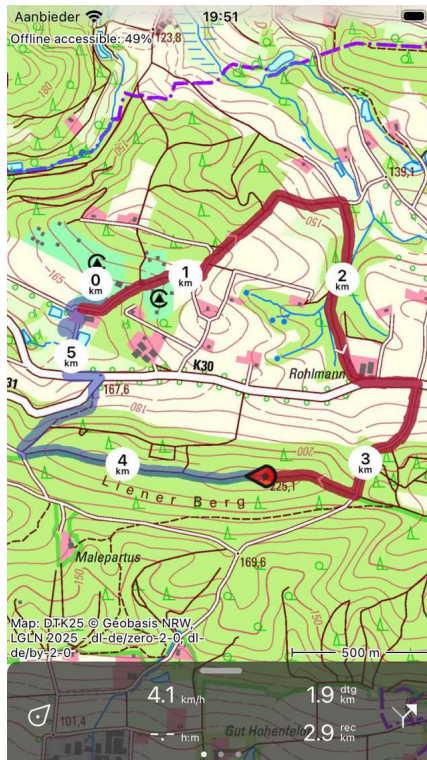


Fig. 11: The recording of a route has been paused, which can be seen from the record timer and record distance meter.

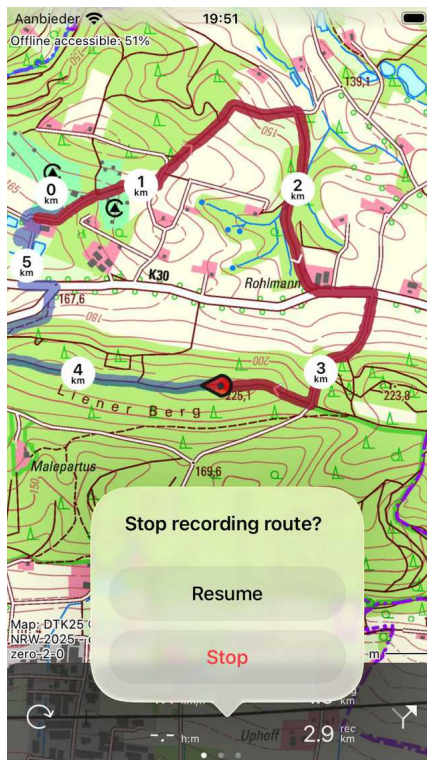


Fig. 12: Resuming the recording of a route.

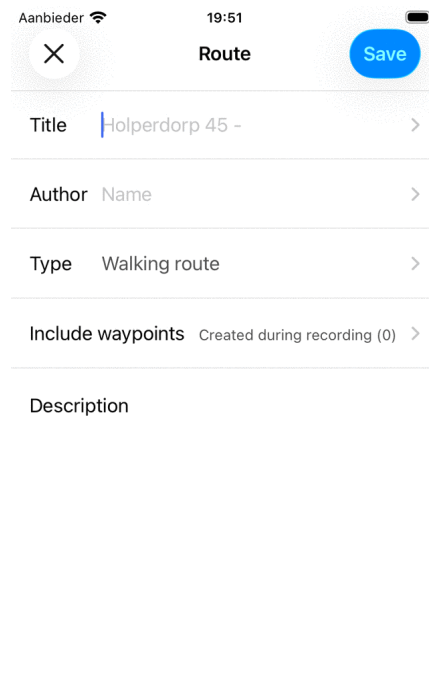


Fig. 13: Saving a recorded route.

To ensure automatic title suggestion functions properly, the option *'Addresses - Find automatically'* should be enabled in the *settings*.

If you press the '>' on the right hand side of the title you can add an URL.

If you press the '>' on the right hand side of the author you can add contact information, and copyright and license details. If you save a route also the author and copyright details will be saved for future use. If you record or plan a new route, the same author and copyright details will already be filled in. Therefore you do not have to reenter these details when saving the next recorded route.

You can alter the route type by pressing the route type field. If you save the route, the current route type will be used as a route type suggestion for the next saved route. If you for example only record bicycles routes you therefore only have to set the route type once.

Using the setting 'Include waypoints' you can determine which waypoints that are currently shown on the main screen map will be included in the saved route. By tapping this setting you can choose between: all waypoints that are on the map, waypoints near the route, waypoints created during recording, and no waypoints. The number between parentheses indicate the number of waypoints to be included. We recommend to set 'Include waypoints' to 'waypoints created during recording'. Then only waypoints that are loaded on the map and created during the recording will be added to the route. This ensures no irrelevant waypoints, which for example photo's from another day are added to the route. If you choose for 'waypoints near route', you can determine the maximal distance of the waypoints to the route. Be careful with setting the value to 'All waypoints'. This might cause adding waypoints which are far a way and hence irrelevant to the saved route.

If you are done, you can press 'Save' on the top right to save the recorded route. If you do not want to save the route you can press 'Cancel' on the top left.

The route will be saved into the folder that is currently opened in the *saved routes screen*.

After you have saved the recorded route, a pop-up will appear that asks you if you would like to share your route with Topo GPS or with another app (for this tap 'More'). If you do not want to share the recorded route, you can tap 'Cancel'.

If you choose Topo GPS you can *share your route with other Topo GPS users*, so that they can *import your recorded route*.

It is also possible to *share the recorded route* later.

Immediately after saving the route, the *route details screen* will be shown. Here you can view and edit the details of the route, and load the recorded route on the map by tapping the map button on the top right of this screen.

You can also *load the recorded route on the map* at a later time.

4.5 Planning routes

Planning a route is creating a route between two or more locations. These locations are called route points in Topo GPS. The route points have to be manually created by pressing long on the map. An alternative to route planning is *route generation*. With route generation you do not have to create route points, but you only have to give a starting point and a desired length.

The route planner can be opened by first opening the *routes pop-up* (Menu > Routes). Then tap the 'Plan a route' item. In MacOS tap the 'Plan' mode selector on the top of the window, or Command-K'. An example of the route planner screen is shown below:



Fig. 14: The route planner with no route planned.

In the route planner screen you can find an overlay. In this overlay the *transportation means button* is displayed, and there are several other buttons that you can use to control the route planner.

To zoom the map to your location, you can tap the position button in the bottom left of the overlay.

To undo an action you have to press the 'Undo' button (circle with return arrow) in the overlay. You can undo all actions in the planner until the undo button becomes light blue.

Next to the undo button, you find the more Button (circle with points, iOS only). If you tap the more button a menu will appear with the following options:

- *Change map*: You can change the map of the planner with this option.
- *Add route*: This can be used to join a saved route to the planned route, or to add a saved route to the map.
- *Search*: With this option you can create a route point by entering a location name.
- *Reset*: This will reset the route planner. The planned route and the route points will disappear.

If there is a route planned, a circle with a cross will appear on the overlay. If you press this button, you will reset the route planner. By tapping the undo button, you can undo a reset action.

To save a planned route, you have to press 'Save' button on the top right of the screen. To share the planned route, you can tap the export icon left of the save button.

In the Topo GPS settings you can modify the *style of the planned route line*.

You can obtain more information about the route planner, by pressing 'Planner: Copyright', in the top left of the route planner screen.

4.5.1 Transportation means

To plan a route, first verify the current *transportation means* in the overlay. In the example above, it is set to 'Walking'. By tapping 'Walking' a screen will appear in which you can change the *transportation means*.

On the right hand side of the transportation means button there is a *settings* icon. If you tap this icon you can fine tune the behavior of the transportation means. Depending on the settings the route will be optimized. Enabling any of these options could result in a longer route.

If you plan a route with the transportation means 'Crow fly' or using a layer, you can do this without an internet connection. For the other ways of transportation an internet connection is required, because the routes are calculated externally.

More information can be found in the section *Transportation Means*.

4.5.2 Adding route points

To plan a route you need to add route points. You can add route points in three ways:

- By pressing long on the map and dragging the icon to the desired location. If you are using MacOS you can also put the pointer on the desired location and press Command-A.
- By entering a location in the search bar of the route planner overlay.
- By tapping waypoints, the position marker, or nodes from a node network.

If you have added at least two route points, a route will be computed between the two route points. Thereafter, you could add other route points.

Below several examples of planning routes are discussed.

4.5.2.1 Planning a route by entering the name of a location

To plan a route by entering the name of a location, first open *the route planner*. If a route is already planned, tap the cross button to reset the planner.

If you tap the search bar in the route planner overlay a screen will appear in which you can enter the starting point and the destination. An example is shown below:

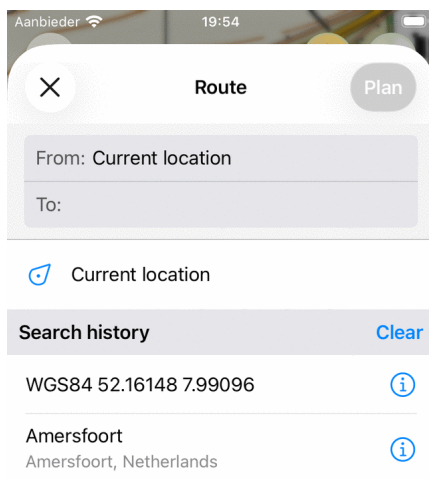


Fig. 15: Screen in which you can enter a starting point and a destination.

Your current location is automatically filled in as the starting point, you only need to enter the destination. If you wish to use another starting point just enter the name of another location in the ‘From:’ field.

As an example we have entered ‘Amersfoort’ in the ‘To’ field. If you now tap ‘Plan’ on the top right or tap the location in the list of search results, you will return to the plan screen and a route will be planned from your current location to ‘Amersfoort’ as you can see in the example below:

In the route planner overlay the destination and source of the planned route are shown as you can see in the figure above. If you tap them, they can be changed. Furthermore, the length of the route is shown. If you tap the length, the map will be zoomed to the planned route. Also the total ascent is displayed, if you tap it you can view a *height profile* of the planned route.

If you press ‘Save’ on the top right, you can *save the planned route*.

If you do not want to save the route, you can press ‘< Map’ on the top left to return to the *main screen*. The planned route will then also be visible on the main map.

If you tap the route line of a planned route in the main screen, you will return to the route planner.

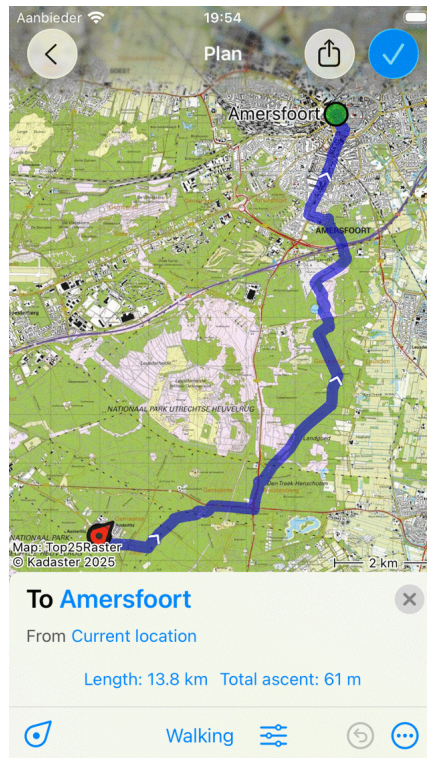


Fig. 16: Planned a route from your current location to 'Amersfoort'.

4.5.2.2 Planning a route by manually creating route points on the map

To plan a route by manually creating route points on the map, first open the *route planner*. If a route is present, tap the button with the cross to reset the route planner.

If you press long on the map, a route point will appear. If you hold your finger on the map, you can drag the route point to the desired position. If you then release your finger, the route point will be positioned. On Mac-OS, you also could press Command-A to add a route point at the position of the pointer.

An example with one route point added to the map is displayed below:

The added route point is colored green. The green color indicates that the route point is selected.

You can add a second route point by pressing long on the map. This one will be colored blue and indicates a route point that is being added. A blue route point will always follow a green one. You now have to drag the blue route point to the desired position. If you release your finger a route will be planned from the green to the blue route point as you can see below:

By planning a route the route points will be moved automatically to the closest known road.

By releasing the blue route point, it will be selected automatically and colored green. The originally selected route point will be deselected and becomes orange.

The length of the planned route is indicated in the route planner overlay in the bottom. If you tap the length, the map will zoom to the planned route. Also the total ascent is shown in the overlay. If you tap the total ascent, you can view a height profile of the planned route.

To extend the route you have to add a third route point, by pressing long on the map. An example is displayed below:

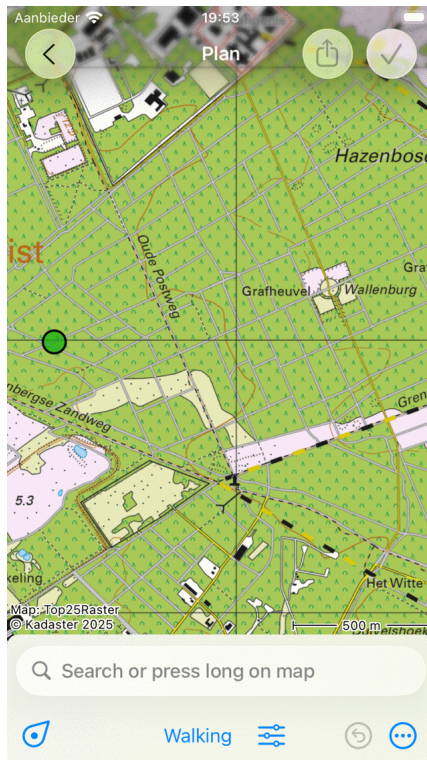


Fig. 17: A single route point is added manually to the map.



Fig. 18: A route is planned between two manually added route points.

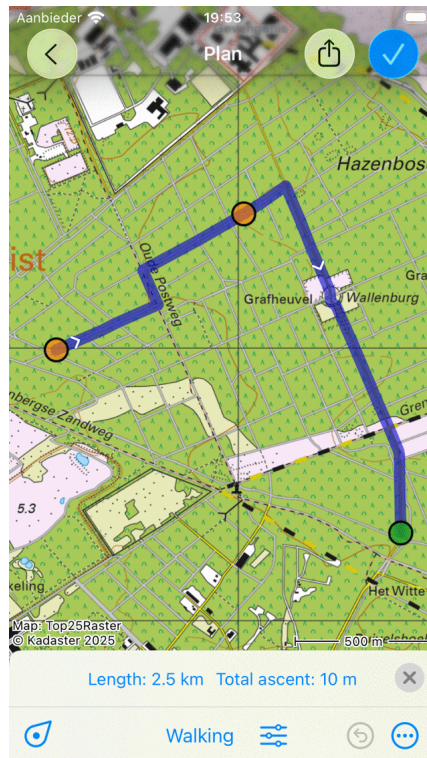


Fig. 19: A route is planned via three route points.

Planning a round-trip

To plan a round trip, you first have to create several route points as in the example above. Then tap the first route point. A pop-up will appear in which you are asked to plan to or select the start point. If you tap 'Plan to start point' the route will be closed, as you can see in the example below:

Selecting route points

You can select a route point by tapping (pressing shortly) a route point. The tapped route point will become green. A route point that immediately follows a selected route point will be colored purple. In this way you can always recover the direction of the route. All other route points will be colored orange.

Moving route points

To move a route point, you first *select* the desired route point by tapping it. The route point will become green. Next, you press long on the selected route point. Hold your finger on the screen and drag the route point to the new position. An example is displayed below:

If you release the moved route point, the new route will be calculated automatically as you can see in the figure below:

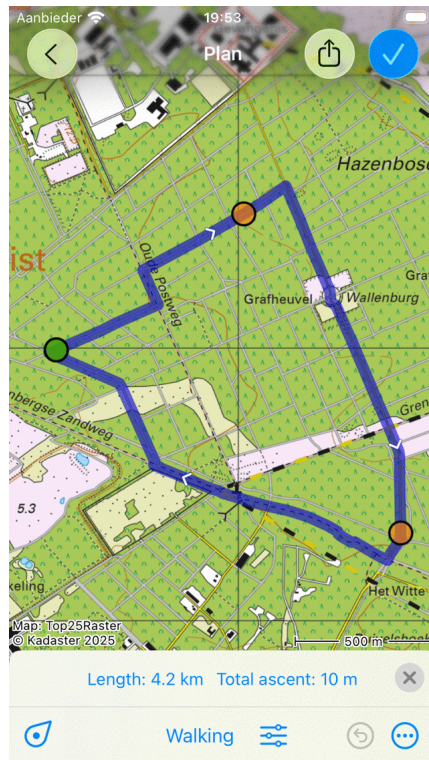


Fig. 20: A round-trip route is planned via three route points.

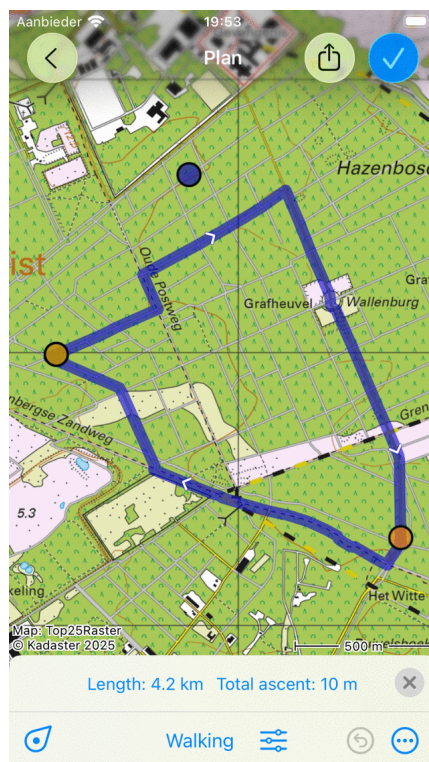


Fig. 21: Moving a route point.

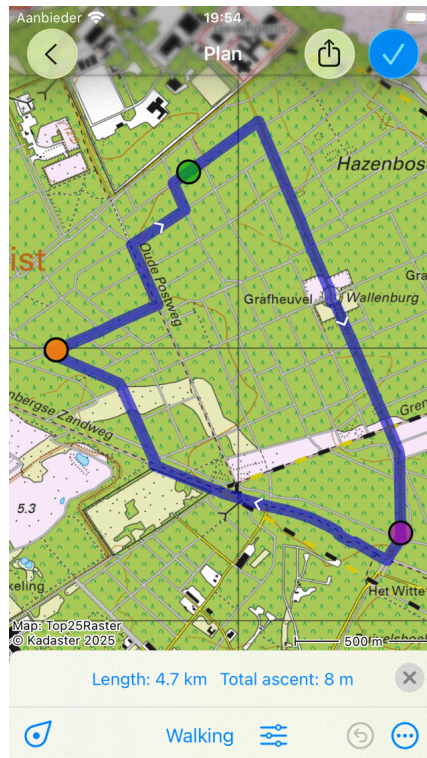


Fig. 22: Newly planned route after moving a route point.

Inserting route points

To insert a route point in between two existing route points, you first have to *select* the route point that lies just before the route point that you intend to insert. To select the route point, you just have to tap it (press shortly).

If the selected route point is not the last route point, you will see a purple route point. That is the route point that directly follows the green route point. An inserted route point will be inserted between the green and the purple point.

If you press long on the map, a blue route point will appear. If you hold your finger on the map, you can drag this point to the desired position. An example is displayed below:

If you release your finger from the screen, the route between the green and purple route point will now go via the inserted route point. This is illustrated in the figure below:

If the new route has been computed, the inserted route point will be automatically selected and colored green.

It is also possible to insert a route point on the current route. Press long on the route, a new blue route point will appear. If you move your finger around, the new route point can be moved along the route line only. If you release your finger, the route point will be inserted.

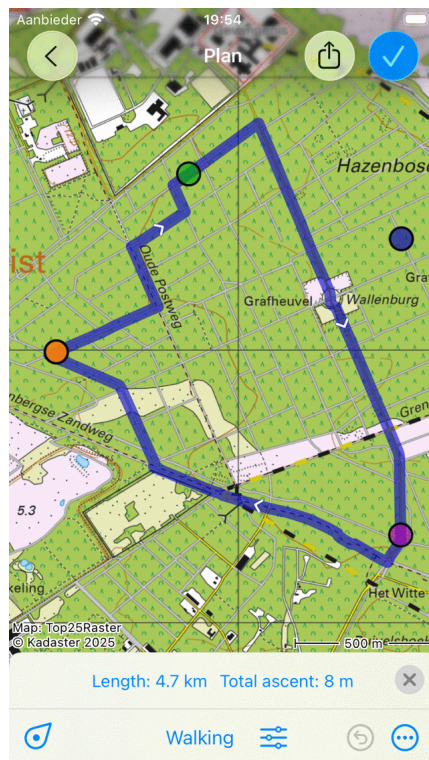


Fig. 23: A new route point (blue) will be inserted between the selected (green) and the following route point (purple).

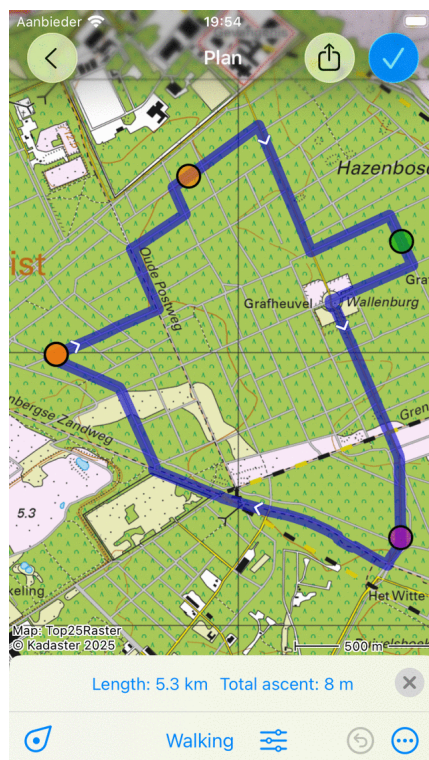


Fig. 24: The newly planned route goes via the inserted route point.

Removing route points

To remove a route point, you first have to *select* the desired route point by tapping it. Next, press long on this route point, hold your finger on the screen and drag it to the top or bottom of the screen. You will see that the route point disappears. An example is displayed below:

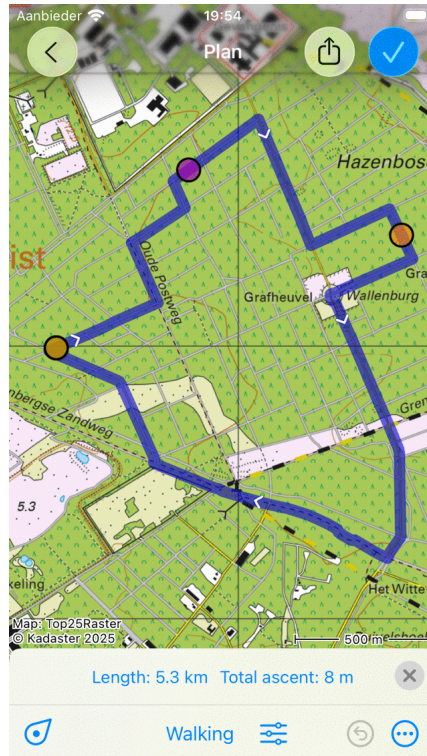


Fig. 25: Removing a route point by dragging it to the top or bottom of the screen.

If you have dragged the route point to the bottom or top of the screen you can release it. The route point will be removed and the route will be recalculated as you can see below:

4.5.2.3 Planning a route from your current location to a point

You can plan a route from your current location to a point in several ways.

Planning from current location to a point on the map

If you want to plan a route from your current location to a point on the map, the fastest way is to press long on the map. An icon will appear which you can drag to the desired location. If you release your finger the waypoint creation screen will appear. Scroll down in this screen to see the route plan section, as in the example below.

Below the plan button you can see the current transportation means. If you tap it, you can change it to the desired *means of transportation*. Next to the plan button you see an overview map with the current location and the point. If you tap the plan button, a route will be planned from your current location to the point and you will return to the main screen as you can see in the figure below:

If you tap the route curve, the *route planner* will be opened. There you can tap More > Reset to remove the planned route, or 'Save' to save it.

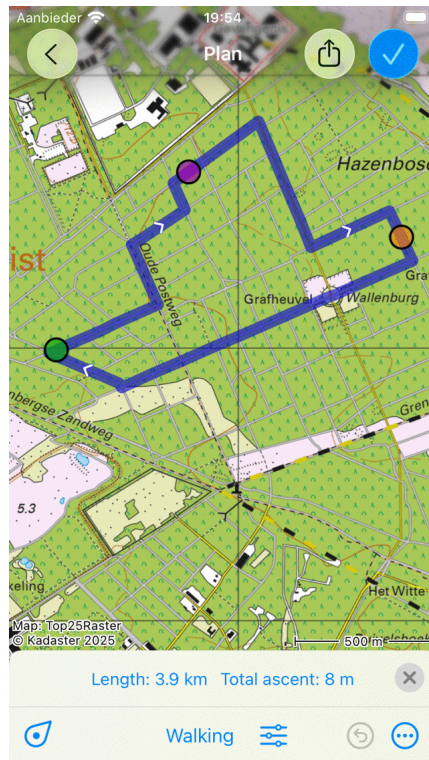


Fig. 26: The route after removing a route point.

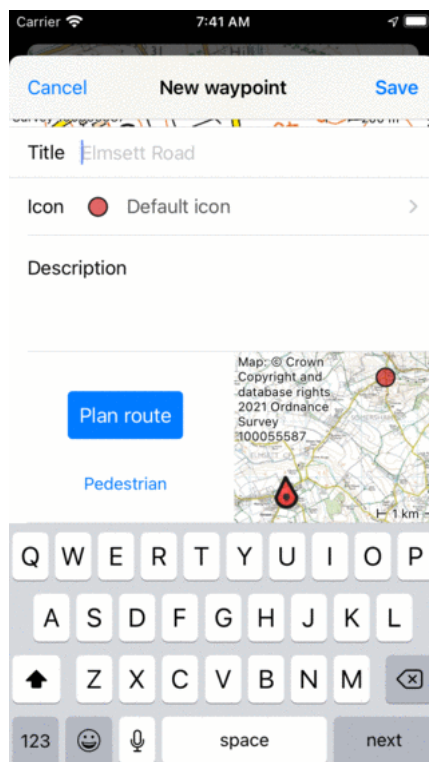


Fig. 27: Planning a route to a point on the map.



Fig. 28: A route was planned from your current location to a point on the map.

Planning from current location to a waypoint

To plan a route from your current location to a waypoint, first open the *waypoint details screen* by for example tapping on a waypoint that is loaded on the map. Then scroll down in the waypoint details screen to the plan section. Check the transportation means, and tap 'Plan' to plan a route from your current location to the waypoint, as in the example above.

Planning from current location by entering a location name

It is possible to plan a route from the current location by *entering a location name in the route planner screen*.

Alternatively, tap *Menu* > Search > Address and enter a location in the search bar. In the search results that appear, tap the info button to view more information about a search result. Scroll down to the plan section. Check the transportation means, and tap 'Plan' to plan a route from your current location to the search result, as in the example above.

Planning from current location to a coordinate

To plan a route from your current location to a coordinate, first enter a coordinate, via *Menu* > Search > Coordinate. Then return to the map, tap on the created waypoint and plan the route as *explained above*.

4.5.2.4 Planning a route over a bicycle node network

A bicycle node network is a collection of numbered nodes and connections between them. A sign with the node number is placed at the location of a node. It also shows the direction to the nearby nodes. The connections are also marked with signs. A bicycle node network allows for easy navigation, because a route can be described by the node numbers.

Bicycle node networks can be found in the Netherlands, Belgium and Germany.

To plan a route over a bicycle node network, first load the bicycle node network on the map via *Menu* > Layers > Bicycle node network. Then tap a bicycle node and tap 'Plan a route'.

Alternatively open the *route planner* and set the transportation means to 'Bicycle node network'.

Tap subsequently the desired bicycle nodes to plan a route. An example is shown below:

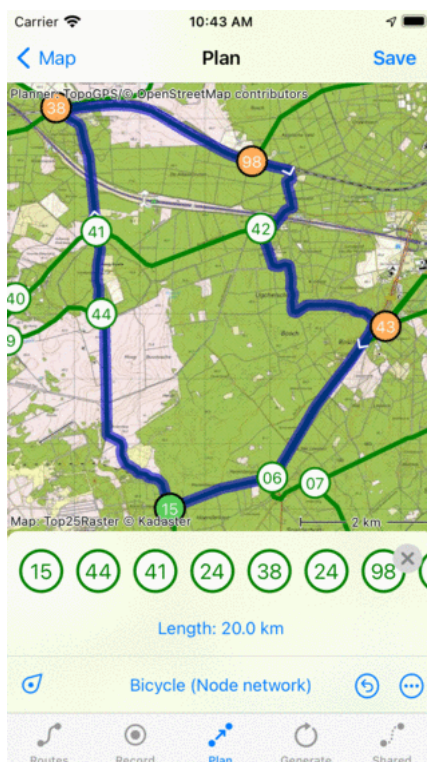


Fig. 29: Planning a route over a bicycle node network.

The route is planned on your device, that is why you do not need an internet connection for planning routes over a bicycle node network.

Like with *route planning by creating route points manually on the map*, it is also possible to *move*, *insert* and *remove* route points

If you press long on a connection between the nodes, you can also add a route point on a connection.

In the route planner overlay you can see the list of the nodes you have to follow. You can slide this list to the left and the right.

If you are done planning a route you can press 'Save' to save the route. If you tap '< Map', the route will not be saved. You will return to the main screen and the map will zoom to the planned route.



Fig. 30: The planned bicycle node network route on the main screen.

4.5.3 Finishing route planning

If you are ready with planning a route, you can return to the main map by tapping '< Map' on the top left of the screen. The planned route will then be shown on the map in the main screen, but it will not be saved. If you tap a planned route in the main screen, you will return to the route planner.

4.5.4 Saving planned route

If you want to save a planned route tap 'Save' in the top right of the route planner screen. A screen will appear in which you can enter the details of the route as is illustrated below:

You can enter the title, author, route type, and description. The grey title placeholder in the title field is the suggested title, and will be used if you do not enter a title. If you tap at the end of the suggested title, you can modify the suggested title. You can also decide to include waypoints that are currently loaded on the map in the route. Then tap 'Save' to save the planned route. You will return to the *main screen* and the map will be zoomed to the planned route.

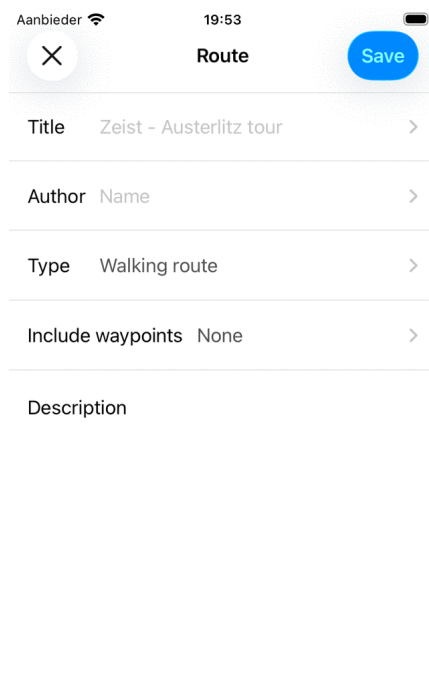


Fig. 31: Saving a planned route

4.6 Generating routes

Suppose you want to walk or cycle a round trip route of a certain length from a certain point. You could try to *plan a route*, and by trial and error you will probably end up with a nice round trip route of the desired length. However, in such situation it might be much easier to let Topo GPS generate a route for you.

Generating a route is the automatic creation of a round-trip route. The only inputs are the starting point, the desired length and the transportation means.

To generate a route, first open the *routes pop-up*. Then tap the item 'Generate route'. The route generation screen will be opened and a route will be immediately generated like in the example below:

The generated route is shown on the map.

The green point on the map is the start and end point of the route. By pressing long on the green point, you can drag it to another location on the map. Immediately a new route will be generated from the new location.

The slider in the bottom determines the desired length of the route. If you move the slider, a new route will be generated. The desired length is displayed on the right hand side of the slider. The desired and actual length, do not always match exactly. The actual length of the generated route is displayed above the slider. Next to the actual length, you see the total ascent of the route. If you tap it, you can view the *height profile* of the generated route.

Below the slider there is the transportation means button. In the example above it is set to 'Pedestrian'. If you tap this button you can change the *transportation means*. Next to the transportation means button there is a icon with sliders. If you tap this icon you can fine tune the behavior of the route generator.

In the bottom there is the 'Generate' button. If you tap it, you will generate a new route. This can be

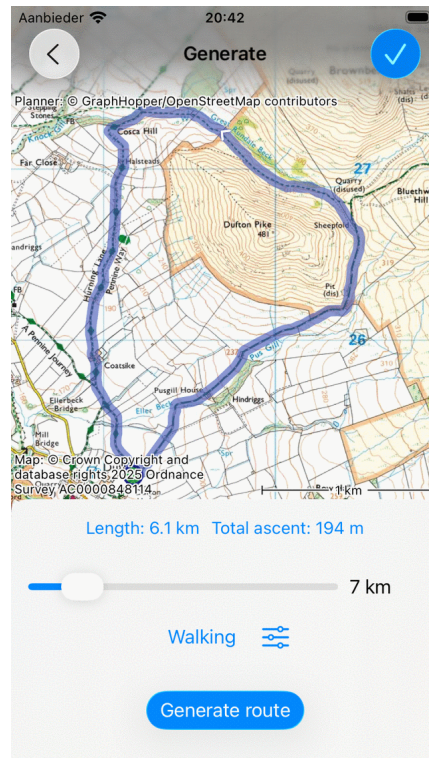


Fig. 32: The route generation screen with a generated route.

useful if you want to generate another route, but you do not want to change the starting point or the desired length.

In the example below, we have tapped on the 'Generate button' to generate a new route from the same point:

Clearly the newly generated route is different from the first route. By pressing multiple times the generate button, you can generate routes until you find a route you like.

As an example we now change the desired length to 50 km. A new longer route is generated, as you can see in the example below:

If you tap 'Save' on the top right of the route generation screen, the generated route will be saved on your device, loaded on the map and you will return to the main screen. Below you see the result of saving the last generated route of the examples above:

4.7 Transportation means

To *plan* or *generate* a route you need to set the means of transportation. You can find the transportation means button in the bottom of the plan or route generation screen, or below the plan button in the point details screen. On the button the currently used transportation means is shown. Next to the transportation means button a settings button is displayed. This settings button can be used to fine-tune the behavior of a transportation means. Note that enabling any of the possible settings can increase the duration and/or length of the route.

It is possible to mix the transportation means when planning a route. One can for example start with pedestrian, then plan a part with 'Crow fly' and then plan with 'Bicycle'.

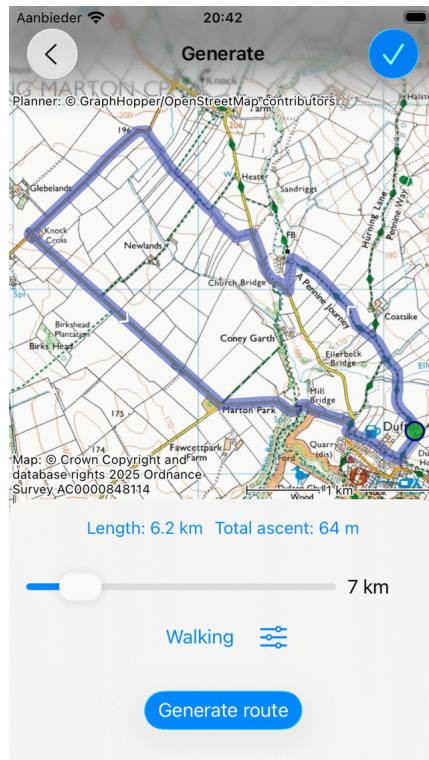


Fig. 33: Another route has been generated.

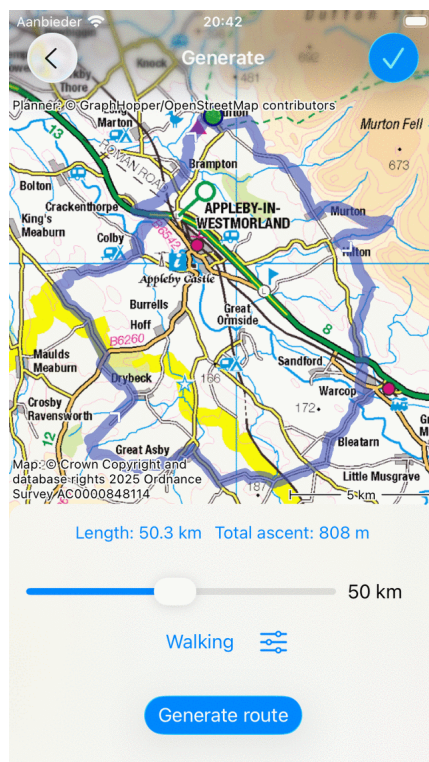


Fig. 34: A route with a desired length of 50 km has been generated.

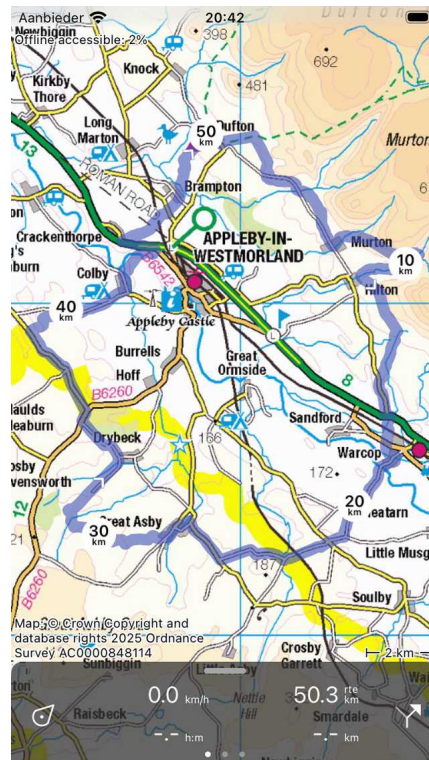


Fig. 35: The generated route was saved and loaded on the main map.

For planning a route or generating a route you can choose between the following transportation means: Walking, Bicycle, Racing bike, Mountainbike, Horse, Motorcycle, Car, Car (avoid highways), and Crow fly.

4.7.1 Walking

The walking transportation means in Topo GPS should be used for manual route planning and automatic route generation. When this profile is selected, the route calculation will respect roads and trails suitable for pedestrians. An active internet connection is necessary.

When planning a Walking route, you can adjust the following settings to customize your path:

- Prefer more scenic roads: Chooses nicer environments when possible.
- Prefer paved roads: Favors paved surfaces and avoids unpaved trails.
- Prefer unpaved roads: Favors dirt or gravel trails and avoids paved roads.
- Prefer curved roads: Favors paths with more curves.
- Prefer rural areas: Routes through nature or countryside, avoiding cities.
- Prefer urban areas: Routes through towns or cities, avoiding the countryside.
- Avoid cycle roads: Avoids paths that must be shared with bicyclists.
- Avoid hills: Seeks out flat terrain.
- Avoid stairs: Prevents routes that require climbing steps.
- Avoid ferries: Prevents routes requiring water crossings (useful if ferries are not running).

- Avoid tunnels: Keeps the route above ground. Avoids even short tunnels.

4.7.2 Bicycle

The bicycle transportation means should be used for planning and generating a bicycle route. The route will respect roads suitable for bicycles. An internet connection is necessary. In the settings you can set the following options:

- Prefer more scenic roads: It will choose nicer roads when possible.
- Prefer bicycle roads: It will prefer bicycle roads if possible.
- Prefer paved roads: It will try to use paved roads and avoid the unpaved roads.
- Prefer unpaved roads: It will try to use the unpaved roads, and avoid the paved roads.
- Prefer curved roads: It will prefer roads with curves.
- Prefer rural areas: It will prefer rural areas if possible, and tries to avoid urban areas.
- Prefer urban areas: It will prefer urban areas if possible, and tries to avoid rural areas.
- Avoid hills: It will prefer flat train.
- Avoid stairs: It will avoid stairs.
- Avoid ferries: It will avoid ferries. This might be useful if you want to avoid the risk of not able to cross a water because the ferry is not running.
- Avoid tunnels: It will avoid tunnels. Might be useful if you do not prefer to walk through tunnels.

4.7.3 Racing bike

The racing bike transportation means should be used for planning and generating a route for the racing bike. The route will respect roads suitable for fast bicycles. An internet connection is necessary. In the settings you can set the following options:

- Prefer curved roads: It will prefer roads with curves.
- Prefer rural areas: It will prefer rural areas if possible, and tries to avoid urban areas.
- Prefer urban areas: It will prefer urban areas if possible, and tries to avoid rural areas.
- Avoid cycle roads: It will avoid the roads specially designated for bicycles. This might be useful if you want to avoid the slower moving bicycles.
- Avoid hills: It will prefer flat train.
- Avoid stairs: It will avoid stairs.
- Avoid ferries: It will avoid ferries. This might be useful if you want to avoid the risk of not able to cross a water because the ferry is not running.
- Avoid tunnels: It will avoid tunnels. Might be useful if you do not prefer to walk through tunnels.

4.7.4 Mountainbike

The mountainbike transportation means should be used for planning a route for mountainbike (MTB). The route will try to take specially designated mtb paths if possible. An internet connection is necessary. Note that you should always verify if mountainbiking is allowed on the planned trail, especially in nature areas. Sometimes a special permit is necessary. In the settings you can set the following options:

- Avoid ferries: It will avoid ferries.

4.7.5 Horse

The horse transportation means should be used for planning and generating a horse riding route. It is a new possibility and might not be optimal. It will prefer bridleways (but only those which are not forbidden for pedestrians). It will avoid specially designated bicycle roads, since in most countries they are forbidden for horses. An internet connection is necessary. In the settings you can set the following options:

- Prefer paved roads: It will try to use paved roads and avoid the unpaved roads.
- Prefer unpaved roads: It will try to use the unpaved roads, and avoid the paved roads.
- Avoid ferries: It will avoid ferries. This might be useful if you want to avoid the risk of not able to cross a water because the ferry is not running.
- Avoid tunnels: It will avoid tunnels. Might be useful if you do not prefer to walk through tunnels.

4.7.6 Car

The car transportation means should be used if planning a route by car. It will in principle give you the fastest route possible. An internet connection is necessary. In the settings you can set the following options:

- Avoid ferries: It will avoid ferries. This might be useful if you want to avoid the risk of not able to cross a water because the ferry is not running.
- Avoid toll: It will avoid toll roads.
- Avoid tunnels: It will avoid tunnels.

4.7.7 Car (avoid primary roads)

The car (avoid primary roads) transportation means is useful if you want to plan a scenic car route. It will automatically avoid all motorways and high speed primary roads. An internet connection is necessary. In the settings you can set the following options:

- Prefer curved roads: It will prefer roads with curves.
- Prefer unpaved roads: It will try to use the unpaved roads, and avoid the paved roads.
- Prefer rural areas: It will prefer rural areas if possible, and tries to avoid urban areas.
- Prefer urban areas: It will prefer urban areas if possible, and tries to avoid rural areas.
- Avoid secondary roads: It will also avoid the secondary roads, leading to a longer trip over smaller roads.

- Avoid ferries: It will avoid ferries. This might be useful if you want to avoid the risk of not able to cross a water because the ferry is not running.
- Avoid toll: It will avoid toll roads.
- Avoid tunnels: It will avoid tunnels.

4.7.8 Motorcycle

The motorcycle transportation means is useful for planning or generating a motorcycle trip. An internet connection is necessary. In the settings you can set the following options:

- Prefer curved roads: It will prefer roads with curves. That might give a more enjoyable trip.
- Prefer unpaved roads: It will try to use the unpaved roads, and avoid the paved roads.
- Prefer rural areas: It will prefer rural areas if possible, and tries to avoid urban areas.
- Prefer urban areas: It will prefer urban areas if possible, and tries to avoid rural areas.
- Avoid motorways: It will avoid the motorways. Useful if you want to make a scenic tour.
- Avoid primary roads: It will avoid the primary roads.
- Avoid secondary roads: It will also avoid the secondary roads, leading to a longer trip over smaller roads.
- Avoid ferries: It will avoid ferries. This might be useful if you want to avoid the risk of not able to cross a water because the ferry is not running.
- Avoid toll: It will avoid toll roads.
- Avoid tunnels: It will avoid tunnels.

4.7.9 Crow fly

The crow fly transportation means can be used to plan the shortest path between points. If the distance is small, it will be a straight line. An internet connection is not necessary. Using the crow fly it is possible to plan any route, even one that does not respect the roads. If you have purchased the height extension, also a height profile will be generated in specific countries. There are no possible fine-tune settings for the crow fly transportation means.

4.7.10 Other transportation means

If you have bought any of the layers, e.g. Walking nodes, Bicycle nodes, Mountainbike routes, or Long distance bicycle trails, you can also use them as a transportation means. Then you can plan a route in this layer without using an internet connection.

4.8 Route details

The route details screen shows information about a particular route.

To open the route details screen, tap the route curve of a route that is loaded on the map in the main screen. You can also open the route details screen by tapping the information button (i) on the right hand side of a route title in *saved routes screen* (Menu > Routes > Saved routes) and the shared routes screen (Menu > Routes > Shared routes).

An example of the route details screen is shown below.

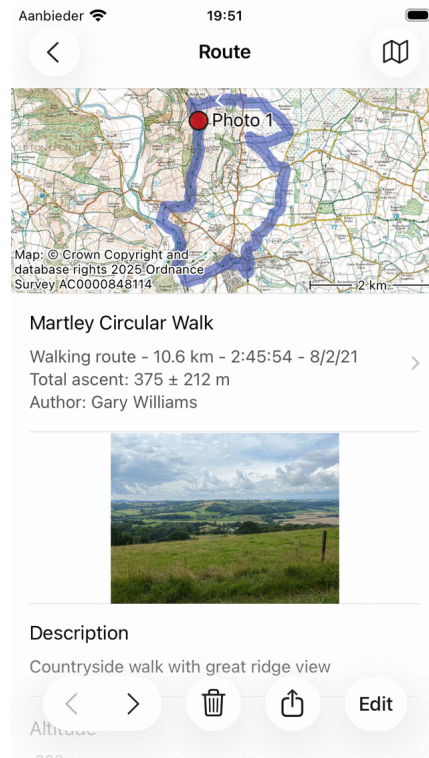


Fig. 36: An example of the route details screen.

In the top right of the route details screen a map icon is shown. If you tap the map icon, the route will be loaded on the main map, the map will be zoomed to the route and you will return to the main screen. If a slash is shown on the map icon, the route is already loaded on the map. If you tap the slashed map icon, you will remove the route from the map.

In the top of the route details screen a map with the route is displayed. The white arrow on the route line indicates the direction of the route.

Directly below the map you can find the title, the route type, length, duration (if the route is recorded), *total ascent* (if available) and author. If you tap this item, you can view *additional information about the route*.

A description and photos will be shown if they are present. If you tap a photo, it will be shown full screen and you can browse through the photos by swiping the photos to the left and right.

Next, if present an altitude/elevation profile, a slope profile, a speed and a distance profile are shown. You can tap these profiles to view the *profile in more detail* and obtain additional height, slope and speed information.

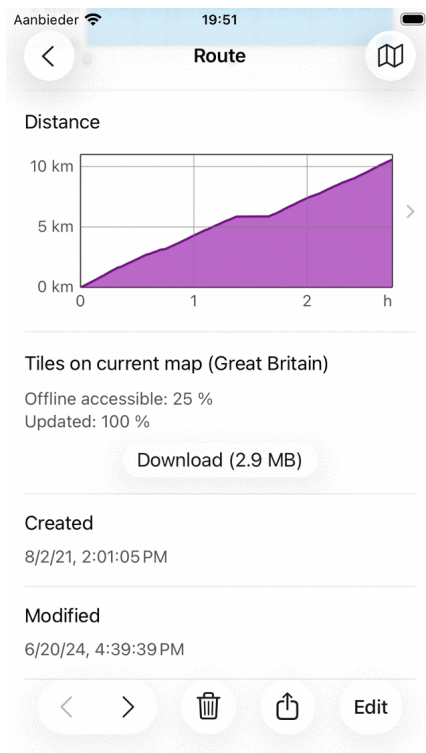


Fig. 37: An example of the bottom of the route details screen.

If the route is within the coverage region of the main map, the section ‘Tiles on current map’ will appear as in the figure above. Here you can *download the map tiles of a route*.

In the bottom of the screen you also find the creation and last modified date and time of the route.

In the bottom of the routes details screen you can find a toolbar with the following buttons:

- ‘<’ and ‘>’ buttons: With these buttons you can browse backward and forward through the route details of a collection of routes.
- *Trash button*: If you tap this button you can *remove the currently shown route from your device*.
- *Export button*: If you tap this button you can *export the route*.
- *Edit button*: If you tap this button an pop-up will be shown which you can use to *edit the route*.

4.8.1 Additional route details

If you tap on the title section just below the map, in the *route details screen*, the additional route details screen will be opened. Here you can find additional information about the route, like author, and copyright information. An example is shown in the figure below:

In the additional route details screen, also the exact time and date of a start and finish of a recording is shown. If you tap one of these items, a graph of the distance versus time is shown, together with a map. Here you can read off every timestamp of every point on a recorded route. The time is displayed in the time zone used on the device.

If you have shared a route with Topo GPS, a special section about shared routes will appear in the additional route details screen. Here you can remove the shared route by tapping ‘Remove shared route’, and

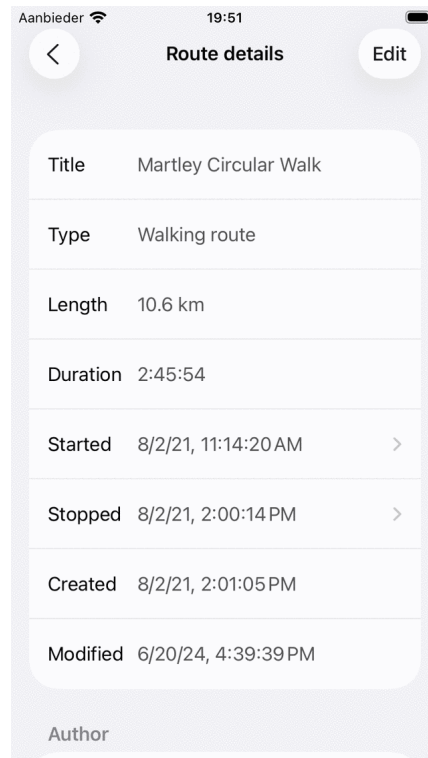


Fig. 38: An example of the additional route details screen.

confirming the removal. Other users can then no longer download this shared route, but it will remain stored on your device.

If you have recorded the route on this device, the battery usage of your device during the recording is also shown. Especially the percentage consumed per hour could be useful to know.

4.9 Downloading map tiles of a route

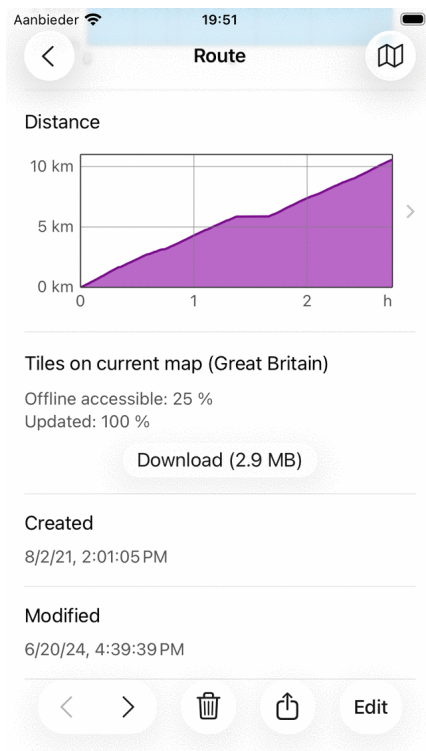
You can download the map tiles of a route by scrolling down in the *route details screen* to the section ‘Tiles on current map’. The current map is the map currently used in the main screen. If the route does not lie in the coverage region of the map, the ‘Tiles on current map’ section will not be shown. An example is shown below:

The percentage offline accessible map tiles indicates the percentage of map tiles relevant to the route that are stored on your device. This percentage only applies to the map that is currently visible in the map screen. If the percentage is 100% it means that all map tiles necessary to display the route on the map are offline accessible.

Tap the ‘Download’ button to start downloading the map tiles. It is recommended to download all map tiles on a WiFi connection before you go outdoors to follow the route. In that case you can be certain that the part of the map relevant to the route is accessible on all zoom levels, even if you are not connected to the internet.

On the download button an estimate of the size of the download and the required amount of storage space is shown.

If you have tapped the download button, the button will indicate how much tiles remain to be downloaded. You can abort downloading by tapping ‘Stop download’. If all map tiles relevant to the route have been



downloaded, the button will read ‘Downloaded completely’.

Although the percentage offline accessible calculation is very reliable, you can always verify if the tiles are really accessible offline. Just put the device to airplane mode, load the route on the main map, and see if all maps around the route are shown.

4.10 Route profiles

When height information is available you can find an altitude or elevation, and a slope profile by scrolling down in the *route details screen*. When timing information is available you can also find a speed and a distance profile in the *route details screen*. When *recording a route*, you can tap the route line of the recorded route to open the record screen. There you also find an altitude and a speed profile. When *planning a route* or *generating a route*, you can tap the ‘Total ascent’ label to see the elevation and slope profiles of the planned route. You might need to scroll down in the route details screen to see all profiles.

4.10.1 Height profiles

Both an altitude and elevation profile are height profiles. Altitude is the height of the device with respect to the mean sea level. Elevation is the height of the ground with respect to the mean sea level and is most often derived from a digital elevation model. If somebody is walking on the ground, the altitude is approximately equal to the elevation. But if somebody is flying, altitude and elevation are different. The height profiles of recorded routes in Topo GPS are always altitude profiles, i.e. measured with use of the GPS and barometer (when available).

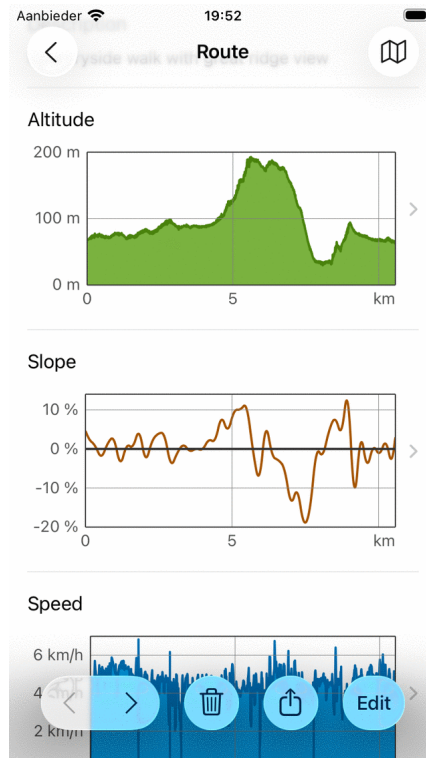


Fig. 39: An example of altitude, slope and speed profiles in the route details screen.

4.10.2 Slope profile

The slope profile gives you a quick look on the difficulty of a route. The slope percentage (also called grade) is the amount of vertical displacement compared to the horizontal displacement. Although the slope profile might be fluctuating a lot, the grade of the steepest parts can be easily found from the slope profile. And also the length of the steepest parts can be read off quickly. Together with the length and the *total ascent*, this gives you quickly an idea of the difficulty of the route.

We would advise you to figure out what slopes you can handle. This you can do by investigating slope graphs of routes you *recorded* previously. Then always check the slope graph before you would like to follow a route. If it has steep parts for longer distances, which are above your abilities, you better choose another route to follow.

In the slope profile in Topo GPS the slopes are computed between points that are about 200 m away from each other, in order to smooth out fluctuations.

4.10.3 Speed profile

The speed profile gives you a quick overview of the speed of a route. This profile is only available when the route was recorded.

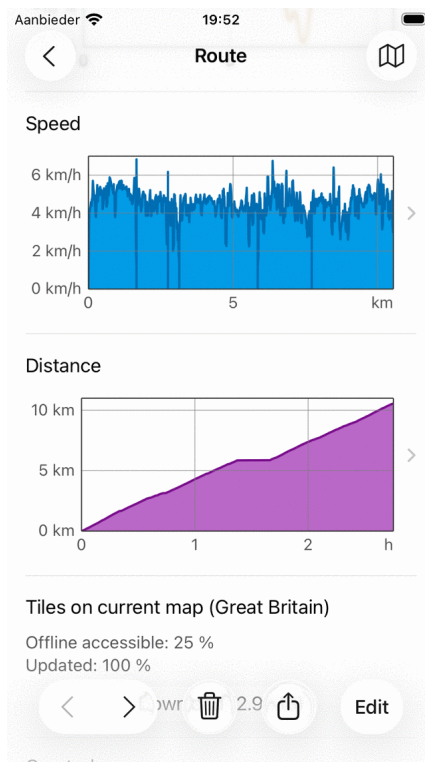


Fig. 40: An example of speed and distance profiles in the route details screen.

4.10.4 Distance profile

The distance profile gives you an overview how the traveled distance increased with time. This profile is only available when the route was recorded.

4.10.5 Profile screen

You can tap a profile in the *route details screen*, to open the profile screen. Below we discuss only the altitude profile screen, the other profiles show other information, but their profile screens function similarly.

An example of the altitude profile screen is shown in the figure below:

The altitude profile screen contains a graph and information. The graph contains a pointer which you can drag around to read off a value from the profile. By putting two fingers on the profile and moving them away from each other you can zoom in to the profile to see more details. If you are zoomed in you can also move the profile with one finger. To zoom out, put two fingers on the profile and move them towards each other.

In the bottom you can select between the tabs 'Details' and 'Map'. In the example above the 'Details' tab is opened. This gives detailed information about the altitude profile, such as 'Total ascent', 'Average ascent grade' and 'Total descent'.

If you select the tab 'Map' a map of the route will be shown in combination with the altitude profile, as you can see in the example below:

The position of the pointer in the graph is shown with a green point on the map. If you drag the green point along the route, the pointer in the altitude profile will move as well. In this way you can easily find interesting points in the altitude profile on the map.

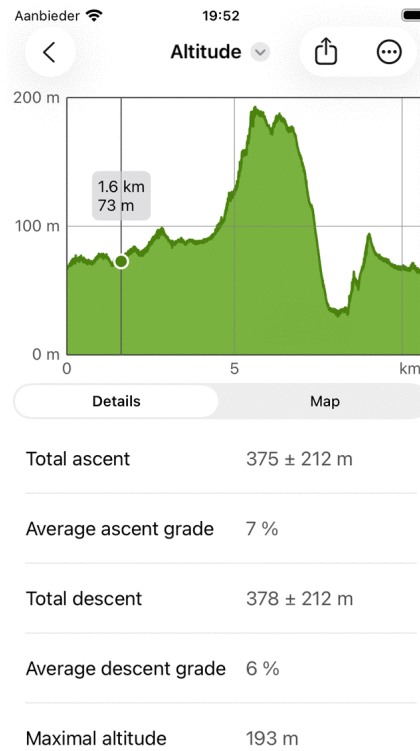


Fig. 41: Altitude profile of a route in more detail



Fig. 42: Altitude profile of a route with the map of a route

If you tap the 'More' icon on the top right of the screen you can change the horizontal axis. You can choose between 'Distance', 'Duration' and 'Time'.

If you tap the export icon on the top of the screen, you can export and share the profile in PDF format.

If you tap the 'Altitude' title on the top of the screen, you can quickly change the profile to another type, like the slope profile or the speed profile.

4.10.6 Total ascent and descent

The total ascent is the cumulative altitude gain of a route. Alternatively said, it is the sum off all vertical upwards displacements. Likewise the total descent is the cumulative altitude loss of a route, or the sum of all vertical downwards displacements. The total ascent of a route is shown in the *route details screen*, in the title section just below the map. Also the total ascent and total descent can be found in the *height profile screen*.

Especially the total ascent gives you together with the length and the slope profile an idea of the difficulty of a route. Routes with a larger total ascent are typically more difficult.

In theory the total ascent and descent are quite simple to understand. For example, suppose you start a route at an elevation of 100 m. First you walk up a hill along a path of 1 km to a height of 150 m. Then you walk 2 km downwards to a height of 120 m. The total ascent is in this example $(150 - 100) \text{ m} = 50 \text{ m}$. The total descent is $(150 - 120) \text{ m} = 30 \text{ m}$.

In practice, computing the total ascent/descent of a recorded route is more difficult. The route with altitudes is in reality a set of points which all have their measurement errors. If we would simply add up all positive vertical gains, then we also would include measurement fluctuations, resulting in an unreasonable large total ascent. Therefore we estimate the accuracy of the height determination in Topo GPS, and use that as a cut-off for including gains in the total ascent. In practice this means approximately that gains are only included in the total ascent if the gain is at least about 10 m. We also compute the error. Therefore the total ascent is presented as a value \pm the error. If the value of the total ascent is for example 320 m \pm 50 m you should read it as, most likely the total ascent is between 270 m and 370 m.

In fact other programs/apps will compute the total ascent differently and hence can give values which can differ (widely) from Topo GPS. Therefore it is best to compare only total ascents between routes if they are computed in the same way. So you might perfectly compare total ascent of Route A in Topo GPS with that of Route B in Topo GPS. However be careful, if you would compare the total ascent of Route A in Topo GPS with Route A in another app.

4.11 Editing routes

To edit a route, first open the *route details screen*. Then tap the button 'Edit' in the bottom toolbar. A pop-up appears as you can see in the example below:

In the edit pop-up you can choose between the following options:

- *Edit line style*. A screen will appear in which you can set a custom line width and color for the route.
- *Edit settings*. You can alter the settings of a route. You can determine whether to enable showing the waypoints of a route. Furthermore you can enable 'Reverse direction', this reverses the direction of a route.

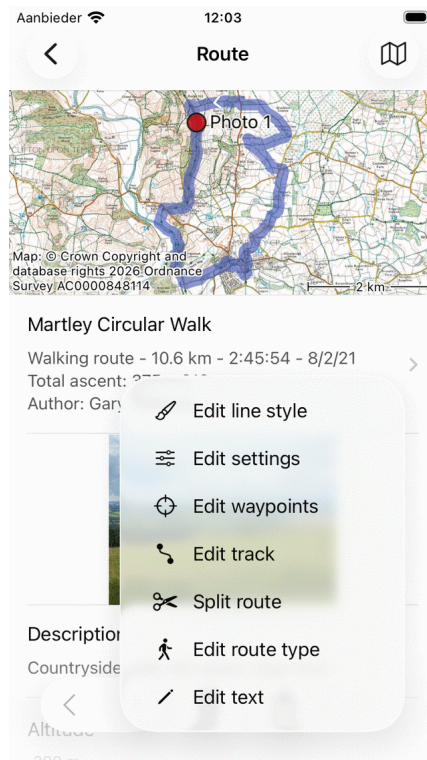


Fig. 43: *Edit options pop-up route details screen.*

- *Edit waypoints.* The waypoints belonging to the route will be shown in a special screen. Here you can add waypoints, drag waypoints, and remove waypoints belonging to a route.
- *Edit track.* The route will be loaded into the route planner where you can modify the route track. Then you could *extend the route*, *shorten the route* or *modify the route track in a general way*.
- *Split route.* This opens the split route screen, where you can *split the route into parts*.
- *Edit route type.* A screen will appear in which you can change the route type. It is always useful to make sure that your routes have the correct route type.
- *Edit text.* A screen will appear in which you can edit the title, author details and description.

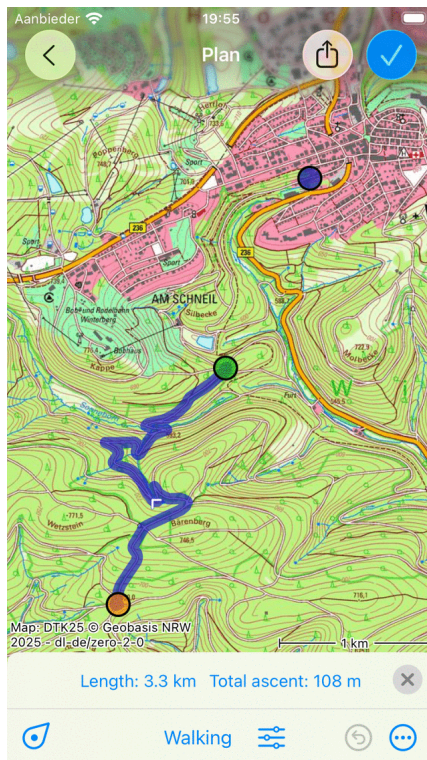
4.12 Extending a route

To extend a route, first go to the route details screen and tap *Edit > Edit route track* in the bottom right of the screen.

The route will be loaded in the route planner. Make sure that the *transportation means* is set correctly.

4.12.1 Extending route at end

To extend a route at the end, tap the last route point so that it becomes selected and green. You can now add a route point by pressing long on the map. A blue route point will appear as in the example below:



As long as you hold your finger on the map, you can drag the blue route point to the desired location.

If you release your finger a route will be drawn from the green route point to the added route point. The added route point will be selected and colored green. An example of extending the route in the figure above is shown below.

If you wish you can extend the route even more by adding more route points.

You can now save the extended route by pressing 'Save' in the top right of the screen. A saved route will be always stored as a new route.

4.12.2 Extending route at beginning

To extend a route at the beginning, select the first route point by tapping it so that it becomes green. Then tap the first route point a second time, so that it becomes purple as in the figure below:

Then add a new route point by pressing long on the map. A route will be drawn from the added point to the original starting point.

The added point will automatically be colored purple after the route has appeared. You can then continue adding route points to extend the route at the beginning further.

If you are ready editing the route you can tap 'Save' in the top right of the screen.

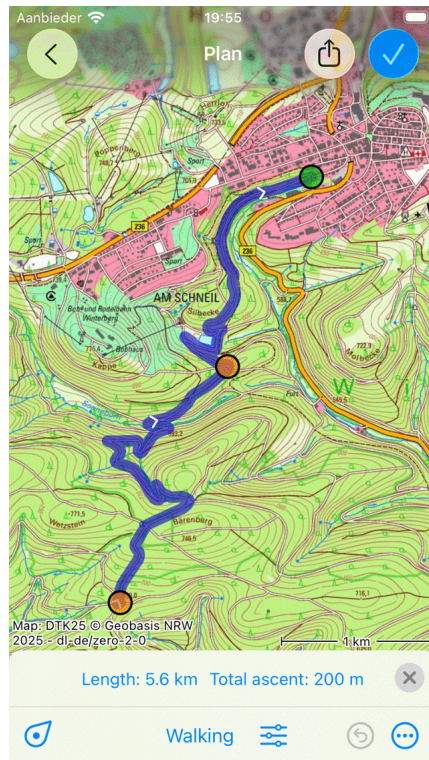


Fig. 44: The route is extended to the added route point.

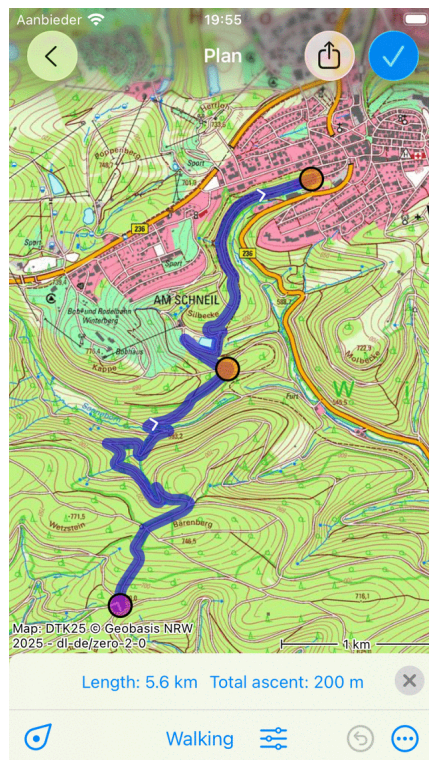


Fig. 45: The first route point is purple.

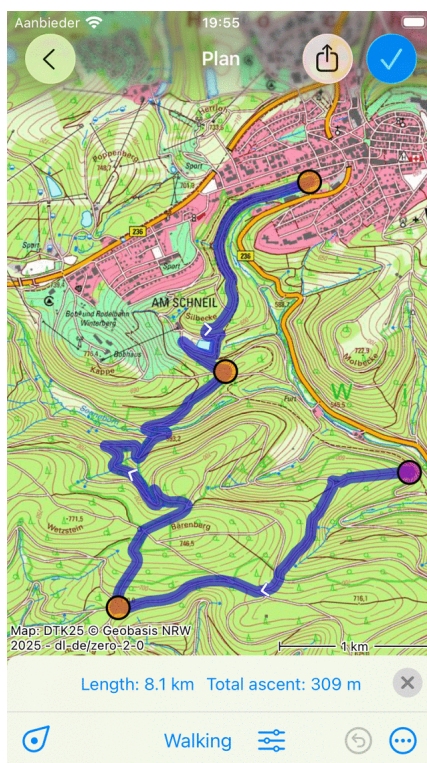


Fig. 46: The route is extended at the beginning.

4.13 Shortening a route

To shorten a route, first go to the route details screen and tap *Edit > Edit route track* in the bottom right of the screen.

The route will be loaded into the route planner, as in the example below

To shorten the route, first press long on the first or the last point of the route. Hold your finger on the screen and move the point to the desired location. The point can only be moved along the route. If you release your finger the route will be shortened as in the example below:

If you have shortened the route, the original route is shown on the map with a lighter color. You can correct the shortening by moving the first or last route point again.

If you are ready shortening the route you can press ‘Save’ to save the shortened route as a new route.

4.14 Editing route track

To edit the route track, first open the *route details screen*. Then tap *Edit > Edit route track* in the bottom right of the screen.

The route will be loaded in into the route planner in this way.

In the previous sections, it was explained how to *extend a route* and to *shorten a route*. Below we will discuss the more general situation in which we will change the middle part of a route. In one of the next sections, it is explained how you can *split a route into parts*.

As an example we will now change the ‘Gower Hike’ so that the middle part of the route will go over the ‘Gower Way’. Initially the route looks as follows:



Fig. 47: A route that needs to be shortened.

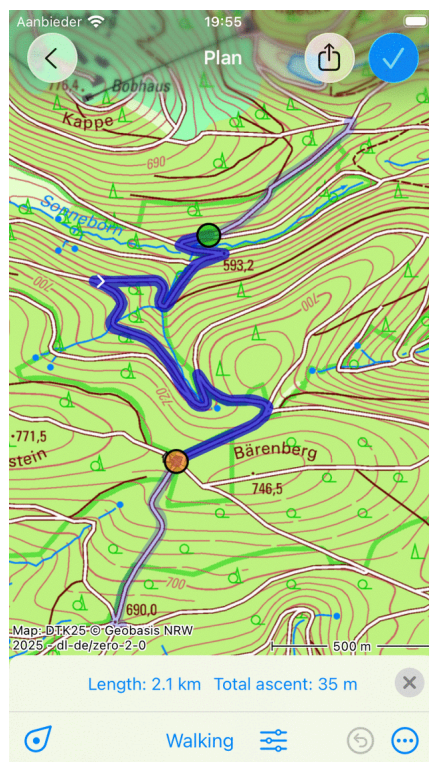


Fig. 48: A route that is shortened by moving both the start and end point.



Fig. 49: *The northern part of the route is to be replaced.*

If you want to replace part of a route you have to insert two route points, one at the point the route needs to deviate, and one at the point the deviation will return to the original route. You can insert a route point by pressing long on the route. A blue route point will appear which you can move along the route to the desired location.

Since we want to change the route, so that the middle part runs over the ‘Gower way’ we have inserted two route points at the Gower way, as you can see below:

The route between the orange and the green route point needs to be modified. We now have to insert a third routepoint in between the orange and the green route point by pressing long on the route. The result is shown below:

By pressing long on the green route point you can drag it to the bottom or the top of the screen to remove it. The route between the previous and next point will be recomputed so that it runs over the ‘Gower way’ as is shown below:

You can now save the shortened route by pressing ‘Save’ in the route planner window.

4.15 Merging routes

Merging routes means combining two or more routes into a new route. For example if you have multiple parts of a trail, you might want to combine them into a single route.

The easiest way to merge routes is to go to the saved routes screen. There *select the required routes*. Then tap the ‘More’ icon in the bottom of the screen and choose ‘Merge into new route’. A pop-up will be shown in which you can enter a title for the merged route. If you press ‘Save’ you will be shown the details of the merged route.

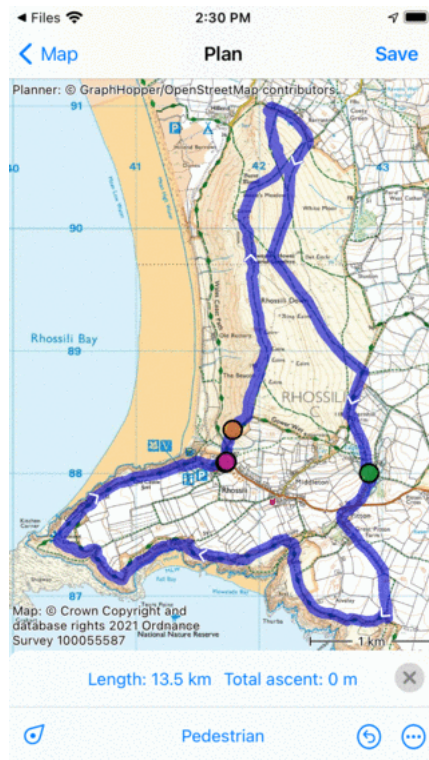


Fig. 50: Two route points have been inserted.



Fig. 51: The green route point is inserted in the route.

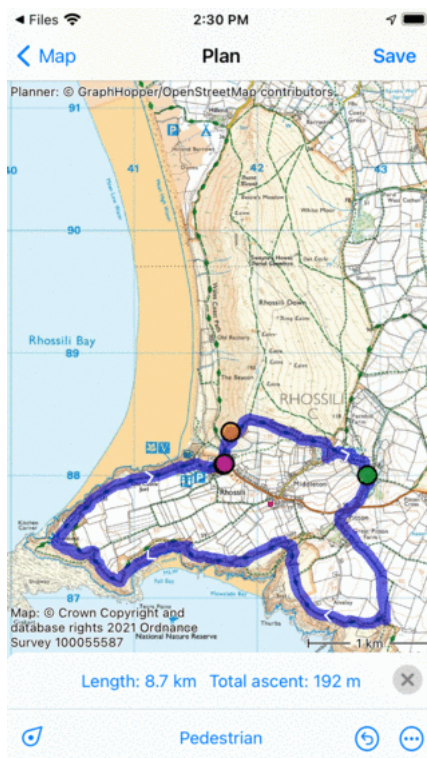


Fig. 52: The northern part of the ‘Gower Hike’ route is replaced.

After merging routes, it could sometimes be useful to *split the route into parts* in a way that you can determine.

4.15.1 Merging using route planner

As an alternative you can also merge routes using the route planner. Open the route planner, reset the route planner and then tap the ‘More’ icon in the planner overlay. Here choose ‘Add route’. The saved routes screen will be shown. Tap the desired route and choose ‘Join to planner’. Repeat the previous step to add more routes to the planner.

If you press ‘Save’ in the route planner window, the saved route will be the combination of all added routes.

4.16 Splitting a route

To split a route into parts, first open the *route details screen* and tap ‘Edit > Split route’. The split route screen will then be opened like in the example below. Using this screen you can split a route into multiple parts.

The orange icons with scissors indicate the points where the route should be cut. By pressing long on one of these points you can drag them along the route to another location, so that you can determine the exact location where the route should be cut.

If you need additional cut points, you could use the ‘+’ button just below the map. If you press this button a cut point will be added and all points will be redistributed over the route so that the length of all parts

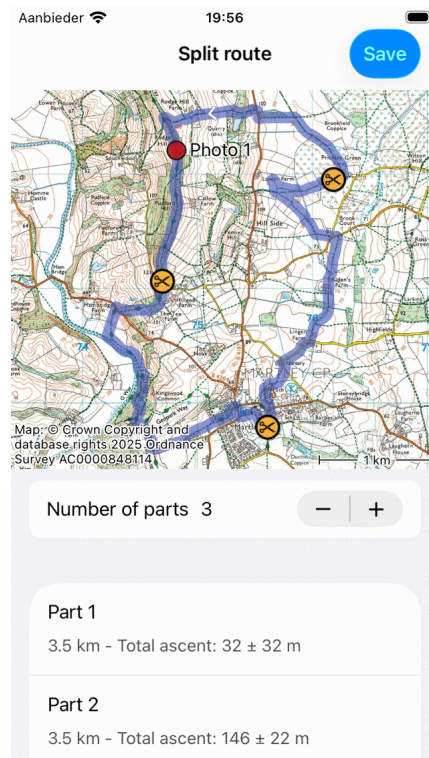


Fig. 53: *The split route screen.*

become equal. If you press long on the route away from an existing cut point, you can add a new cut point without changing the position of the other cut points.

If you press the '-' button you will lower the number of cut points by one. The remaining cut points will be redistributed such that the length of the parts become equal. If you press long on an existing cut point and if you drag this point away from the route, the icon will become gray. If you then release your finger the cut point will be removed, without changing the position of the other cut points.

Below the '+/-' buttons you will see a list of parts and the exact lengths of the parts. By dragging a cut point along the route you can set the length to the desired length. If you tap on a part in the list, the map will be zoomed to the specific part.

If you are finished setting the cut points, you could tap 'Save'. Then the route will be cutted into parts. The parts will be saved as a new route, and the existing route will not be modified. After saving you will be directed to the saved routes screen where you can find the parts of the cutted route.

If you have routes of different parts of a trail, it can sometimes be useful to first *merge the parts into a larger route*. And then split them afterwards so that you get exactly the route parts you need. For example, if you want to make separate routes for each daily part of a longer trail.

4.17 Removing routes

To remove a route from your device you first have to open the *route details screen*.

You can do this by pressing the info button on the right hand side of a route in the *saved routes screen* or by tapping a route that is loaded on the map.

An example of the route details screen is displayed below:

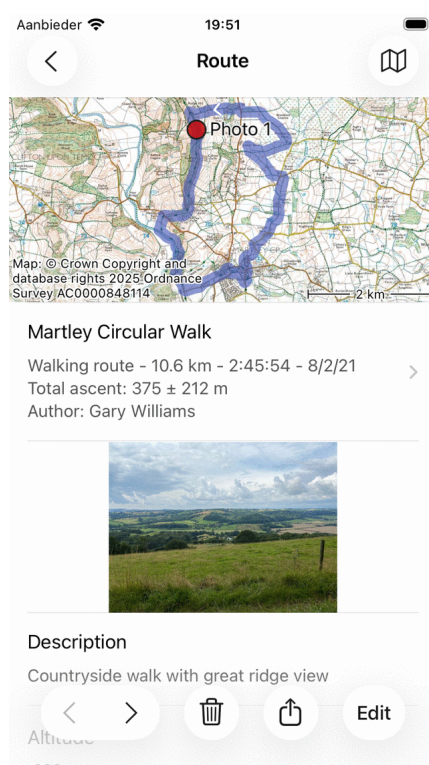


Fig. 54: *The route details screen.*

You can remove the route from your device by tapping the trash icon on the bottom of the route details screen. A pop-up will appear in which you have to confirm the removal as is shown below:

If you press 'Remove' the route will be removed from your device.

If you have enabled *iCloud synchronization of routes* the route will also be removed from iCloud and from all devices that are synchronized with the same iCloud account.

It is also possible to remove multiple routes at once. Open the saved routes screen (Menu > Routes > Saved routes). Press 'More > Select' and *select* the routes that need to be removed. Next press the trash icon on the bottom of the screen and confirm the removal.

If you only want to *remove a route from the map (and not from the device)* you have to tap the map with slash icon in the route details screen.

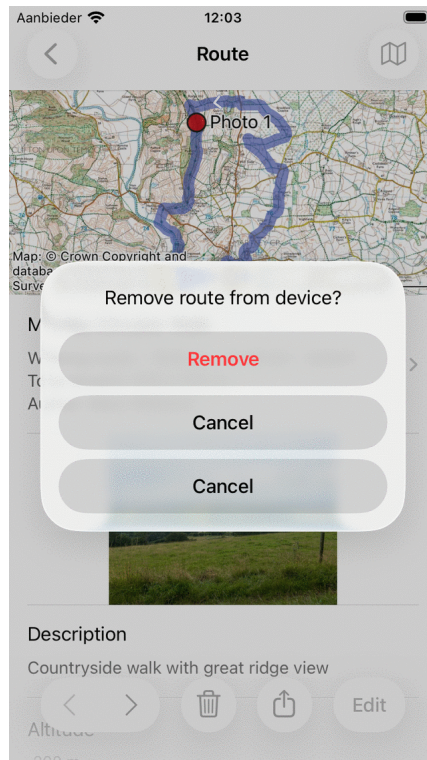


Fig. 55: *The remove popup.*

4.18 Selecting routes

In the *saved routes screen* you can select routes and perform one of the following actions on the selected routes:

- Remove selected routes
- Move selected routes into a folder
- Export selected routes
- Load selected routes on the map
- Remove selected routes from the map
- Merge selected routes
- Edit line style of the selected routes

Selecting routes is similar to *selecting waypoints*.

4.18.1 Opening selection screen

If you press the button ‘More’ on the top right of the *saved routes screen*, a menu will be shown. Tap ‘Select’ in the menu to open the selection screen. It is also possible to open the selection screen by pressing long on an item in the saved routes screen. That item will then be selected immediately. An example of the saved routes selection screen is shown below:

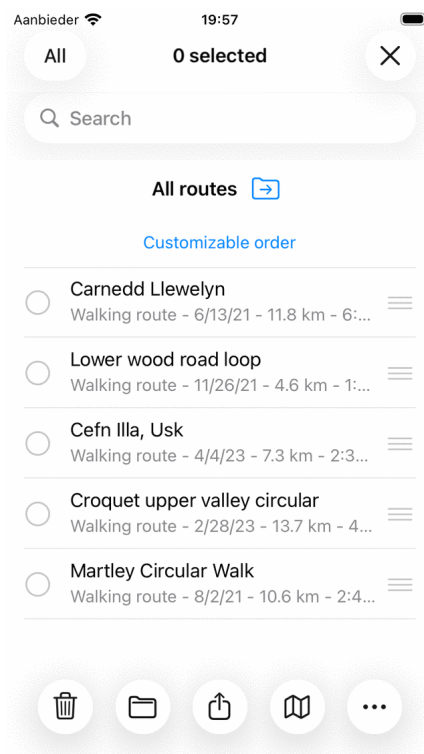


Fig. 56: The selection screen in which you can select routes.

4.18.2 Selecting routes

To select one or more routes, tap a route item in the selection screen. A checkmark will show up and the background of the item will become gray to indicate that it is selected. An example in which two routes are selected is displayed below:

The title of the selection screen shows how many items are selected. You can deselect a route by tapping a selected one. If you want to select all routes in the list, you have to press ‘All’ on the top left. To return to the usual routes screen you have to press ‘Cancel’.

To quickly select multiple routes you can long press on a item, leave the finger on the list and then go up or down. In the same way you can quickly deselect multiple items.

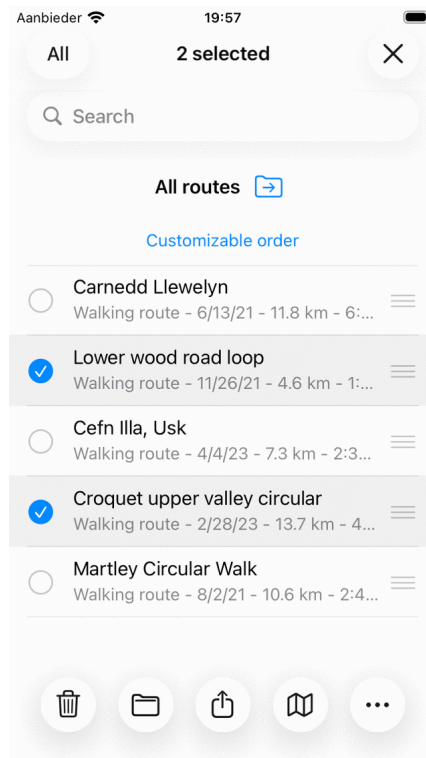


Fig. 57: Two selected routes.

4.18.3 Performing an action

If you have made a selection you can perform an action with one of the buttons in the toolbar on the bottom of the screen. The toolbar buttons are:

- *Trash button*: If you press this button a pop-up will ask to whether you would like to remove the selected routes from your device (and iCloud if enabled). If you press 'Remove' the selected routes will be removed.
- *Folder button*: If you press this button a screen with the folder tree will be opened. You can select a folder and the selected routes will be moved to this folder.
- *Export button*: If you press this button the *export pop-up* will be shown. In this pop-up you can select the kind of data to be exported and change the export settings. If you press 'Export' in the export pop-up the selected routes will be exported. Another pop-up with apps and actions will be shown. If you tap an app or action, the result of the export will be handled by the app or action.
- *Map button*: If you press this button, the selected routes will be loaded on the map. The map will zoom automatically to the selected routes and you will return to the map.
- *More button*: If you press the more button in the bottom toolbar, a menu will appear from which you can choose the following actions:
 - *Remove from map*: The selected routes will be removed from the map.
 - *Merge into new route*: The selected routes will be *merged into a new route*. A screen will be displayed in which you can choose a title. If you press 'Save' the merged route will be created. Sometimes it might be useful to merge routes first, and then *split them* afterwards (Route details > Edit > Split route). For example in this way you can make your personal daily tracks from a collection of routes that together make a longer trail.

- *Edit line style*: The line style of the selected routes can be modified. In this way you can easily give a collection of routes a distinct color or line width.
- *Save as layer*: With this option you can combine the selected routes into a separate layer. In the pop-up that appears you can choose to override the customly set route line styles, and pick a default color for the lines. You can also enter a title for the layer. After tapping save, the selected routes are copied and saved into a newly created layer. They can be loaded and removed from the map via Menu > Layers.

4.19 Searching routes

In the saved routes screen you can search routes by *entering keywords in the search bar*, and by *applying filters*. Furthermore you can *sort the routes* in various ways.

4.19.1 Searching routes with keywords

If you enter a keyword in the search bar on the top of the list of routes only routes will be shown which have the keyword in its title, description or author. Search is case insensitive. If you search in a folder, also all search results in the descendant folders will be displayed. If a *filter* is applied, the search will restrict itself to the filtered routes.

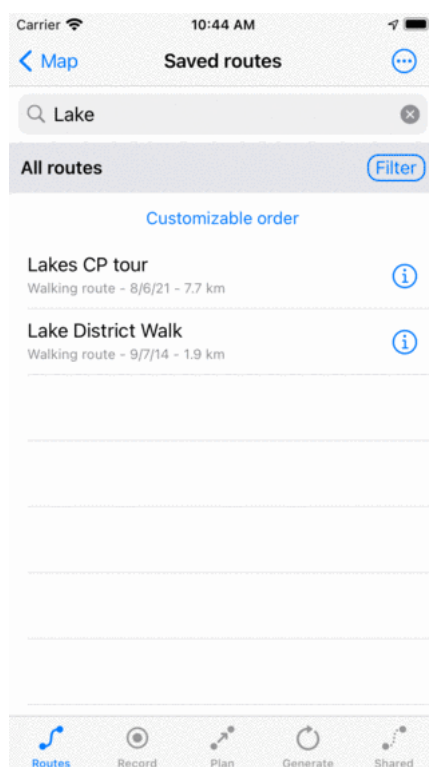


Fig. 58: Searching on 'Stone'

4.19.2 Sorting routes

Below the folder/filter bar below the search bar, the current sort method is displayed in the middle. If you tap the sort button you can change the current sort method between:

- *Customizable order*: The routes are sorted in customizable order. If you did not change the order manually, the most recent added routes are on top.
- *Closest on top*: The routes are sorted according to their distance of the start or end point to your current location, the closest is on top.
- *Closest to center on map on top*: The routes are sorted according to their distance from start/finish point to the center of the currently visible map. If you move the map and reopen the saved routes screen you could get a different ordering.
- *Newest on top*: The routes are sorted according to their creation time, the newest is on top.
- *Longest on top*: The routes are sorted on length, the longest is on top.
- *Shortest on top*: The routes are sorted on length, the shortest is on top.
- *Oldest on top*: The routes are sorted according to their creation time, the oldest is on top.
- *Most recently updated on top*: The routes are sorted according to the time at which they were last changed, the routes that was changed most recently is on top.
- *Least recently updated on top*: The routes are sorted according to the time at which they were last changed, the routes that was changed the longest go is on top.
- *Alphabetical*: The routes are sorted in alphabetical order.
- *Reversed alphabetical*: The routes are sorted in reversed alphabetical order

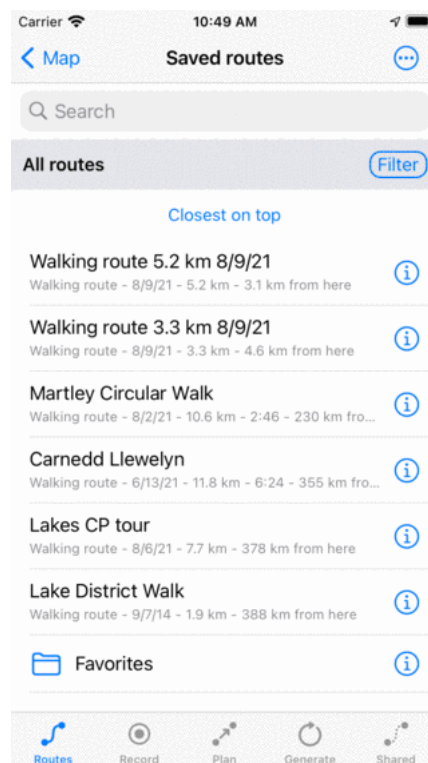


Fig. 59: *Sorting routes on distance to current location.*

4.19.3 Filtering routes

It is also possible to filter routes on location, length and type. To enable a filter, tap the filter button in the routes screen (just below the search bar on the right hand side). If the filter is enabled, the filter button has a blue background, as in the figure below. If the filter is disabled, only the edge of the filter button is blue, as in the figure above.

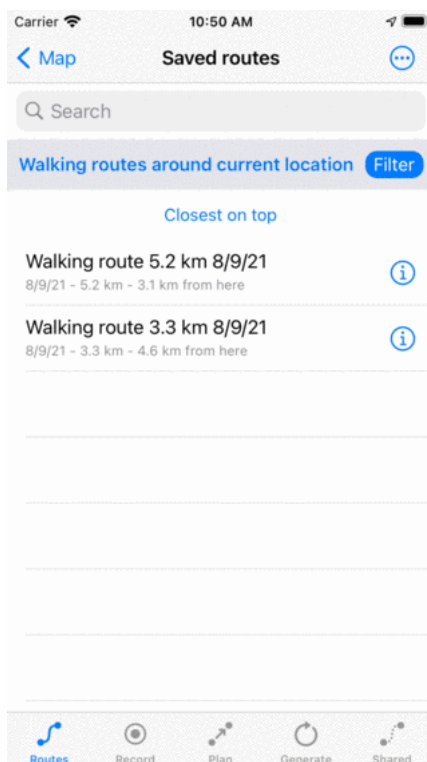


Fig. 60: A filter is enabled.

In the figure above you see an example of an enabled filter. Below the search bar on the left hand side you see a description of the currently active filter. Here the routes are filtered on location, only routes within 100 km of the current location are shown. If you tap the filter description you can modify the current filter. To disable the filter, tap the filter button.

To edit a filter, tap the filter button to enable the filter. Then tap the filter description to modify the current filter. The following screen will be shown in which you can change the current filter:

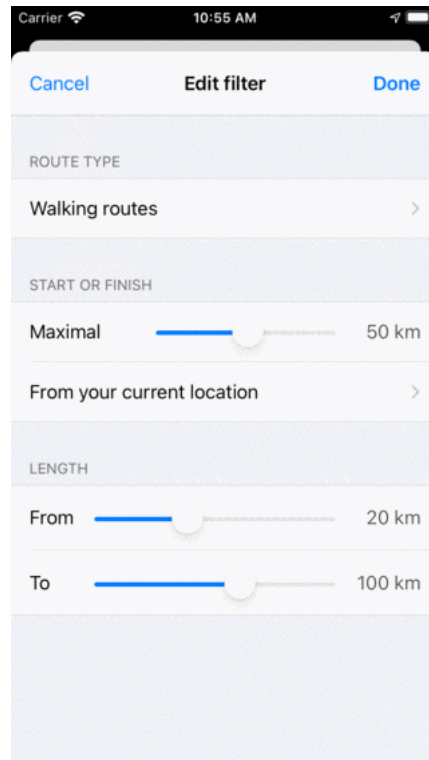


Fig. 61: *Modifying a filter.*

4.19.3.1 Filtering on route type

In the section 'Route type' you can filter the routes on route type, like for example 'Walking routes'. If you choose for 'All routes' the routes are not filtered on route type.

4.19.3.2 Filtering on location

In the section 'Start or finish' you can change the properties of the location filter. The slider can be moved to determine the maximal distance of the start or finish of a shown route to a specific point. Below the slider, the point is displayed. In the example above this is the current location. If you tap it, you could change the current point to:

- *Everywhere*: There is no filtering on location.
- *Current location*: Only routes within a certain distance of the current location are shown.
- *Visible part of map*: Only routes that are within the bounds of the currently visible part of the main map are shown in the routes screen.
- *Within selected area*: A map view will be shown in which you can set an area. It is even possible to rotate the map to make a special selection. Only routes which have their starting or finish points in the selected area will be shown if this filter is enabled.
- *Custom location*: If you enter a custom location or coordinates only routes within a certain distance of the entered location are shown.

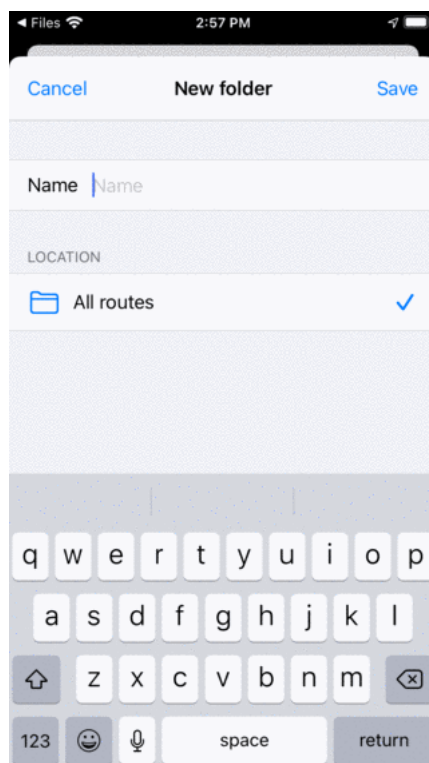


Fig. 62: *The new folder screen*

4.19.3.3 Filtering on route length

In the section ‘Length’ you can set the minimal and maximal length of the filtered routes.

4.20 Organizing routes

You can keep your routes organized by *creating folders* and *moving routes into folders*. It is also possible to *change the order of the routes* appearing in the ‘Routes’ tab of the routes screen.

Organizing routes is similar to *organizing waypoints*.

4.20.1 Creating a folder

To create a folder, first open the routes screen and select the tab ‘Routes’ to show your saved routes. Then press More (top right) > New Folder. The new folder screen will be opened, an example is shown below:

To create a folder, you have to enter a name. Optionally you can choose the location in the folder tree where the new folder is to be added. This is always initially set to the currently opened folder in the route screen. If you press location and select a folder you can change the location to another folder. When you have entered a name you need to press ‘Save’ to create a new folder. You will return to the routes screen and the newly created folder will be shown in the list.

As an example we will enter ‘Favorites’ and press ‘Save’ to create a ‘Favorites’ folder. The routes screen now looks as follows:

The ‘Favorites’ folder is listed in the routes screen with a folder icon.

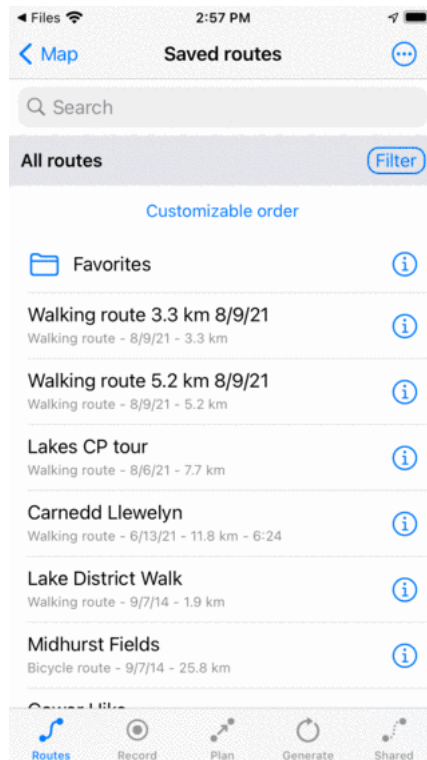


Fig. 63: A 'Favorites' folder has been created.

4.20.2 Moving routes into folder

To move routes into a folder you have to open the *selection screen* by pressing More > Select or pressing long on an item in the routes screen. Select the to be moved routes and press the folder icon in the bottom toolbar. Then the 'Move items to folder' screen will be shown, example is shown below:

In the 'Move items to folder' screen, the folder tree is shown. If you tap on a folder the selected items will be moved to that folder and you will return to the routes screen.

As an example we now will move the waypoints 'Gower Hike' and 'Midhurst Fields' to the 'Favorites' folder. After moving the two routes as indicated above the routes screen looks as follows:

In the routes screen the routes 'Gower Hike' and 'Midhurst Fields' have disappeared. They now can be found in the folder 'Favorites'.

4.20.3 Opening a folder

To open a folder, just tap the folder item in the routes screen. As an example we now open the folder 'Favorites'. The routes screen will then look as follows:

The 'Gower Hike' and 'Midhurst Fields' routes now can be found in the 'Favorites' folder.

Below the search bar you can see the current location in the folder tree. If you press 'All routes' you will return to the root folder.

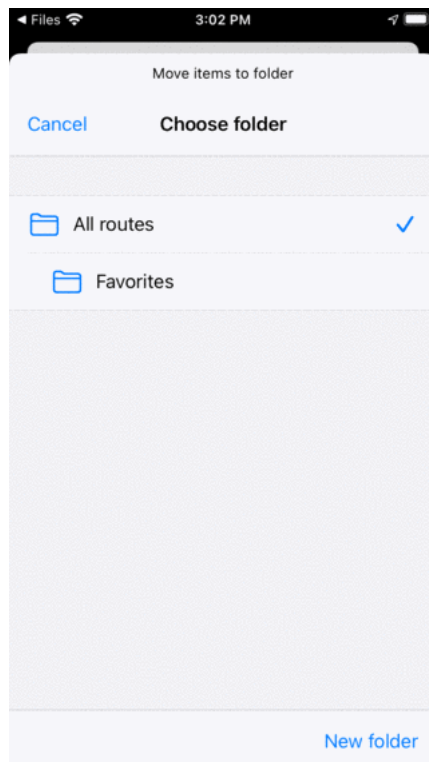


Fig. 64: Move items to folder screen.

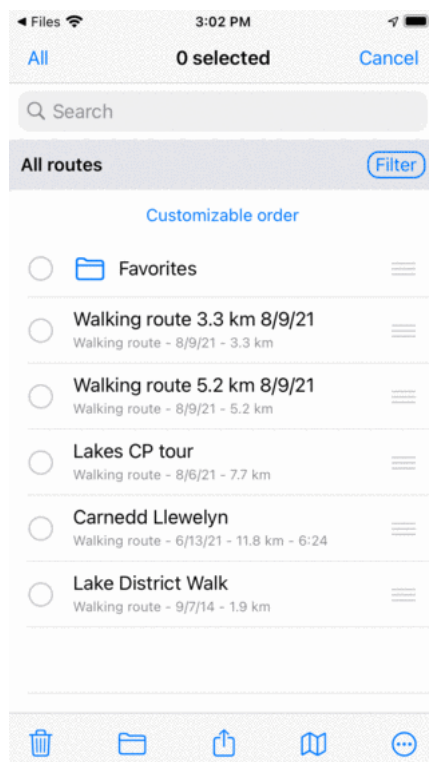


Fig. 65: The routes screen after moving two routes into the folder 'Favorites'.

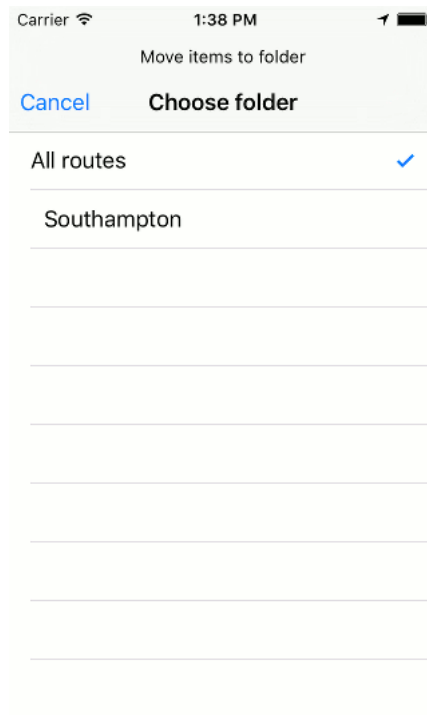


Fig. 66: *The contents of the 'Favorites' folder.*

4.20.4 Loading contents of folder

To load all routes in a folder and its descendant folders, press long on a folder item in the routes screen to enter the selection mode and to select the folder. Then press the map icon in the bottom toolbar to load the contents of the folder on the map.

Alternatively tap the info button next to a folder in the routes screen. Then press 'Show on map' on the top right to load all routes on the map. You will return to the main map screen and the map will be zoomed to the contents of the folder.

4.20.5 Removing contents of folder from map

To remove the routes in a folder and its descendant folders from the map, press long on a folder item in the routes screen to enter the selection mode and to select the folder. Then tap in the bottom tool bar the more button and then tap 'Remove from map'.

Alternatively, first tap the info button next to a folder in the routes screen to open the folder details screen. Then press 'Remove from map' on the top right to remove all routes from the map. If 'Shown on map' is shown, first tap it to load all routes, then go back to the routes screen to open the folder details screen. Then press 'Remove from map' on the top right.

4.20.6 Renaming folders

To rename a folder first open the routes screen and tap the info button next to a folder item to open the folder details screen. Then tap 'Edit' in the bottom toolbar, change the name and press 'Save'.

4.20.7 Changing the order of routes

Just below the folder tree / filter bar in the 'Routes' tab of the routes screen the current sort method is displayed. If you tap the sort method you can change it. If it is set to 'Customizable order' you can determine the order of the routes.

To change the order of the routes in the 'Favorites' folder, just open that folder. Then press More > Select to enter the selection mode. The routes screen then looks as follows:

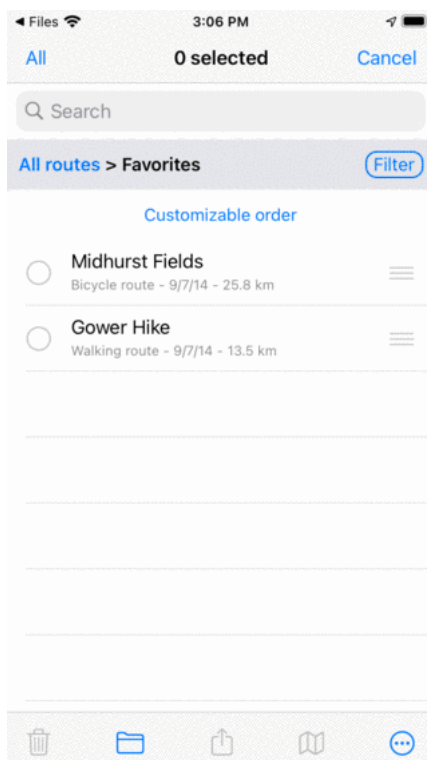


Fig. 67: The 'Favorites' folder in selection mode.

On the right hand side of each item a handle with three bars is displayed. Drag such a handle to a desired position and release your finger. The route will then be moved in the list to the desired location. In the example below, we have moved 'Gower Hike' to the top.

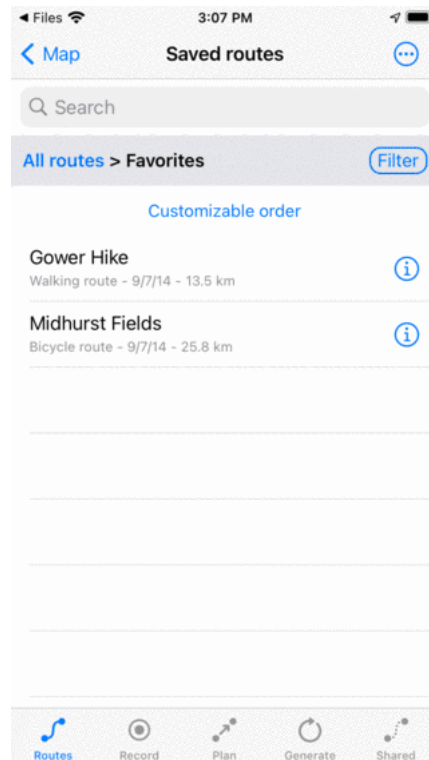


Fig. 68: The contents of the 'Favorites' folder after moving the 'Gower Hike' route.

4.21 Importing routes

In this section it is explained how to *import a route from a geodata file, from an url* and how to *import routes shared by Topo GPS users*.

4.21.1 Importing routes from geodata files

It is possible to import routes in Topo GPS in the following file formats: gpx, kml/kmz, geojson and ozi explorer track files (plt). Files of these types can also be imported if they are compressed in a zip file.

To import a route you could try to tap on a file icon. Most often an app picker will show up. Sometimes you need to scroll through the list of apps or tap More to find 'Topo GPS'. You then have to tap 'Open with Topo GPS' or 'Copy to Topo GPS' and the file will be imported in Topo GPS.

Sometimes it is convenient to use drag and drop. This can even be done on an iPhone. Press and hold your finger on the file, item or URL. Then move your finger to drag it. Move the item into the Topo GPS main maps screen. On an iPhone, drag and drop works only if you use two fingers. After you have pressed and hold the item, you have to open the app switcher with a second finger by swiping the screen upwards at the bottom. Now still holding the first finger, you can use your second finger to switch to Topo GPS. If you are at the main map screen you can drop the file here. It will then be automatically imported.

Alternatively you could also tap *Menu* > More > Import file. Then the files app will be opened. Here you can select a cloud storage, like iCloud, Dropbox, OneDrive or Google Drive. Then you can browse through your files and select the files you want to import.

If the routes were imported successfully, you will return to the main screen, and the map will be zoomed to the imported routes. The imported routes will be saved on your device and can be found back in the *routes screen*.

4.21.2 Importing route from URL

If you have an URL, a convenient way to import is to press long on it and use drag-and-drop to drag it into the Topo GPS main screen as explained above.

For example dragging a link on a webpage to a gpx file into Topo GPS, might be a convenient way of importing a route.

Alternatively, you press long on an url to a geodata file and copy it to your pasteboard. Then open the routes screen and select the tab 'Routes'. Tap 'More > Import URL' to open the URL import screen. Here you can paste your URL. Then tap 'Import' to import the URL.

If the routes were imported successfully, you will return to the main screen, and the map will be zoomed to the imported routes. The imported routes will be saved on your device and can be found back in the 'Routes' tab of the routes screen.

4.21.3 Importing routes shared by Topo GPS users

To import routes *shared by other Topo GPS users*, first open the *routes pop-up* (Menu > Routes). Then tap the item 'Shared routes'. The shared routes screen will be opened as in the example below:

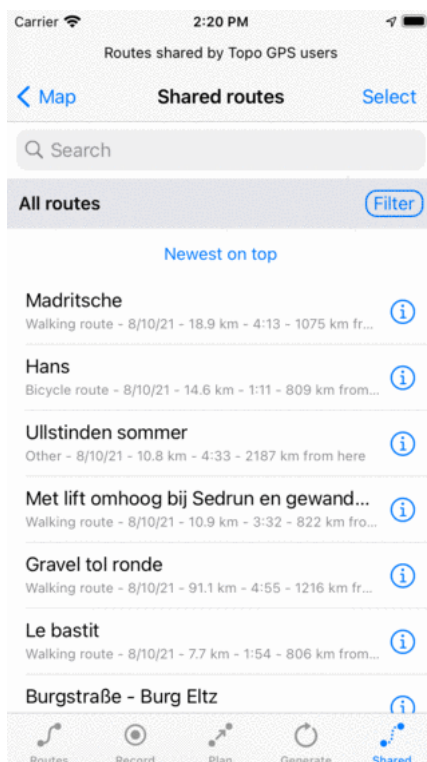


Fig. 69: *The shared routes screen.*

The shared routes screen displays routes which are stored on the Topo GPS server and shared by other Topo GPS users. You can *search*, *filter* and *sort* these routes just like you can with your saved routes. Applying a filter can help you to find for example bicycle routes near your current location, as in the example below:

If you tap a route title in the list it will be immediately imported and you will return to the main screen. You can tap long on an item or tap 'Select' on the top right to enter the selection mode. Then you can select multiple routes and import them at once.

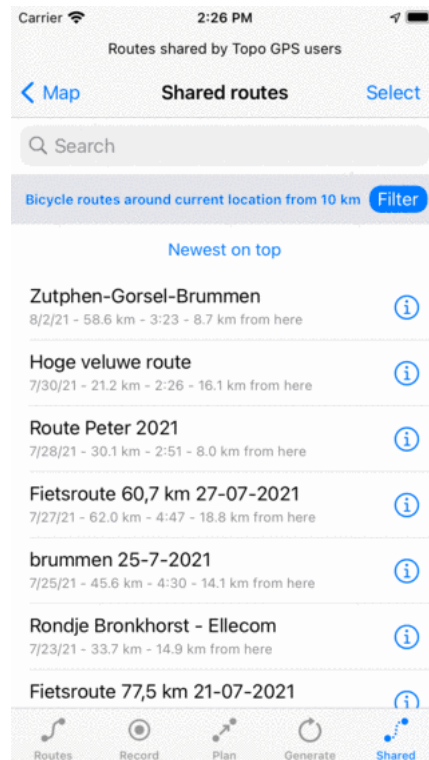


Fig. 70: Searching bicycle routes of minimal 10 km length around your current location.

If you tap the info button (i) next to a route the *route details* screen of a shared route will be opened. Sometimes it will take a few seconds before all route data is downloaded. An example is shown below.

You can use the ‘<’ (previous) and ‘>’ (next) buttons in the bottom toolbar to browse through the list of shared routes. If you want to import a specific route you can tap the ‘Import’ button on the top right.

4.22 Exporting routes

To export a single route, open the *route details screen* and tap the export icon in the bottom toolbar.

To export multiple routes, first open the *routes screen* via Menu > Routes > Saved routes. Then open the *route selection screen* by tapping More > Select. Or press long on on a route to open the selection mode. Select the desired routes and folders and tap the export icon in the bottom toolbar. After pressing the export icon the export pop-up will appear, an example is shown below:

In the export pop-up you can select the kind of data that will be exported when pressing the export button in the bottom of the pop-up. The kind of exported data can be any combination of the following:

- **Geodata:** If you include ‘Geodata’ a data file containing the route(s) will be exported. The file format is shown in the subtitle of the geodata item. In the example above it is gpx. If you press *settings* you can change the data format. Supported file formats for exporting routes are gpx, gpx.zip, kml, kmz, geojson, and geojson.zip.
- **Photos:** If you include ‘Photos’ the photos of the routes(s) will be exported as well. This item is not available if there are no photos.
- **Map:** If you include ‘Map’ a map of the routes(s) will be exported. The pixel size of the map is displayed in the subtitle. You can change the pixel size and the data format (jpg/png/pdf) in the *export settings*.

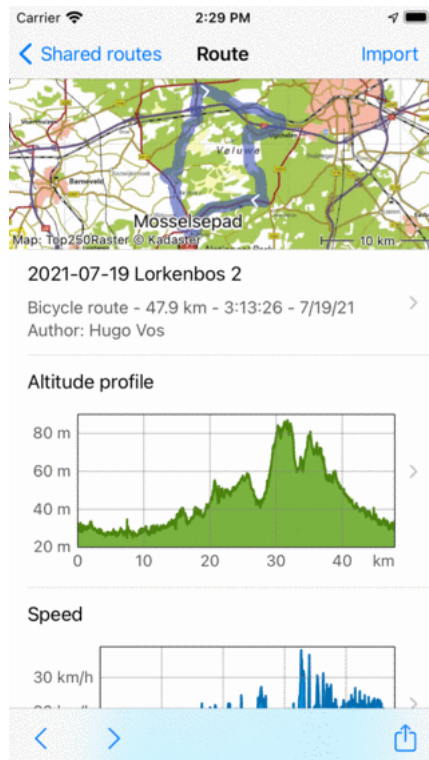


Fig. 71: The route details screen of a shared route.

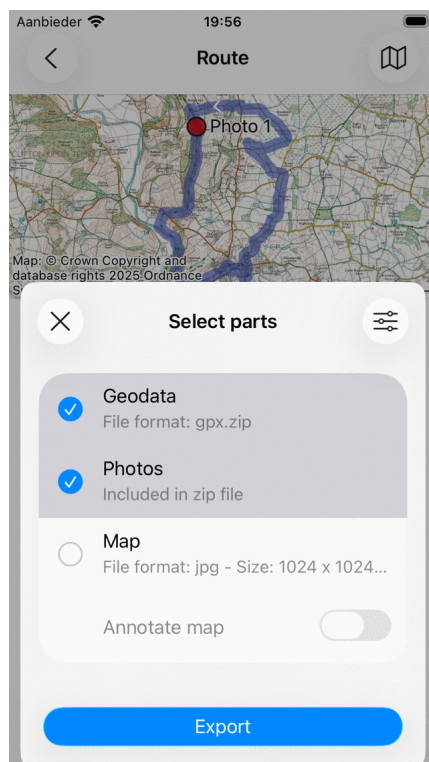


Fig. 72: The export pop-up.

If you include a ‘Map’ in the export you can also enable the option ‘Annotate map’ (not on MacOS). Then before sharing the map with another app, you can draw annotations on the map with your finger or with an Apple Pencil.

After you have selected the kind of data to be exported you can press ‘Export’ in the bottom of the export pop-up to export the route(s). Then a regular iOS pop-up will show up in which you can pick an app to send the exported data to. For example, iMessage to send the route(s) to a friend, or the files app to save the routes(s) on the cloud.

4.22.1 Export settings

In the export pop-up you can also change the export settings by pressing the ‘Settings’ button on the top right of the export pop-up. Then the following screen will appear:

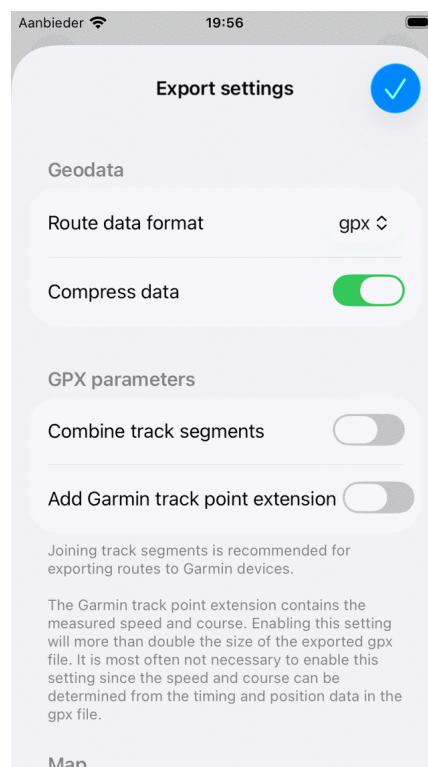


Fig. 73: The route export settings screen.

The first section in the export settings screen is about geodata. Here you can set the data format of the to be exported route(s). By tapping ‘Route data format’ you can choose between gpx, kml, and geojson. You can decide whether you want to compress the data. If you enable compression the exported geodata file will be zip compressed. The file size will be much smaller than without compression, therefore we recommend you to enable compression.

In the gpx section you can decide to enable ‘Joining track segments’. This is important if you intend to export the gpx of a planned route to a Garmin device. The Garmin devices cannot properly import gpx files consisting of multiple track segments. A Garmin device only will show you the first segment. By joining the tracksegments to a single tracksegment the route can be imported correctly.

The remaining sections deal with the map (image) that can be exported. You can decide the file format of the map image (png, jpg, or pdf). You can set the desired pixel width and height with the sliders. Also to generate a map sometimes map tiles need to be downloaded. You can determine if you want to allow cellular downloads of map tiles.

4.22.2 Exporting all routes

To export all routes stored on your device, first open the routes screen via Menu > Routes > Saved routes. Make sure that the filter is not active (filter button has a blue edge). Go to the root routes folder, so that 'All routes' is displayed below the search bar. Make sure that the search bar is empty. Then open the *route selection screen* by tapping More > Select. Press 'All' on the top left to select all routes and folders. Then tap the export icon in the bottom toolbar to open the export pop-up. Select the kind of data to be exported in the export pop-up and press 'Export'.

4.23 Sharing routes with Topo GPS

You can share a route with Topo GPS so that it can be *imported by other Topo GPS users*. Only routes that you have recorded or planned yourself can be shared. Routes that you have imported on your device can not be shared.

Shared routes including its photos are visible to all Topo GPS users and are available for download on the Topo GPS website.

To share a route with Topo GPS, tap the export icon in the bottom of the *route details screen*.

Then select 'Geodata' in the export pop-up and tap 'Export' to export the route. A share pop-up will appear in which you can select apps, as in the example below:

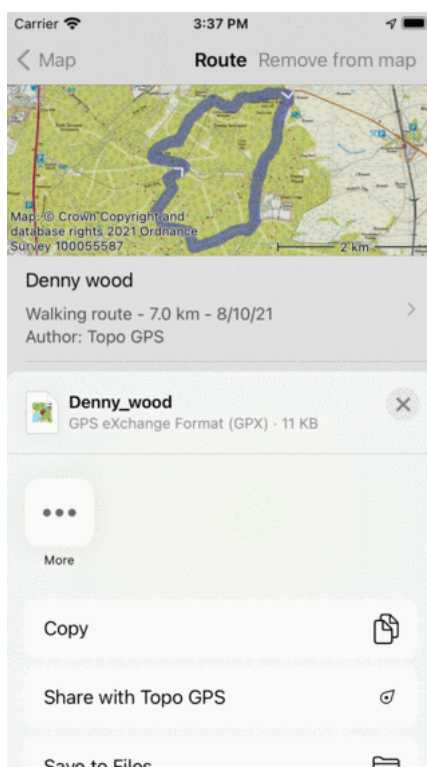


Fig. 74: The share pop-up after exporting a route.

In the share pop-up tap 'Share with Topo GPS'.

A pop-up will appear in which you can confirm sharing the route with Topo GPS.

If you tap 'Share' in this pop-up the route will be shared with Topo GPS and will be visible to other users in the '*Shared routes screen* (Menu > Routes > Shared routes).

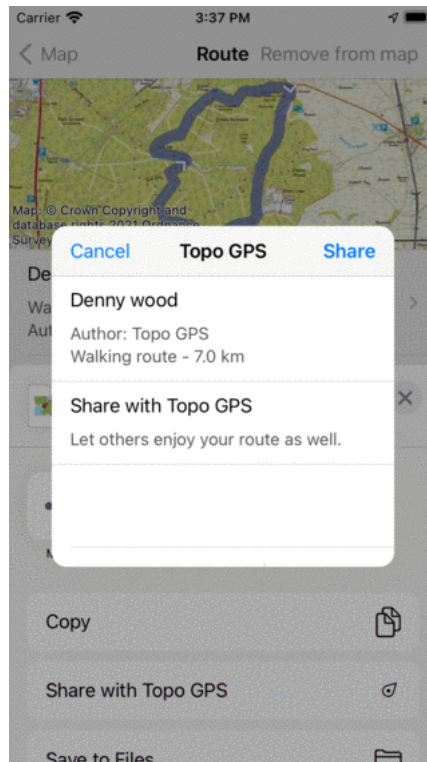


Fig. 75: The share with Topo GPS pop-up

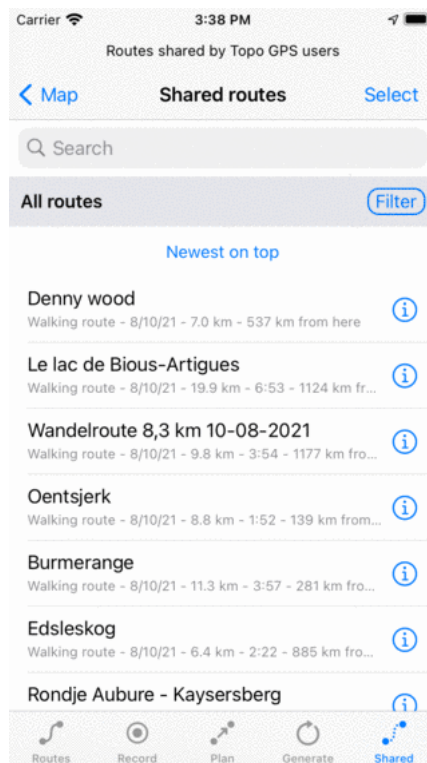


Fig. 76: The route Denny wood was shared with Topo GPS

4.23.1 Modifying shared route

If you want to modify a shared route, you have to *edit* it on your device and share it again.

4.23.2 Removing shared route

If you accidentally shared a route and you want to remove the shared route, first open the route details screen of the shared route. This can be done via Route button > Saved routes > Info button next to an item, or by tapping on the route line of a loaded route in the main screen. Then in the route details screen, tap the title section just below the map to open the additional route details screen. If you scroll down you will find a button 'Remove shared route'. If you tap it, and confirm the removal, the route will be removed from the Topo GPS server. It will not longer appear in the shared routes screen.

If this is not succesfull, you can also send a message to support@topo-gps.com.

LAYERS

A layer is a collection of geographical information that can be added to the map. Layers can be added to the map via the layers screen (*Menu > Layers*).

The layers screen shows a list of available layers, an example is shown below:

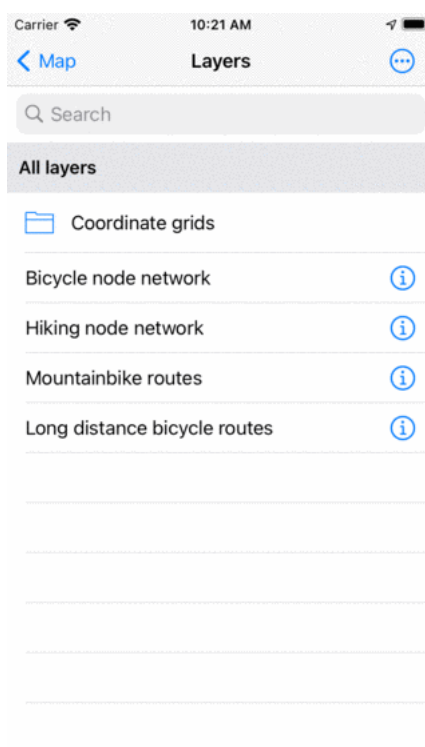


Fig. 1: *The layers screen (Menu > Layers).*

Layers that have grey background are currently loaded on the map. If you tap an item without a grey background it will be loaded on the map and you will return to the main screen. If you tap a layer with a grey background it will be removed from the map. To remove all layers, tap ‘More > Remove all from map’ in the layers screen.

In the layers screen you can always access the *coordinate grid layers*. Optionally you can purchase a special layer, like the bicycle node network or the mountainbike routes layer. It is also possible to import geodata as layers in wsf, kml/kmz, and geojson format.

5.1 Creating a layer from routes

It is possible to create a new layer from your saved routes. Go to the saved routes screen (Menu > Routes > Saved routes). Then tap 'More > Select' to enter the selection screen. Select the desired routes and/or folders and tap in the bottom of the screen on the more icon. Then choose 'Save as layer'.

A new pop-up will appear. Here you can choose the title of the route layer. You can decide to include the waypoints of the routes using a toggle. The default color of the route lines can be set. If you enable the toggle 'Override route line styles', the possibly customly set route line styles are ignored, and the default color is used for all routes. If you give the default color a bit transparency you can easily see the points which were visited more often, as they will become darker. If you tap 'Save' in this pop-up the layer is created. All selected routes are copied into this layer.

The saved routes layer can be found in the layers screen. If you tap it, it will be loaded or removed from the map.

5.2 Creating a layer from waypoints

Like with the routes, it is possible to create a new layer from your saved waypoints. Go to the waypoints screen (Menu > Waypoints). Then tap 'More > Select' to enter the selection screen. Select the desired waypoints and/or folders and tap in the bottom of the screen on the more icon. Then choose 'Save as layer'.

A new pop-up will appear. Here you can choose the title of the waypoint layer. If you tap 'Save' in this pop-up the layer is created. All selected waypoints are copied into this layer.

The saved routes layer can be found in the layers screen. If you tap it, it will be loaded or removed from the map.

5.2.1 Coordinate grids

Coordinate grids are a collection of curves at regular intervals that show a coordinate system.

To add a coordinate grid to the map, go to *Menu* > Layers > Coordinate grids. The following screen will appear:

If you tap a coordinate grid it will be loaded map and you will return to the main screen. If you return to the coordinate grids screen, the loaded grid will have a grey background. If you tap it, it will be removed from the map.

Sliding the dashboard to the *coordinates panel* is useful for read off the coordinates from the map.

In the figures below several examples of coordinates grids are displayed.

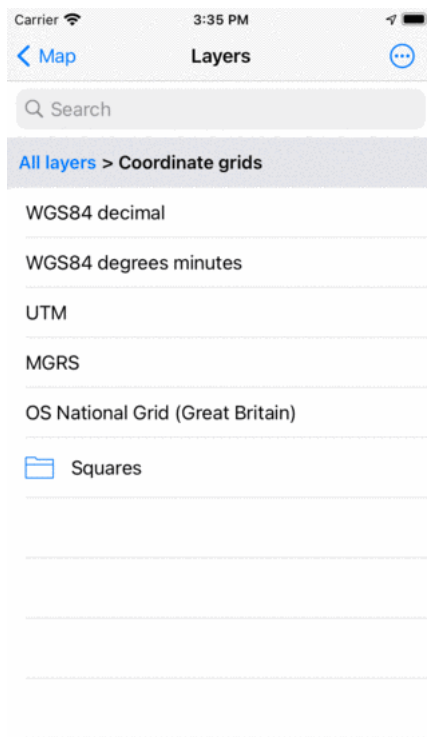


Fig. 2: *Coordinate grids in the layers screen.*



Fig. 3: *WGS84 degree minutes coordinates grid.*



Fig. 4: Ordnance Survey National Grid coordinates grid.



Fig. 5: MGRS coordinates grid.



Fig. 6: RD atlasblokken coordinates grid.

SEARCHING ADDRESSES AND PLACES

To search addresses and places you first have to open the search pop-up via *Menu* > Search. Then tap the the item ‘Search place or address’.

A screen will appear in which you can enter addresses and place names.

6.1 Loading single search result

As an example we now will enter the town ‘Alton’ in the search box. While typing search results will appear in the list below the search box, as you can see below:

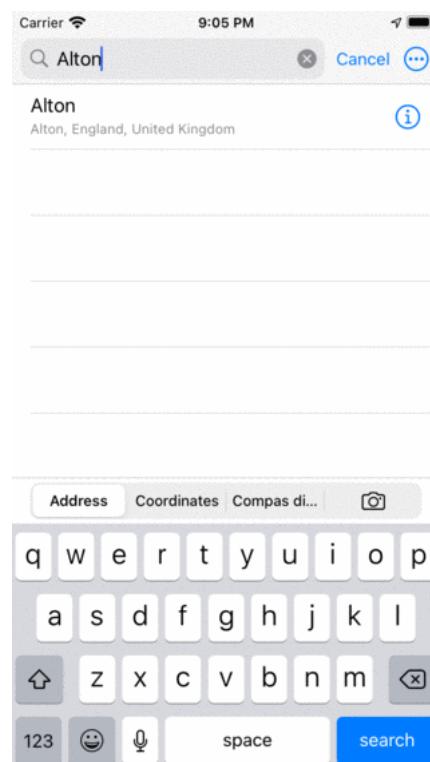


Fig. 1: *Searching the town ‘Alton’*

In order to be able to find addresses or places you have to be connected to the internet. Searching will occur via a service of Apple.

If you tap on a search result in the list, it will be loaded on the map as a waypoint and you will return to the main screen. An example is shown below:

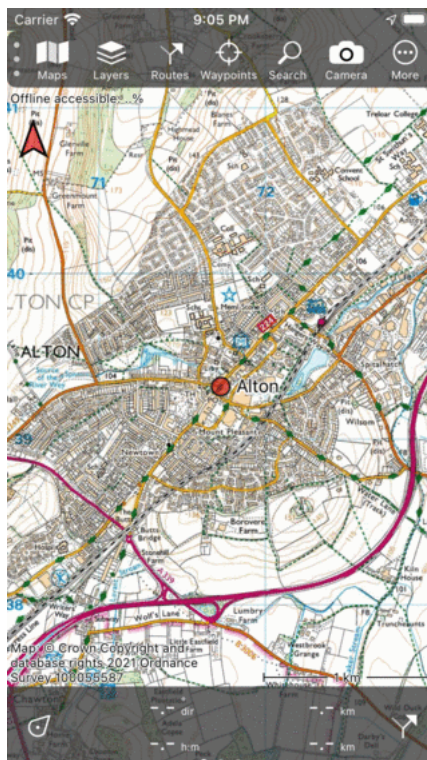


Fig. 2: The search result 'Alton' has been loaded on the map.

In the settings (Menu > More > Settings) you can control whether used search results are automatically saved as a waypoint. The default setting is not to save automatically in order not to clutter your list of waypoint with search results. If you want to save search result as a waypoint, you could tap it to open the *waypoint details screen*. There you can tap 'Save' in the bottom right to save the search result.

6.2 Loading all search results

You can also search on a keyword, like for example 'Pub'. The results that appear in the list depend on the area that is currently visible in the map screen. If you search for Pub and the map is zoomed to Alton, only pubs near Alton will show up, like in the figure below:

If you tap a single search result, it will be loaded on the map. You can also load all results, by pressing 'Search' on the bottom right of the screen. This is illustrated in the figure below:

6.3 Loading selection of search results

If you now search for 'Restaurant', a list of restaurants in Alton will appear, as you can see in the figure below:

If you only want to load a few of the results on the map, you have to press long on one of the desired results. A selection screen will appear as you can see below:

In this selection screen you can select multiple search results by tapping them. In the example above the restaurants 'Mifta's Indian' and 'The Twisted Teacup' have been selected. If you press 'Show on map' on the bottom right the selected items will be loaded on the map, as is illustrated below:

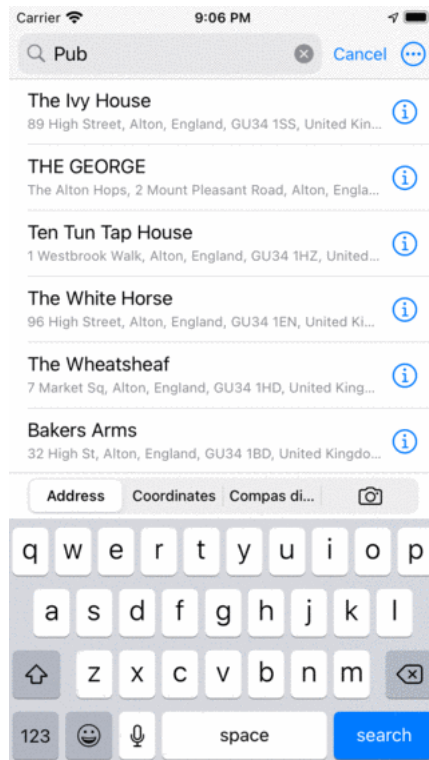


Fig. 3: Searching for 'Pub' in Alton.



Fig. 4: All found pubs near Alton.

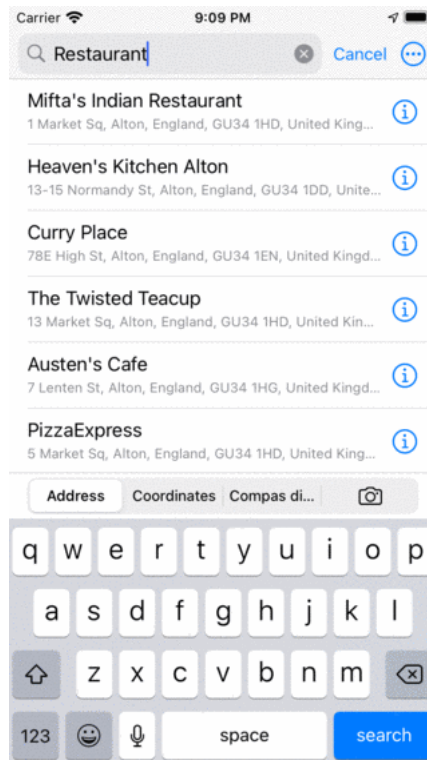


Fig. 5: Searching for a restaurant in Alton.

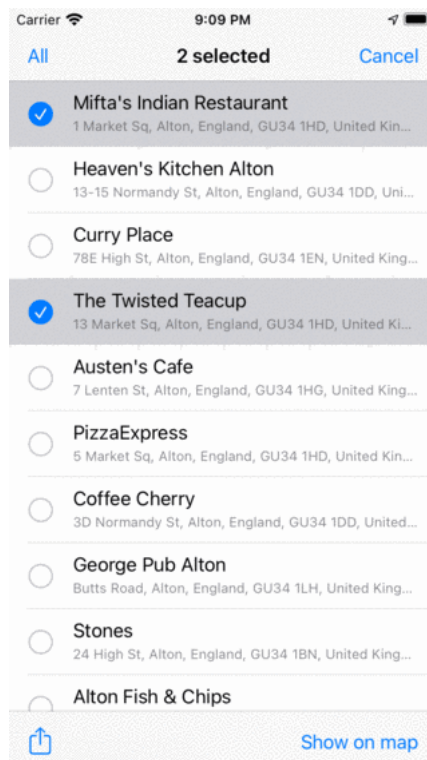


Fig. 6: Selecting search results.

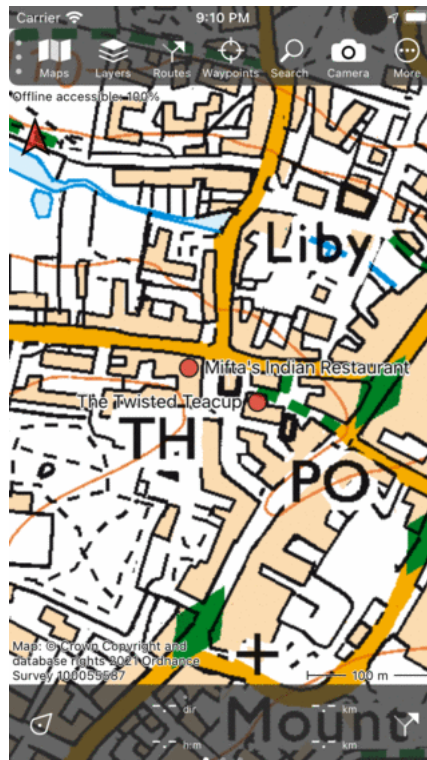


Fig. 7: Two selected search results have been loaded on the map.

6.4 Removing search results from the map

To remove a single search result from the map, tap the search result to open the *waypoint details screen*. Then tap the remove from map icon in the top right of the screen. To remove all search results from the map at once, tap *Menu* > Search. Select the 'Address' tab and tap More (top right) > Remove all from map.

6.5 Search result details

If you want to view the details of a search result, you can press the info (i) button on the right hand side of the title in the list with search results. The *waypoint details screen* of a search result will then appear.

6.6 Searching with search history

Your searches will be saved in the search history. This can be disabled in the *settings*.

If the search field is empty, the search history will appear below the search field. An example is displayed below:

If you tap a result from the history, it will be searched, and its results will be placed on the map.

For example, it is now easy to search for pubs at another location. Just move the map, and tap 'Pub' from the search history.

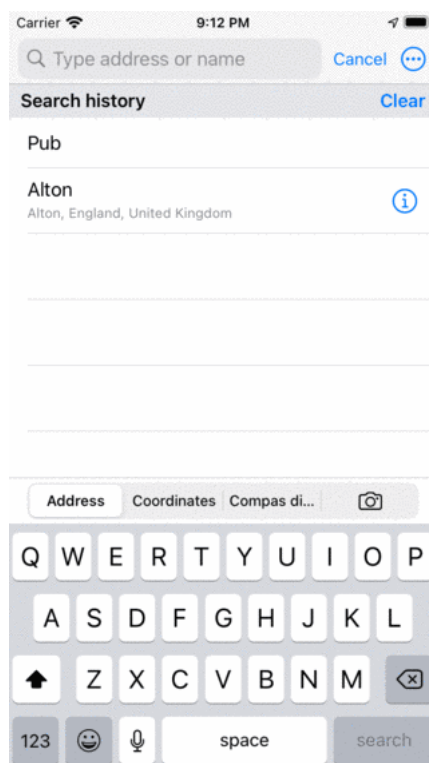


Fig. 8: *If the search field is empty, the search history will be displayed.*

6.7 Clearing search history

You can remove all results from the search history by pressing the 'Clear' button on the right hand side of the label 'Search history'.

It is also possible to remove individual results from the search history. Make a slide to the left with one finger on an item that needs to be removed. A delete button will appear, as is illustrated in the figure below:

If you tap the red 'Delete' button the item will be removed from the search history.

6.8 Search settings

In the *settings screen* (Menu > More > Settings > Search results) two options are important for searching addresses and places.

- *Save as waypoint*: If this setting is enabled, the search results that are loaded on the map will also automatically saved as a waypoint and show up in the waypoints screen. If you disable this setting, the search results will not be saved as a waypoint.
- *Save history*: If you enable this setting, the search results will be stored in the search history. If this settings is disabled your search results will not be saved. The search history will show up if no text is entered in the search box.

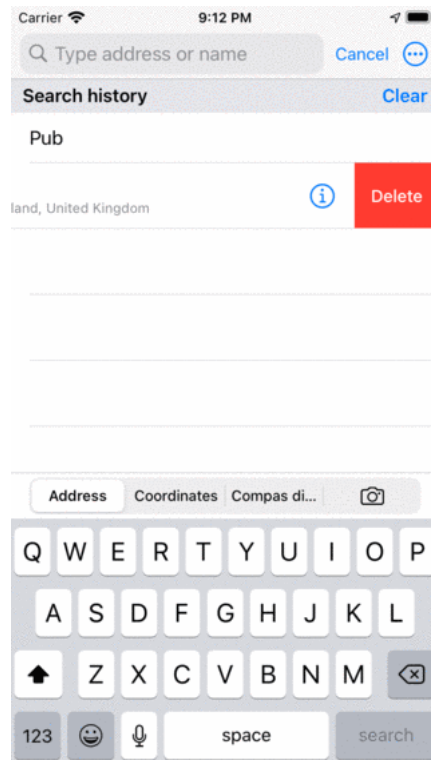


Fig. 9: Removing a search result from the search history.

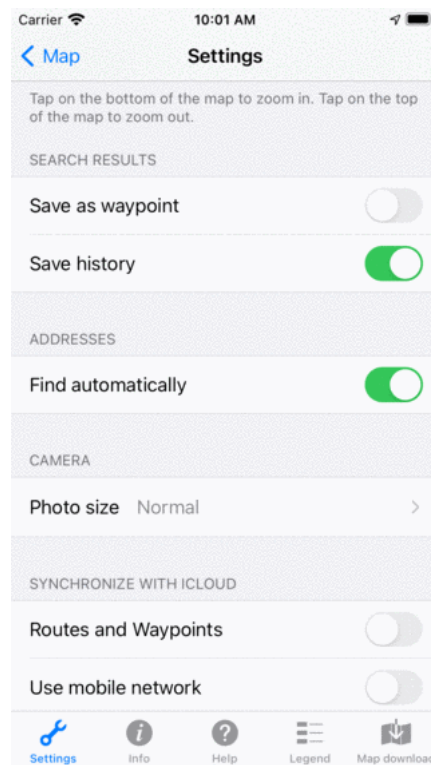


Fig. 10: Settings related to search in the settings screen (Menu > More > Settings).

COORDINATES

Geographic coordinates are a set of numbers and/or characters that refer to a location on the earth.

Topo GPS supports the global WGS84 decimal, WGS84 degree minutes, WGS84 degree minutes seconds, UTM, MGRS, GEOREF, GARS, QTH (Maidenhead), UTM ETRS89, and UTM (NAD83) coordinate systems. Next to that we support various country specific coordinate systems. A list of the supported country specific coordinate systems can be found below.

In Topo GPS you can view the coordinates of a *point on the map on the dashboard*. You can view your coordinates in *your current location screen* by tapping the position marker. The coordinates of a point are shown in the *waypoint details screen*. It is also possible to *add a coordinate grid layer to the map*. If you *print the map with a grid layer at a fixed map scale* you can read off and find coordinates with a map protractor.

Entering coordinates in various formats is possible via *Menu > Search > Enter Coordinates*. If need to enter printed coordinates you could also *scan the coordinates* instead via *Menu > Search > Scan coordinates*.

To set the shown coordinate systems, go to *Menu > More > Settings > Coordinates > Displayed coordinate systems*.

7.1 Entering coordinates

To enter coordinates you first have to tap *Menu > Search*. Then tap the 'Enter coordinates' item in the pop-up that appears. An example is shown in the figure below:

7.1.1 Coordinates type

To enter coordinates you have first to make sure that the right coordinates type has been set. If you press the 'Type' cell a screen will appear in which you can change the coordinates type, like in the figure below:

You can choose between different coordinates types, including: **WGS84 decimal**, **WGS84 degrees minutes** **WGS84 degrees minutes seconds**, **UTM** and **MGRS**. Next to that you can use various country specific coordinate systems.

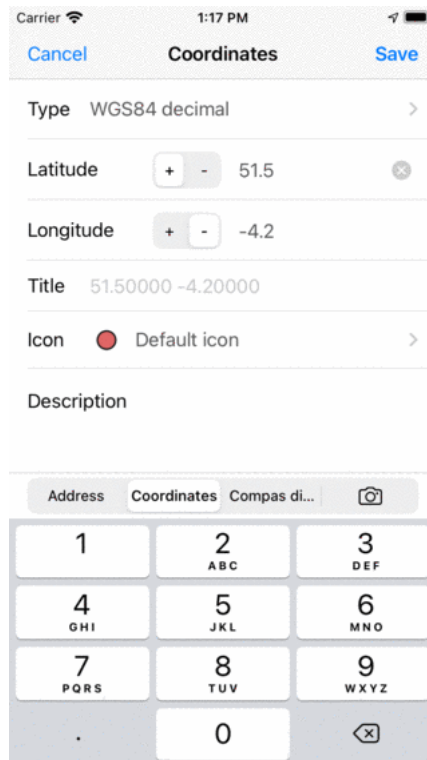


Fig. 1: *The coordinates input screen.*

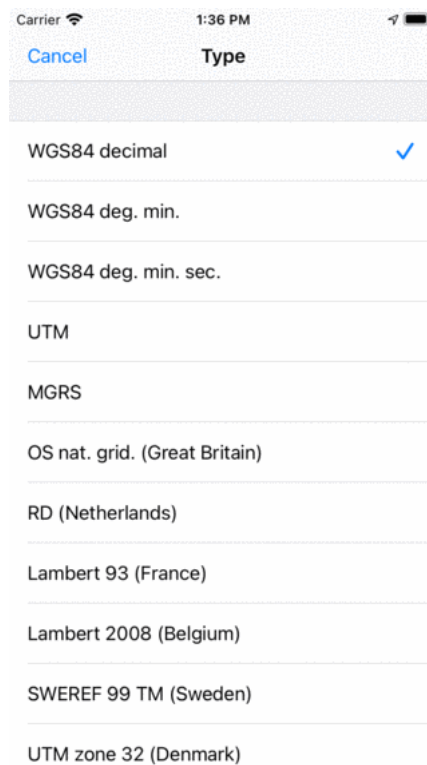


Fig. 2: *Choosing the coordinates type.*

7.1.2 Entering coordinates

If you have set the right coordinates type, you can enter the coordinates.

Depending on the position of the center of the map, the first digits of the coordinates are already entered. This makes it faster to enter coordinates if the coordinates are not located far from the center of the map.

As an example we now will enter the WGS84 coordinates '51.56321 -4.28942':

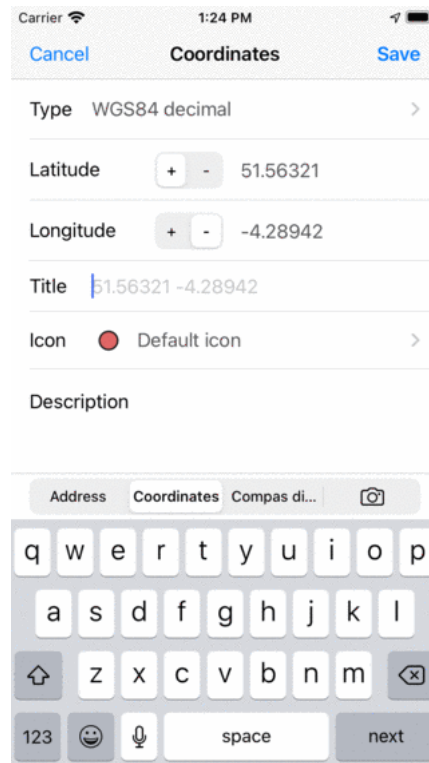


Fig. 3: Entering the coordinates 51.56321 -4.28942.

Optionally you can enter a title. As long as we do not enter a title, the suggested placeholder title will be used as a title for the waypoint. Next you could set the *icon* and enter a description.

If you tap 'Save' the coordinates will be saved as a *waypoint*. The coordinates screen will be cleared, so that you can enter the next coordinates. The first digits will now be based on the previous input. On the top left of the screen a Map button will appear, with which you can return to the map. The number behind map tells you how many coordinates have been entered.

As an example we will now enter the coordinates: N 51°34'01.9" W 4°16'41.9". To enter these coordinates we had to change the type to WGS degree, minutes, seconds. An example is shown below:

Again we are happy with the suggested title and press save. The coordinates will be saved and the coordinates screen will be cleared, so that you can enter the next coordinates.

Now will we enter the Ordnance Survey National Grid coordinates SS 41996 88847, as is illustrated below.

After pressing 'Save' the coordinates will be saved and the coordinates screen will again be cleared.

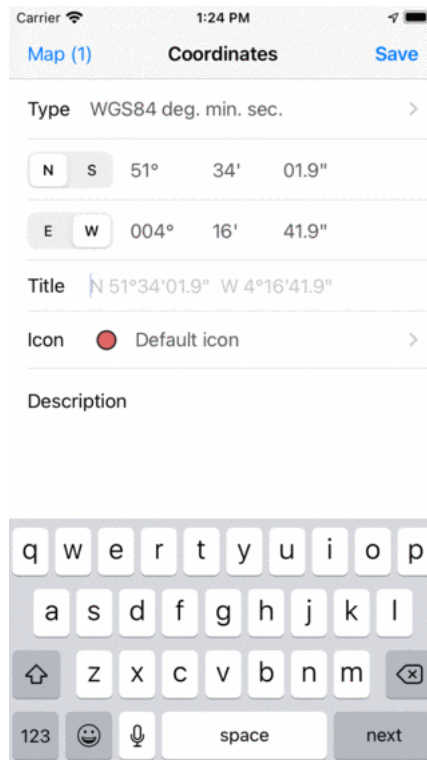


Fig. 4: Entering the coordinates $N 51^{\circ}34'01.9'' W 4^{\circ}16'41.9''$.

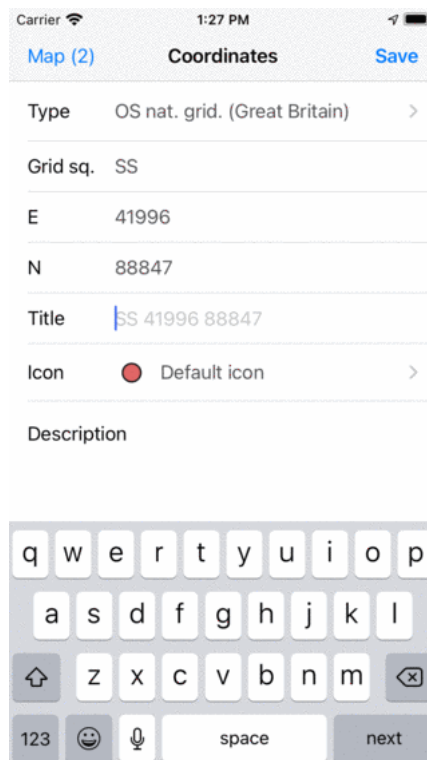


Fig. 5: Entering the coordinates $SS 41996 88847$.

7.1.3 Displaying on map

After entering the coordinates, you can return to the map screen by pressing the map button on the top left. The number of successfully entered coordinates is displayed on the map button. After entering the three coordinates in the examples above and tapping ‘Map’ the main screen looks as follows:

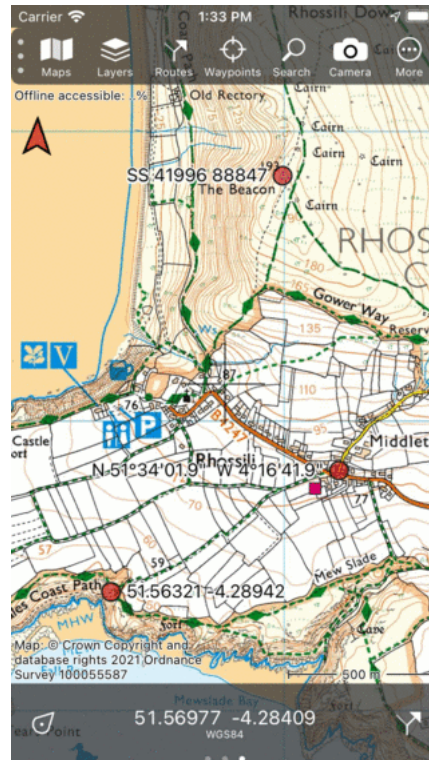


Fig. 6: Three entered coordinates are put as waypoints on the map.

7.1.4 Entering a list of coordinates

If you have received a list of coordinates in text format, you could enter them one-by-one via the coordinates input screen, as is explained above.

It could however be easier to select and copy these coordinates. Then select the tab ‘Address’ and then press long on the search box. A paste button will appear as is illustrated in the figure below:

If you press ‘Paste’ the list of coordinates will be inserted and processed. The resulting coordinates will be displayed in the list below the search box, as is illustrated in the figure below:

You can now load individual coordinates on the map, by tapping them. By pressing long on a result you can make a selection of results that you would like to load on the map. If you press ‘Search’ on the bottom right, all results will be loaded on the map, like in the figure below:

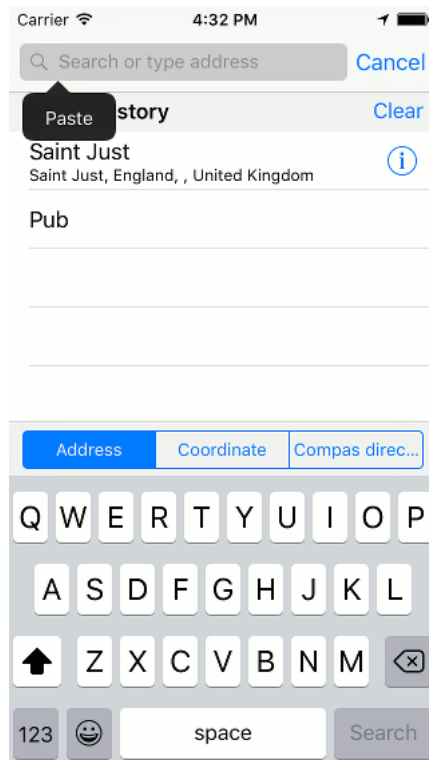


Fig. 7: Pasting a list of coordinates into the address search box.

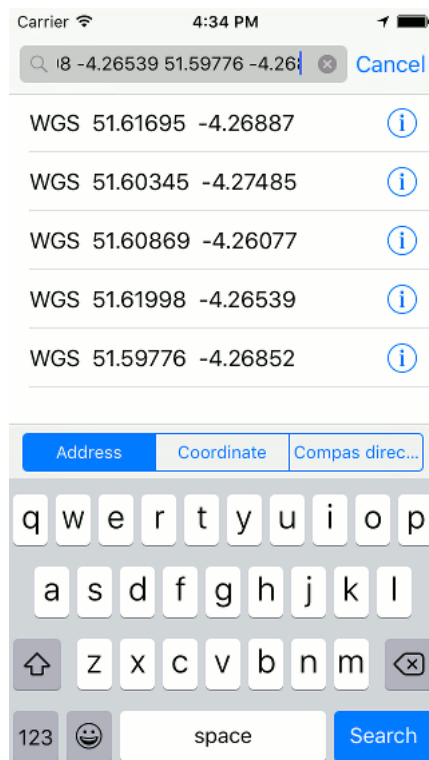


Fig. 8: A list of coordinates has been pasted into the search box.

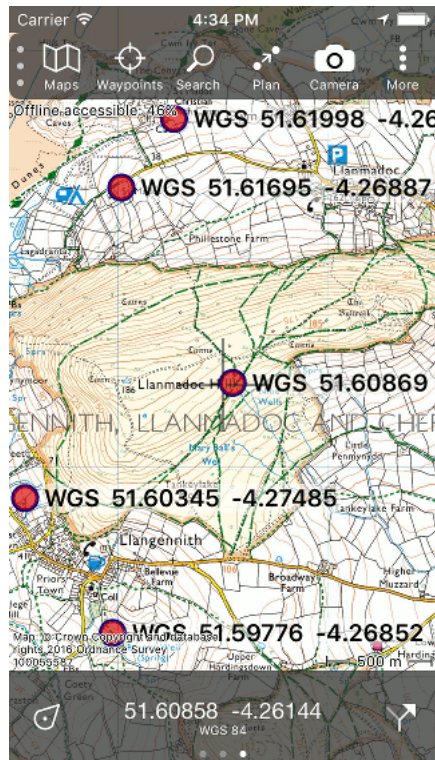


Fig. 9: A list of coordinates has been placed on the map.

7.2 Scanning coordinates

Topo GPS contains a coordinates scanner. The coordinates scanner can scan coordinates and show them on the map. You obtain the best results by scanning coordinates printed on paper. Scanning coordinates shown on a display is also possible. Scanning handwritten coordinates does not function very well.

Scanning coordinates is most often much faster and more accurate than *entering the coordinates*.

To open the coordinates scanner, tap *Menu* > Search. Then tap 'Scan coordinates' in the pop-up that appears.

To use the coordinates scanner you need to give Topo GPS permission to access your camera in the device settings.

If you open the coordinates scanner you see the image of the camera. In the center there is a lighter rectangle. Place that rectangle above the coordinates. You can zoom in and out with two fingers to focus the rectangle on the coordinates. The coordinates should be printed on one line. It is not possible to scan multiple coordinates at once.

An example is shown below:

If you have placed the coordinates in the rectangle and focussed the camera the coordinates will be recognized automatically and shown on the map, as in the example below:

In the top of the screen you see the position of the coordinates on the map. In the bottom you see the scanned image. You can use it to verify that the coordinates were scanned correctly. If you tap 'Save' the coordinates are saved as a *waypoint* and the coordinates scanner screen is opened again. As a second example we will scan MGRS coordinates:

After the coordinates are recognized, again a map with the coordinates will be shown:



Fig. 10: Scanning coordinates with the coordinates scanner.



Fig. 11: Coordinates have been scanned and are shown on the map.

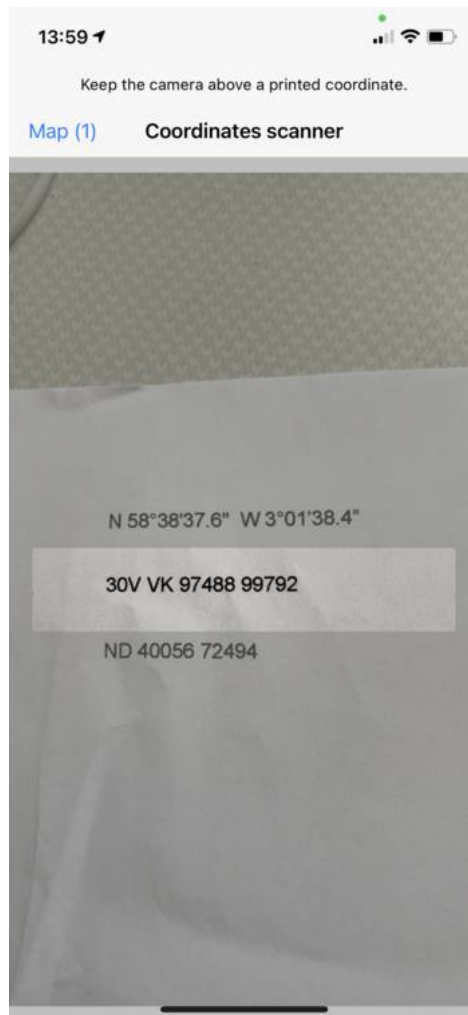


Fig. 12: Scanning MGRS coordinates

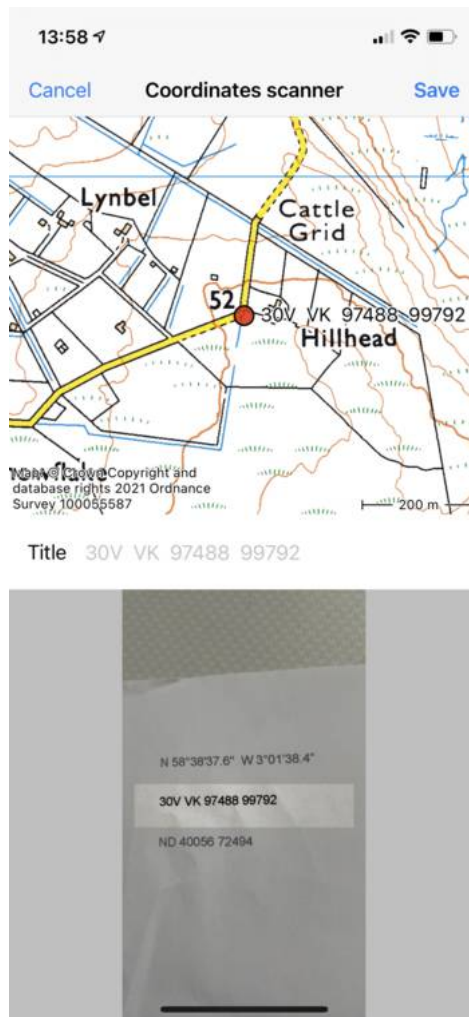


Fig. 13: MGRS coordinates have been scanned and shown on the map.

Again you can tap 'Save' to save the coordinates and return to the coordinates scanner screen. As a last example we now will scan Ordnance Survey National Grid coordinates:

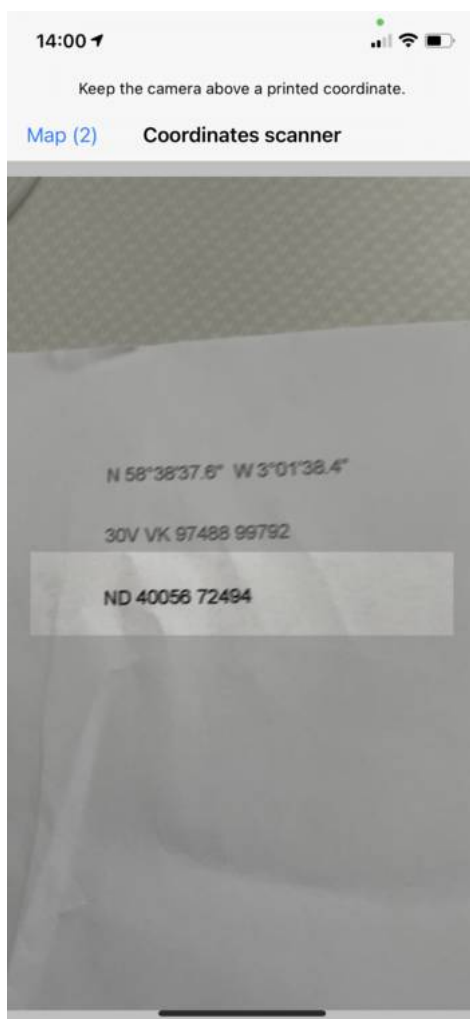


Fig. 14: Scanning OSNG coordinates

After the coordinates are recognized, again a map with the coordinates will be shown:

Tap 'Save' to return to the coordinates scanner screen.

In the top left of the coordinates scanner screen you see 'Map (3)'. The number next to map indicates the number of saved coordinates. If you tap 'Map' you will return to the main screen and the map will be zoomed to the scanned coordinates as you can see in the example below:

The coordinates scanner detects the coordinate system to be used. For country specific coordinate systems which contain only numbers, sometimes the wrong coordinate system can be picked. To make sure the right coordinate system is used, center the main map on the country that uses the coordinate system you are scanning.

The following country specific coordinate systems are supported in Topo GPS

Albania ATM – EPSG:6870 ALCC – EPSG:6962

Australia SA Lambert – GDA2020 – EPSG:8059 Vicgrid – GDA2020 – EPSG:7899 NSW Lambert – GDA2020 – EPSG:8058 MGA zone – GDA2020 GA LCC – GDA2020 – EPSG:7845 SA Lambert – GDA94 – EPSG:3107 Vicgrid – GDA94 – EPSG:3111 NSW Lambert – GDA94 – EPSG:3308 GA LCC – GDA94 – EPSG:3112 MGA zone – GDA94



Fig. 15: OSNG coordinates have been scanned and shown on the map.

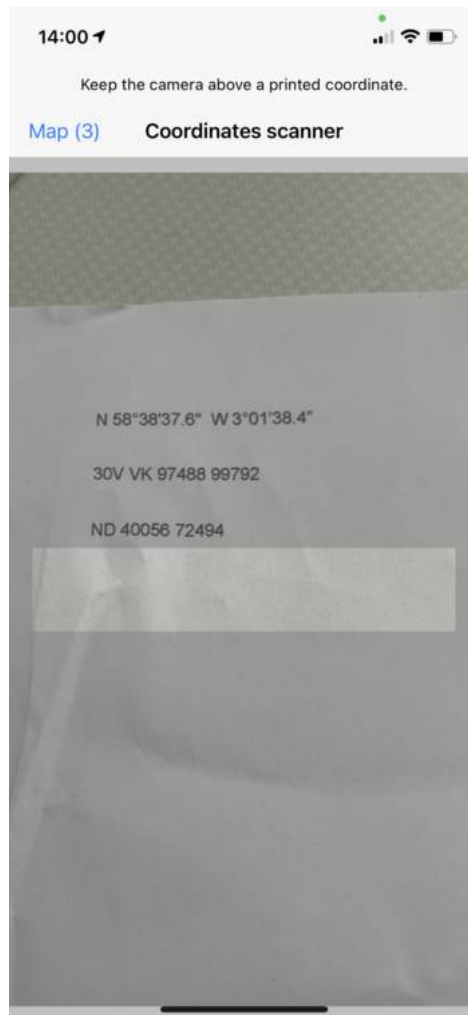


Fig. 16: *The coordinates scanner screen with 3 saved results.*

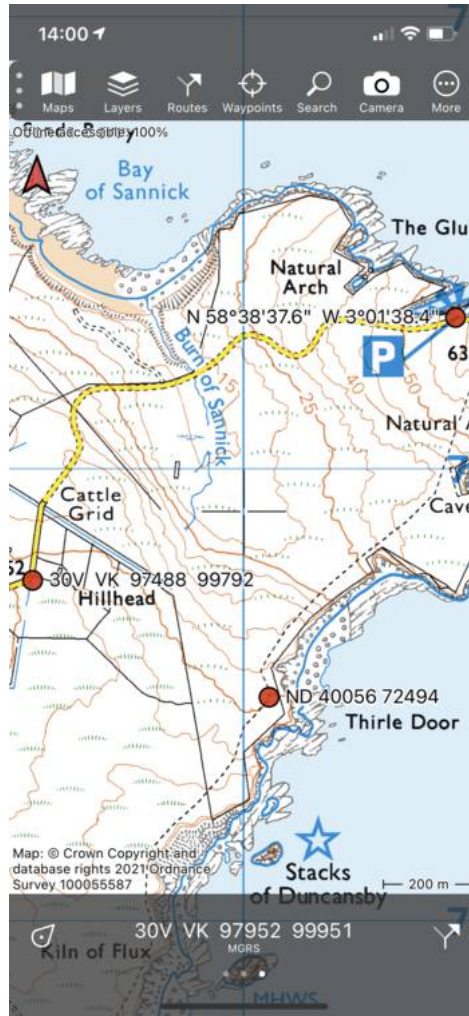


Fig. 17: The three scanned coordinates are shown on the main map.

Belgium Lambert 2008 – EPSG:3812 Lambert 1972 – EPSG:31370

Bulgaria BCCS – EPSG:7801

Croatia HRTM – EPSG:3765

Czech Republic/Slovakia SJTSK – EPSG:5514

Estonia Estonia 1997 – EPSG:3301

Faroer islands Faroe TM – EPSG:5316

Finland TM35FIN – EPSG:5048

France Lambert 93 – EPSG:9794 Lambert CC42 – EPSG:9842 Lambert CC43 – EPSG:9843 Lambert CC44 – EPSG:9844 Lambert CC45 – EPSG:9845 Lambert CC46 – EPSG:9846 Lambert CC47 – EPSG:9847 Lambert CC48 – EPSG:9848 Lambert CC49 – EPSG:9849 Lambert CC50 – EPSG:9850 Lambert I Zone (Nord) – EPSG:27561 Lambert II Zone (Centre) – EPSG:27562 Lambert III Zone (Sud) – EPSG:27563 Lambert IV Zone (Corse) – EPSG:27564 Lambert I Carto (Nord) – EPSG:27571 Lambert II Carto (Étendue) – EPSG:27572 Lambert III Carto (Sud) – EPSG:27573 Lambert IV Carto (Corse) – EPSG:27574

Germany Gauß-Krüger 3

Great Britain OS Nat. Grid. – EPSG:27700

Greece 87 – EPSG:2100

Iceland ISN 93 – EPSG:3057

Ireland ITM – EPSG:2157

Italy Fuso Italia – RDN2008 – N-E – EPSG:6875 Fuso Italia – RDN2008 – E-N – EPSG:7794 RDN2008 – UTM zone 32 N-E – EPSG:6707 RDN2008 – UTM zone 33 N-E – EPSG:6708 RDN2008 – UTM zone 34 N-E – EPSG:6709 Fuso 12 – RDN2008 – N-E – EPSG:6876 RDN2008 – UTM zone 32 E-N – EPSG:7791 RDN2008 – UTM zone 33 E-N – EPSG:7792 RDN2008 – UTM zone 34 E-N – EPSG:7793 Fuso 12 – RDN2008 – E-N – EPSG:7795

Japan CS I-XIX – EPSG:6669 - EPSG:6687 JGD2011 UTM 51 – EPSG:6688 JGD2011 UTM 52 – EPSG:6689 JGD2011 UTM 53 – EPSG:6690 JGD2011 UTM 54 – EPSG:6691 JGD2011 UTM 55 – EPSG:6692

Latvia LaTM – EPSG:10306

Lithuania LiTM – EPSG:3346

Luxembourg LU30 – EPSG:2169

Malaysia RSO – GDM2000 – EPSG:3375 BRSO – GDM2000 – EPSG:3376 BRSO – Timbalai – EPSG:29873 RSO – Kertau – EPSG:3168

Netherlands RD – EPSG:28992

New Zealand NZTM 2000 N-E – EPSG:2193 NZTM 2000 E-N MSLC2000 – EPSG:5479

Poland PL 92 – EPSG:2180

Romania RO – EPSG:3844

Singapore STM – EPSG:3414

Slovenia Slovenia 1996 – EPSG:3794

South Korea UCS – KGD2002 – EPSG:5179 UCS – 1985 – EPSG:5178

Spain SOC ED50 – UTM zone 29 ED50 – UTM zone 30 ED50 – UTM zone 31

Sweden SWEREF99TM – EPSG:3006 RT 90 7.5 gon V – EPSG:3019 RT 90 5 gon V – EPSG:3020 RT 90 2.5 gon V – EPSG:3021 RT 90 0 gon – EPSG:3022 RT 90 2.5 gon O – EPSG:3023 RT 90 5 gon O – EPSG:3024

Switzerland LV95 – EPSG:2056 LV03 – EPSG:21781

Ukraine Gauss-Krüger – UCS2000

CAMERA

If you tap *Menu* > Camera, the camera will be opened. If you take a photo, a *waypoint* will be created at your current location. The photo will be added to the waypoint and can be shown by opening the *waypoint details screen*.

The pixel size of the photo can be set in the *Photo size* section of the *settings*.

The photo will also be saved in your photo library if you give Topo GPS access to selected photos of your photo library (*iOS Settings* > *Topo GPS* > *Photos*). The photo stored in Topo GPS is always a copy of the original. If you remove the photo in Topo GPS it will not be removed from your photo library. And also if you remove the photo from your photo library, it will not be removed from Topo GPS.

The photo saved in Topo GPS and in the photo library contains the location and the direction the photo was taken in, in the EXIF metadata. To view the direction the photo was taken in, first open the *waypoint details screen*. Then tap on the photo to see it in more detail. You can view the direction on a map by tapping on the info button in the bottom bar.

If you are recording a route you can include the waypoints with the photos in the route. If you save the recorded route make sure that the setting 'Include waypoints' is set to 'Created during recording'. Then all waypoints with photos that are loaded on the map and are created during the recording of the route will be included in the saved recorded route. Other possible irrelevant waypoints and photos will then not be added.

COMPASS DIRECTION

A compass direction is a line of a certain length from a certain point in a certain direction.

You can manually create or read of a compass direction using the *map ruler*. This is most often the quickest way.

Alternatively you can *enter a compass direction manually*, or read of the *compass direction on a route* as explained below.

9.1 Manually entering a compass direction

To add a compass direction to the map, tap *Menu* > Search and tap the item 'Enter compass direction'.

The compass direction screen will appear like in the figure below:

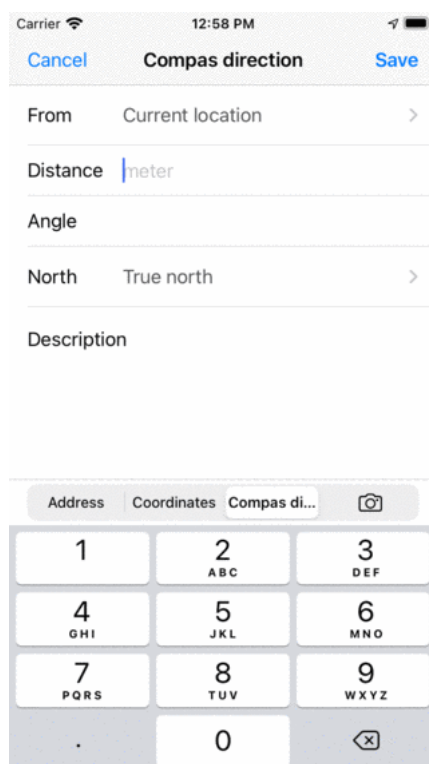


Fig. 1: *The compass direction screen.*

In the compass direction screen you can subsequently enter the following things:

- *From*: Here you can set the starting point of the compass direction. Most often it is your current location. If you tap this field you can enter another location or coordinates.
- *Distance*: Here you can enter the length of the compass direction in the displayed units.
- *Angle*: Here you can enter the angle with respect to the true north or magnetic north. If you do not enter a value, the value of the direction in which you point your device is used. This value is displayed in lighter color as a placeholder in this field.
- *North*: Here you can set the kind of north the angle is referring to. If you are entering a reading of a compass, you might want to set it to magnetic north, so that a correct magnetic declination correction can be applied.
- *Description*: Optionally you can add a description.

If you have entered all values, you can tap 'Save'. The compass direction will be saved, and can be found back in the *routes screen*. You will return to the main screen and the compass direction will be shown as a route on the map.

As an example we now create a compass direction direction of 5000 m with a direction of 45 degrees with respect to the true north. The result is displayed in the figure below:

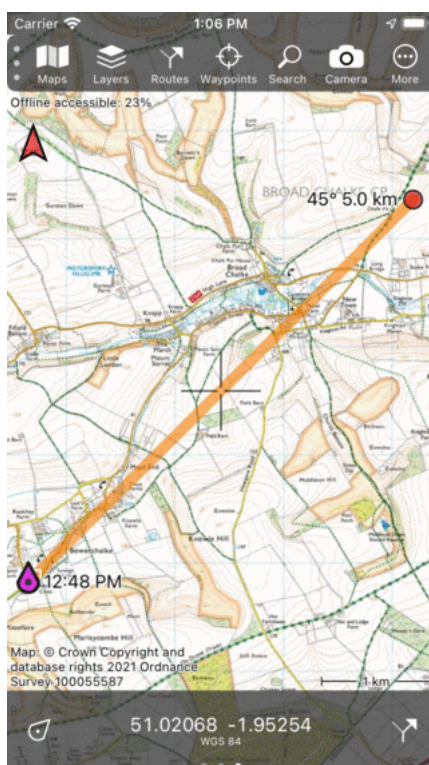


Fig. 2: A compass direction was added to the map.

If you are using compass directions it might also be useful to *enable the true north arrow*. This is an arrow on the main screen that shows the direction of the true north on the map.

The *direction you are travelling in* can also be displayed on the dashboard.

9.2 Finding a compass direction on a route

To find a compass direction, you first have to *enable the route course markers* in the settings.

Then you can *plan a route to a point*, for example with the transportation means ‘Crow fly’.

If you do that and return to the main screen, the route with the compass direction is shown on the map. An example is shown below:



Fig. 3: Finding a compass direction.

In the example above, we have planned a ‘Crow fly’ route from our current location to the Knowle Hill. The route course markers are displayed on the route. From these markers we can see that we have to travel in 80 degrees with respect to the true north to get from our current location to the Knowle Hill.

MEASURING DISTANCES AND ANGLES

10.1 Map ruler

To measure distances and angles between two points in the main map screen you can use the map ruler. To show the map ruler, first press long on the map until the icon for waypoint creation appears. Then add a second finger (possibly with your other hand). Immediately a ruler will be shown between the two fingers. On MacOS tap the ruler icon on the top right of the window.

If you move your fingers around you can change the start and endpoint of the ruler. If you put the start or end point near a waypoint or your current location, it will snap to it automatically. If you release your fingers, the ruler will remain at its location. An example of the ruler is shown in the figure below:

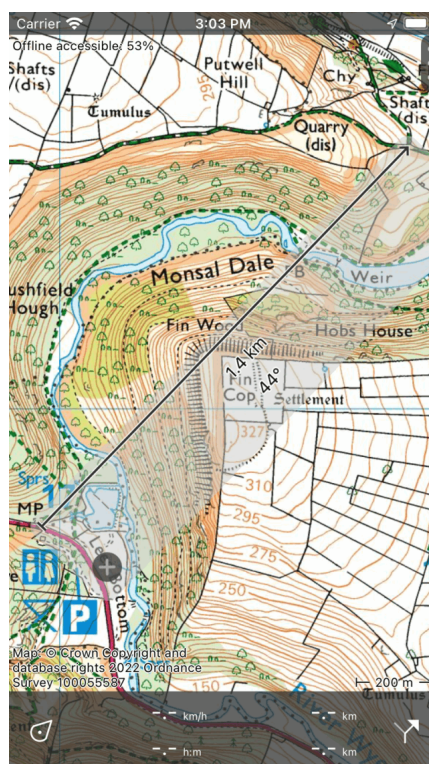


Fig. 1: The map ruler (press long on map with one finger, then add second finger).

In the middle of the ruler the distance between the two points is shown. If there is space, also the compass direction (with respect to the true north) from the start to the end point is displayed. The endpoint has a arrow head so that you can infer the direction of the ruler.

You can change the length and angle unit in the *settings*.

10.1.1 Modifying map ruler

You can modify the position, length and direction of the map ruler in several ways.

- Change start point: Put your finger on the ruler (light grey) near the starting point and move it around.
- Change end point: Put your finger on the ruler near the end point and move it around.
- Move the ruler without changing length: Put your finger on the ruler in the center, and move it around.
- Change length: Put two fingers on the ruler and move them apart to increase the length of the ruler. Move the two fingers towards each other to decrease the length. Only the end point will change, the starting point will remain at the same position.
- Rotate: Put two fingers on the ruler, keep the finger nearest to the starting point fixed. Move only the second finger to rotate the ruler. The length of the ruler stays the same, only the direction will change. While the length of the ruler stays the same, the measured distance can vary by rotating. This is due to the used map projection, especially when using the mercator projection (as is the case for OpenStreetMap), you might see clear differences.

If you move or zoom the map, the map ruler will stay at the same location. If you zoom in or out too far, the map ruler will disappear temporarily. It will reappear if you zoom back.

10.1.2 Removing map ruler

To remove the map ruler, tap the close button with the cross on the ruler.

10.1.3 Quick height profile

If the map ruler lies in the *coverage region of the height extension*, a profile icon will be shown on the map ruler, if the ruler is long enough. If you tap this profile icon, and you have bought the height extension, a *height profile will be shown* in the top of the screen. This height profile shows the heights along the line of the map ruler. If you move the map ruler the height profile will be updated automatically.

10.1.4 Navigate to a point

You can use the map ruler to navigate to a point. First add the ruler on the map as is explained above. Then move the begin point to the position marker icon, and the end point to the desired destination as in the figure below. The distance and angle will be updated automatically while you are moving.

10.1.5 Measuring long distances

The shortest path between two points on the earth is called a geodesic. Only for short separations this is a straight line on a map, but on longer distances it is a curve. The map ruler will always show a geodesic. An example is shown below.

Sometimes the geodesic does not fit on the ruler. If you want to make it visible, it can sometimes help to rotate the map ruler. If it still is not what you want, use the route planner to plan a route with the transportation mode set to 'Crow fly'.

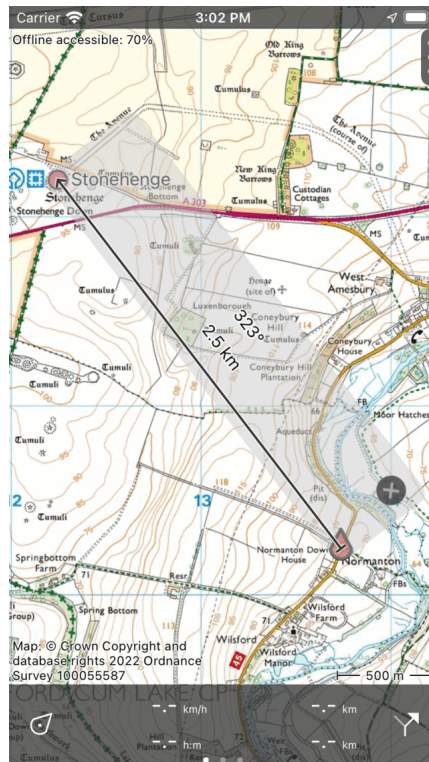


Fig. 2: Using the map ruler to navigate to a point.



Fig. 3: The curve on the map ruler is not a straight line but a geodesic.

On a geodesic the compass direction varies. We therefore only display the compass direction if it varies little. If it varies more than one unit of measurement, we show an error margin, that indicates between which values the compass direction varies along the geodesic. If the error is too large, the compass direction is not shown at all.

HEIGHT EXTENSION

It is possible to extend Topo GPS with the height extension. This addition allows you to do the following:

- *Displaying the terrain height (elevation)* on the coordinates panel of the dashboard.
- Generate *quick height profiles* with the map ruler.
- Generate *height profiles for routes planned with the transportation means crow fly*.
- Generate *more accurate height profiles* for all planned routes.
- Generate height profiles for *routes that lack a height profile*.
- Show *height above ground* and height above ground profiles.

11.1 Coverage

The ‘Height extension’ is a paid addition and currently only available for Germany, England, Wales, France, Switzerland, Austria, The Netherlands, Belgium, and Luxembourg. In the future we will add more regions. If you purchase the ‘Height extension’ now, you will also get access to the regions that will be added in the future.

11.2 Purchasing height extension

To purchase the height extension, zoom the map to one of the regions in which the height extension is available. Then slide the dashboard twice to the left to show the *coordinates panel*. Then tap on the coordinates panel and choose ‘Show height’ in the pop-up that appears. Then the purchase screen will appear.

11.3 Displaying terrain height

To display the terrain height in meters above sea level of a certain point, you have to slide the dashboard twice to the left to open the *coordinates panel*. Then the terrain height (elevation) of the point indicated with the cross in the center of the map will be displayed next to the coordinates as in the example below:

You can tap on the height to view details about the source, the vertical reference, and the accuracy. You have to zoom in the map far enough in a *region in which the Height extension is available* to view the terrain height.

If you tap on the position marker, you can view the terrain height of your current position.



Fig. 1: The terrain height is shown next to the coordinates on the dashboard.

If you tap on a point, the terrain height of the point is displayed just below the coordinates in the waypoint details screen.

11.4 Quick height profiles

To quickly obtain a height profile along a straight line, you have to activate the *map ruler*. Press long on the map so that a waypoint creation icon appears, then add a second finger to activate the ruler. If the map ruler is in the *covered region*, and the ruler is long enough, a height profile icon will appear next to the closing cross icon. If you tap the height profile icon, a profile will be shown in the top of the screen. This is the height profile along the line of the map ruler.

If you move the map ruler around, or change its size, the height profile will be immediately updated. You can drag the point in the height profile window to read off heights. The point is also depicted on the map ruler, so that you can easily see the location of the point in the height profile on the map.

You can zoom the profile in and out by putting two fingers on the profile window and moving them away from or to each other.

If you tap the percentage icon next to the profile, a slope profile is generated. Depending on the slope units set in the Topo GPS settings, either the slope percentage or the slope angle is shown. It allows you to quickly see how steep a certain line is.



Fig. 2: A height profile is generated using the map ruler.



Fig. 3: A slope profile is generated using the map ruler.

11.5 Height profiles for routes planned using crow fly

If you did not *activate the height extension*, routes planned using the transportation mode crow fly will not have a height profile. Purchasing the height extension ensures that the *routes planned* using the transportation means ‘Crow fly’ automatically get a height profile once the route lies in the *covered region of the Height extension*. An example is shown in the figure below:

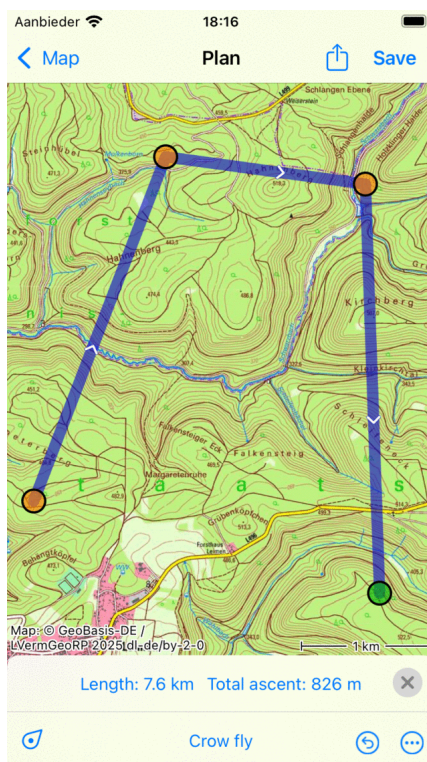


Fig. 4: With the height extension, crow fly planned routes will get a height profile.

In the example, a Crow fly route is planned. In the bottom the total ascent along the route is displayed. If you tap the total ascent the height profile will be displayed.

11.6 More accurate height profiles for planned routes

The height information in used in the height extension is based on very accurate digital terrain models, obtained by laser scanning of the terrain by aircrafts. The vertical and horizontal accuracy is much higher than in the height data that is used in the route planner without the height extension. If you have bought the height extension you the height profiles will be based on the accurate digital terrain models. As a result the computed amount of total ascent will also be more accurate.

11.7 Generate height profiles for routes that lack a height profile

If you have imported a route that lacks a route, a height profile will be automatically generated if you open the *route details screen* of the route. If the route is long, you might have to tap on the button 'Generate height profile'. It can take a while before the height profile appears, because sometimes height information has to be downloaded first.

11.8 Generate terrain height profiles for recorded routes

If you have recorded a route, the height is determined by the GPS and/or barometer of the device. Sometimes the height data obtained in this way is quite inaccurate, with huge fluctuations. Therefore we also display the terrain height profile below the recorded height profile in the *route details screen*. This terrain height profile could be more usable and give a more reliable estimate of the total ascent. However, sometimes the terrain height profile is very different from the actual profile, for example when somebody crosses a bridge over a valley. This bridge will be included in the recorded height profile, but not in the terrain height profile which follows the shape of the valley.

11.9 Height above ground

Especially when you are in the air, it might be of interest to get an estimate of the height with respect to the ground. The height from the GPS (altitude) is the height relative to the mean sea level. If you subtract the terrain height from that, you will get the height above the ground. If you tap on the position marker, you can view your current height above ground.

If you have recorded a route, you can view the height above ground profile in the route details screen. If the route is aerial, the height above ground profile is already listed below the terrain height profile. If not you can tap on the height profile to view the profile details, and then in the top of the screen, you can switch the profile view to height above ground.

11.10 Technical details of the height extension

11.10.1 Downloading

The height information is stored in tiles which have a size of 4 km x 4 km. These tiles have to be downloaded from our server and will be stored on your device. You can download the height information of a particular region by tapping 'Offline accessible' on the top left of the screen to open the map download screen. Then scroll down to the bottom to the section 'Height models'. Here you can tap 'Download' to download the height models for the currently visible region. You can also remove height models to reclaim storage space.

If you have made the height models offline accessible, you can view heights and generate profiles without an internet connection. You can test this by putting your device temporarily to airplane mode with wifi disabled.

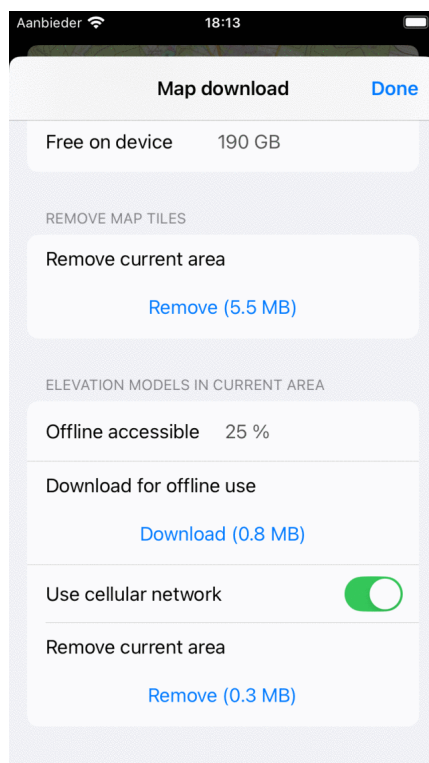


Fig. 5: Downloading digital height models for offline use.

11.10.2 Accuracy

The heights in the height extension are obtained from digital terrain models. These are very accurate big datasets, where heights are determined typically every 1 m using a laser from an aircraft. In the original dataset heights are accurate to in about 0.1 m. We have however reduced the accuracy a bit in a sophisticated way, to obtain a data size that is manageable for an app. Our claimed accuracy is: 95% of the heights differ less than 0.5 m from the original measurement. This is a perfect accuracy for outdoor activities, not every bump is noticeable, but small embankments are.

11.10.3 Privacy

To determine a height using the Height extension, first the necessary height tile of 4 km x 4 km is determined. If the tile is not stored on your device, it is automatically downloaded from our server. Then the height is determined from this height tile on your device. Never will any coordinates be send to our server. The height extension is very privacy friendly, we cannot in anyway view the positions of your points or routes, if you determine a height or a height profile.

SETTINGS

The settings screen can be opened by tapping the item ‘More’ in the *Menu*. Then tap ‘Settings’ in the pop-up that appears.

An example of the settings screen is displayed in the figure below:

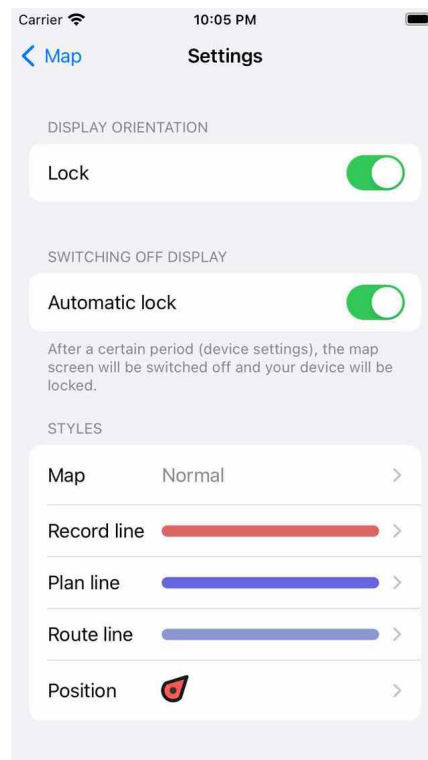


Fig. 1: *The settings screen.*

The settings screen contains the following sections:

12.1 Display orientation

By enabling the switch 'Lock' in the *settings* you can lock the screen such that it does not rotate if you rotate your device.

To lock the screen in the desired orientation, you first disable 'Lock'. Then you rotate your device to the desired orientation and enable 'Lock'.

If the lock is disabled, and the screen does not rotate if you rotate your device, you should check the 'Control Center'. Swipe down from the top-right corner of your screen to open Control Center. Tap the Orientation Lock button if it is enabled.

12.2 Switching off display

With the setting 'Automatic lock' in the *settings* you can determine whether the *main screen* should be switched off and locked automatically after a period of inactivity by iOS. If you disable this setting the *main screen* will not be switched off.

Suppose you mount your device to your bicycle. Then it could be convenient that the main screen stays on continuously. So in that case you have to disable 'Automatic lock'.

If you have *locked the orientation of an iPhone* in the normal (portrait) orientation, then the option 'Cover camera' appears.

If you enable the setting 'Cover camera' the map screen will be switched off automatically if you cover the front camera. On older iPhones the screen will be switched off immediately. On the newest iPhones the screen is switched off after around five seconds. The screen will appear immediately when the camera is uncovered.

Enabling the option 'Cover camera' is recommended when going outdoors. When you put your iPhone in your pocket, the screen will be switched off immediately, saving energy. If you also disable the option automatic lock, the map screen will appear immediately when you uncover your iPhone.

Be aware, if the automatic lock is disabled you do not have to enter your password when the screen reappears. This is convenient, but is also less secure.

12.3 Styles

In the section 'Styles' of the *settings* you can set the appearance of the map, the record, plan and route lines. Moreover you can determine the appearance of the *position marker*.

12.3.1 Map

You can set the map style in Topo GPS to 'Normal' or 'Dark'. The normal style has light colors. An example of the dark map style is shown below:

If you are using Topo GPS during the night, it might be better to set the map style to 'Dark'. The map is then much darker, making it easier for your eyes to look on the screen. The map legend is also adapted for dark mode. We recommend you to combine the 'Dark' map style setting with the 'Dark' mode display setting of your device. Then also all interface elements will have a dark background.

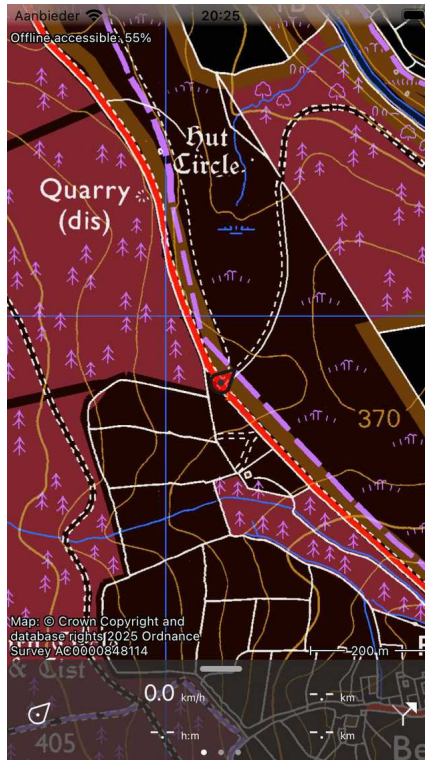


Fig. 2: The dark map style.

It is also possible to change the map style directly on the main screen via *Menu > Maps*. Tap ‘change to dark/light map’ in the pop-up that appears.

12.3.2 Record, plan and route lines

To change the color of the record, plan or route line, tap the corresponding item in the ‘Styles’ section of the *settings*. A screen will appear in which you can set the properties of the line.

If you tap route lines, you will see that there are 10 different route lines. The first route line is for the first loaded route on the map, the second for the second loaded route, etc.

As an example we now show below the screen in which you can change the line properties of the recorded route:

You can change the color using the Red/Green/Blue slider. It is also possible to change the color using a color picker by tapping ‘Choose color’ below the sliders. The transparency slider determines how transparent the line is. A bit transparency allows you to see the map behind the route line.

It is also possible to set the line style of an individual route. This can be done via *route details > edit route*. Tap ‘Edit line style’ in the pop-up that appears and disable ‘Use default linestyle’. To change the line style of a set of routes at once, first go to the saved routes screen (*Menu > Routes > Saved routes*). Then tap *More > Select* and select the routes and/or folders. Then tap ‘More > Edit line style’ in the bottom left to change the line style of the selected routes.

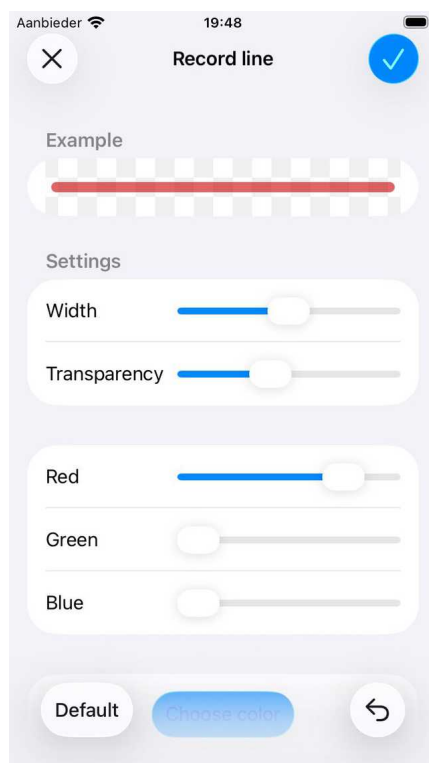


Fig. 3: Changing the properties of the record line.

12.3.3 Position marker

The default position marker has a red color. For visibility it might be better to change the color of the position marker sometimes. Tap the position marker in the ‘Styles’ section of the *settings*. A screen with available alternative position markers will be shown. You can choose between a red, purple, blue, green or yellow position marker. If you tap a position marker it will be changed.

Below you see an example of a map with a purple position marker:

12.4 Routes

In the section ‘Routes’ of the *settings* you can enable and disable *route distance markers*, *route course markers*, and *spoken instructions* for node network routes.

12.4.1 Route distance markers

Route distance markers are markers that appear on the route on regular intervals to show the distance from the start point. If you enable this switch these markers will appear on all routes that are loaded on the main map. An example is shown in the figure below:

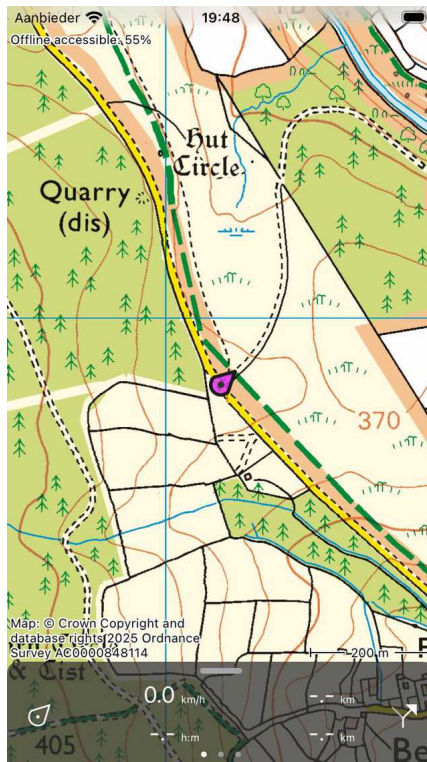


Fig. 4: The position marker was set to purple



Fig. 5: Route distance markers are enabled.

12.4.2 Route course markers

Route course markers are markers that appear on the route on regular intervals to show the course (direction of the route with respect to true north) at the point of the marker. If you enable this switch these markers will appear on all routes that are loaded on the main map. An example is shown in the figure below:



Fig. 6: Route course markers are enabled.

12.4.3 Spoken instructions

If you have loaded a node network like the bicycle node network, or the hiking node network, on the map, and you have loaded a route along these nodes on the map, the nodes will appear on the dashboard. If you enable 'Spoken instructions' and you are near the next node, a voice will tell you the node you are nearing and the upcoming node. The screen should be switched on for this to work, therefore this is only useful in combination with *disabling the automatic screen lock*.

12.5 Show on map

In the section 'Show' of the *settings* you can enable and disable the following settings:

12.5.1 Location accuracy

If you enable this toggle a circle indicating the accuracy of the position determination will appear around the *position marker*.

12.5.2 True north

If you enable this toggle an arrow pointing to the direction of the true north will always appear on the top left of the *main screen*. On most topographic maps the top of the map does not point exactly to the true north.

12.6 Map

In the section 'Map' of the *settings* you find the switch 'Additional zoom in'. If you enable this switch you can zoom in the map up to 8 times as far as without enabling it. The drawback is that the maps will become grainy when zoomed in that far.

Waypoints that lie very close to each other can be separated more easily by enabling this switch.

12.7 Units

In the section units of the *settings* you can set the length/speed, angle and slope units.

The length/speed can be set to Metric (m, km, km/h), Imperial (ft, mi, mph) or Nautical (ft, NM, kt).

The unit of angle can be set to Degrees ($^{\circ}$, 360), Gon (400), NATO mil (6400), Miliradians (6283), Swedish streck (6300) and Finish streck (6000). The number between parentheses indicates the amount of units fit in a full circle.

The slope unit can be set to percentage (%) or degrees ($^{\circ}$).

Below and example of the main screen with imperial units:

12.8 Coordinates

In the section 'Coordinates' of the *settings* you can determine which coordinate types are displayed in the app. The shown coordinate types in the *waypoint details screen*, the *current location screen* and the *coordinate panel* are determined by this setting.

If you tap displayed coordinate types a screen will appear in which you can enable and disable coordinate types. An example of this screen is shown below:

In the figure above, only WGS84 decimal and Ordnance Survey national grid are enabled. With the handles on the right hand side you can determine the ordering of the displayed coordinates. If you go to the waypoint details screen, you see in the 'Coordinates' section that also only these coordinate types are shown:

As a second example we now enable other coordinate types, MGRS, WGS84 degree, minutes seconds, and UTM. The settings screen looks then as follows:



Fig. 7: The main screen with imperial units

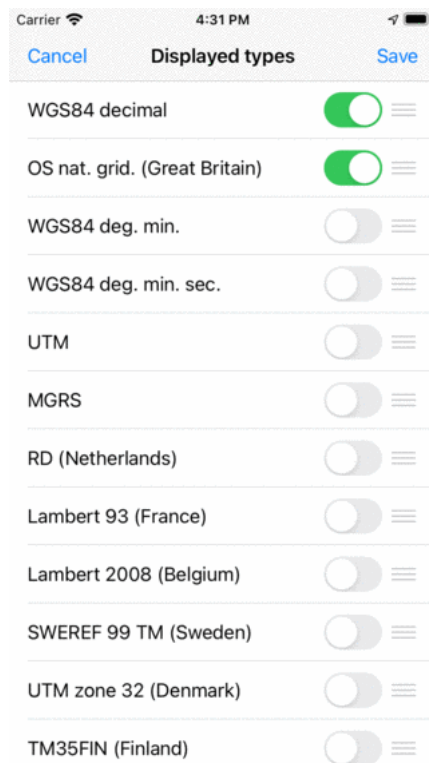


Fig. 8: Setting the displayed coordinate types.

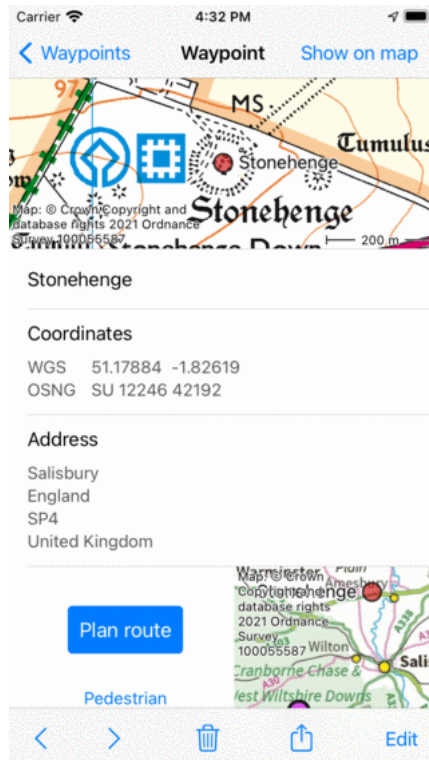


Fig. 9: Only WGS84 decimal and Ordnance Survey National Grid coordinates are shown in the waypoint details screen.

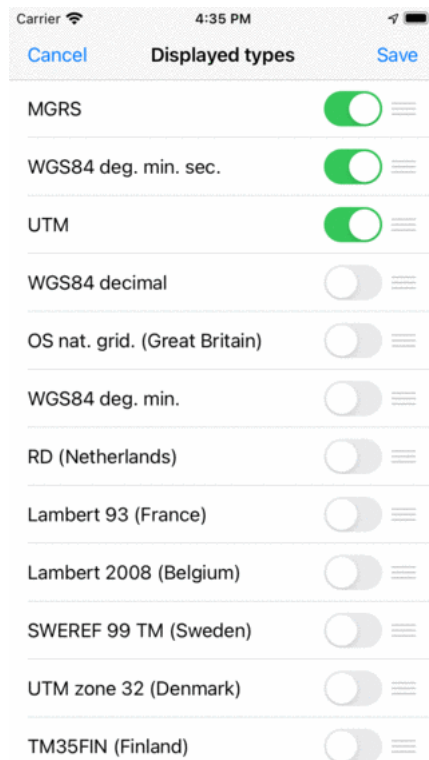


Fig. 10: Setting the displayed coordinate types.

In the waypoint details screen the ‘Coordinates’ section then only shows the MGRS, WGS84 degree minutes seconds, and UTM coordinates:

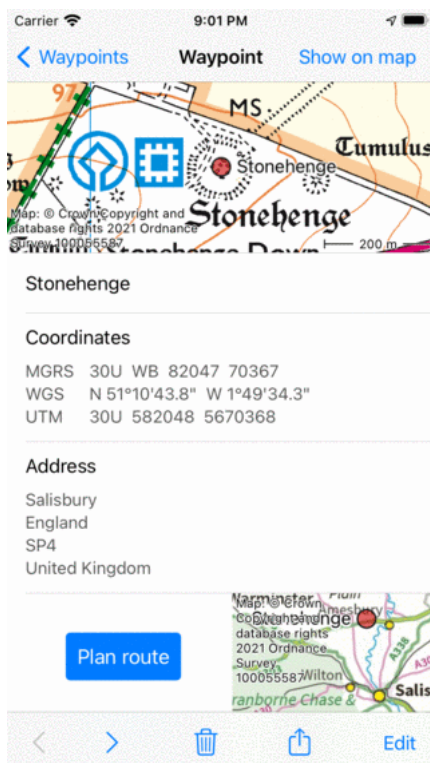


Fig. 11: Only MGRS, WGS84 degree minutes seconds, and UTM coordinates are shown.

12.9 Map tiles downloading

In the section ‘Map tiles downloading’ of the *settings* you can find the switch ‘Use cellular network’.

If you disable ‘Use cellular network’ map tiles will never be downloaded over a cellular network. This can prevent unwanted cellular downloads if you move the map to an area on which map tiles were not *stored offline*. Limiting cellular downloads could save you money, depending on your contract. The drawback is that you sometimes could see *gray maps*.

If you enable ‘Use cellular network’ map tiles can be downloaded over a cellular network. In addition you should enable Topo GPS to use the cellular network in the *device settings*.

12.10 Single tap zoom in/out

In Topo GPS you can zoom the map in or out with a single tap on the map screen. By default, tapping on the bottom is zooming in, tapping on the top is zooming out.

In the section ‘Single tap zoom/in out’ of the *settings* you can control the behavior of the single tap zoom.

You can choose between the following options:

- *Bottom / Top* - Tapping on the bottom is zooming in, tapping on the top is zooming out.
- *Top / Bottom* - Tapping on the top is zooming in, tapping on the bottom is zooming out.

- *Left / Right* - Tapping on the left is zooming in, tapping on the right is zooming out.
- *Right / Left* - Tapping on the right is zooming in, tapping on the left is zooming out.

12.11 Notifications

In the Notifications section of the *settings*, you can manage the system alerts sent by the Topo GPS app. Currently, there is only one toggle available: Deviate from route warning. When enabled, the app will alert you if you stray from a route you are following. Please note that this feature requires you to *record* your route.

Once you have loaded a route on the map, if you deviate from the path by 25 meters or more, Topo GPS will trigger an audible alert—even if the app is running in the background. This helpful warning ensures you are quickly notified if you start heading in an unintended direction.

12.12 Search results

In the section ‘Search results’ of the *settings* you can control several options of *searching addresses and places*.

If you enable ‘Save as waypoint’ all search results that you add to the map are automatically saved as a *waypoint* and will appear in the *waypoints screen*.

If you enable ‘Save history’ all search queries are stored in the *search history*.

12.13 Addresses

In the Addresses section of the *settings*, you can choose whether the app automatically looks up the addresses of specific points.

When the ‘Find automatically’ setting is enabled, Topo GPS will fetch location addresses to provide a precise address for your points and your current position. Please note that an active internet connection is required to use this feature.

Once retrieved, addresses are displayed on the *waypoint details screen* and the *current location screen*.

Privacy Note: For a higher level of privacy, you may prefer to keep this feature disabled. Doing so prevents the app from making any network requests that contain your current location or the locations of your saved points.

12.14 Camera

In the section ‘Camera’ of the *settings* you can determine the pixel size of the photos taken with the *camera*.

You can choose between:

- *Small:* 1024 x 768 pixels
- *Normal:* 1536 x 1152 pixels

- *Large*: 2048 x 1536 pixels
- *Extra large*: 2560 x 1920 pixels

Larger photo sizes imply sharper photos, but they also require more storage space.

This setting is only relevant for the photos stored in Topo GPS. Photos that are saved in your *photo library* are always saved in the original resolution.

12.15 Dashboard

In the section ‘Dashboard’ of the *Settings* you can choose the button that appears on the right hand side of the *Dashboard*. Normally this set to the ‘Route button’. You can set the right button on the dashboard to ‘Routes’, ‘Waypoints’, ‘Layers’, ‘Maps’, ‘Camera’ or ‘Search’. Depending on how you are using Topo GPS you might want to choose a different button. For example if you take a lot of photo’s with Topo GPS you could set this button to ‘Camera’, so that it will become easier to take photo’s.

12.16 Synchronize with iCloud

In the section ‘Synchronize with iCloud’ of the *settings* you can determine the behavior of iCloud synchronization.

If you enable the switch ‘Routes and Waypoints’ your *routes* and *waypoints* will be *synchronized with iCloud*. They are then also available on your other devices and they are backed up.

If you enable ‘Use mobile network’ iCloud synchronization is also possible over cellular network if you also have enabled ‘Mobile data’ in the iOS Settings > account > iCloud.

12.17 Device settings for Topo GPS

If you scroll to the bottom of the *settings screen* or you go to the iOS Settings app > Topo GPS, you can modify the device settings of Topo GPS.

An example of the device settings screen is shown in the figure below:

In the device settings screen you can subsequently set the following options:

- *Location*. If you set this to ‘While using’, Topo GPS can show your position on the map, record your route and find waypoints and routes near your location.
- *Photos*. If you set this to ‘Selected photos’, you can decide which photos Topo GPS can import. If you set this to ‘Selected photos’, Topo GPS can also save the photos made with the *camera* in your photo library.
- *Camera*. If you enable the camera, you can make *photos* and *scan coordinates*.
- *Siri & Search*. This contains settings related to search and the Siri assistant.
- *Background app refresh*. If you enable this setting, Topo GPS can process various tasks in the background, like updating synchronizing routes and waypoints and updating layers.
- *Mobile data*. If you enable this setting Topo GPS can use the mobile network. This is for example necessary for *route planning* and *downloading map tiles* over a mobile network.

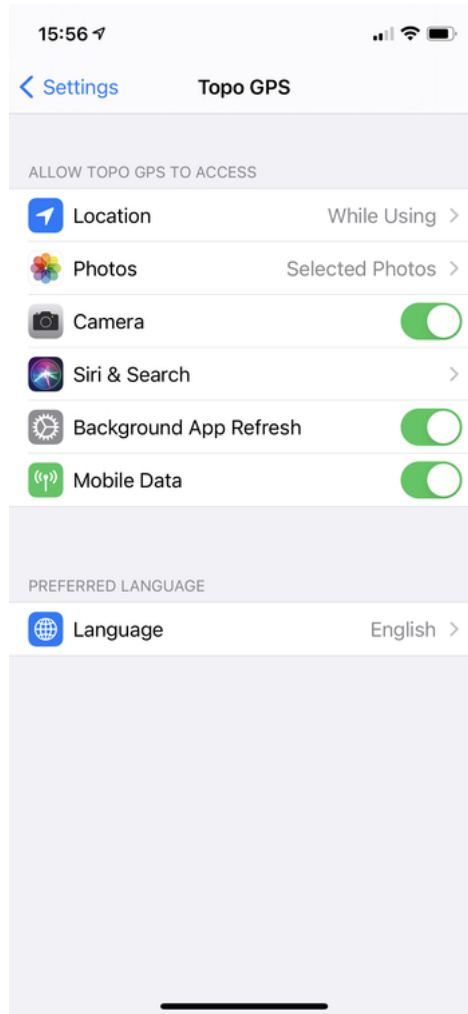


Fig. 12: *The device settings screen for Topo GPS*

- *Language.* Here you can set the language Topo GPS is using, and you could set it different from the language that you use on your device. Supported languages are English, German, Spanish, French, Italian, Dutch, Swedish, Norwegian, Danish, Finnish, Polish, Japanese, Ukrainian, Czech, Slovak, Slovenian, Greek, and Estonian. If your device language is supported, that language is used by default.

MISCELLANEOUS

13.1 Transferring to a new device

If you have obtained a new device, you can install Topo GPS for free from the AppStore or the Google Play store. Below we discuss the various possibilities to transfer your purchases and data.

13.1.1 Transferring from Apple to Apple

13.1.1.1 Purchases

The purchase are connected to your Apple account and are accessible on all your devices that use the same Apple account. Ensure that you are logged in into the AppStore with the correct Apple account. It might be necessary to go to Menu > Maps > More maps and tap 'Restore previous purchases' to retrieve the earlier purchases. If you have bought partial maps, you need to enable in the settings app: Apple account > iCloud > Apps > Topo GPS on both your old and your new device.

If you change your Apple account you cannot transfer your purchases. It is however possible to link accounts via Apple family sharing. Some maps are eligible for family sharing, and they can then still be made accessible via Menu > Maps > More maps > Restore previous purchases.

13.1.1.2 Routes and points

The easiest method of transferring the routes and points is via *iCloud synchronization of routes and points*. If you have enabled this on your old device, enable it also on your new device (Menu > More > Settings > Scroll to bottom). Then all routes and points should be retrieved automatically after a while.

Alternatively, manually *export all routes in the saved routes screen* to gpx.zip format (including photos) and save the file to a cloud storage service like iCloud, OneDrive, Dropbox or Google Drive. Do the same with the points. Open the file on your new device with Topo GPS, or use Menu > More > Import file to import the file into Topo GPS.

13.1.2 Transferring from Android to Android

13.1.2.1 Purchases

The purchases will be automatically accessible if you are logged in into Google Play with the same Google Play account as before. You might need to go to Menu > Maps > More maps to automatically retrieve the purchases.

In the past we had different country specific Topo GPS apps. If you use one of these apps, like for example Topo GPS Netherlands or Topo GPS Sweden, you need to install this country specific Topo GPS app on your new device, otherwise you cannot retrieve your earlier purchases. Go to the Google Play store and search for 'Topo GPS Netherlands/Sweden etc.'. Or tap on one of the following links on your new Android device: [Netherlands](#), [Sweden](#), [Germany](#), [Norway](#), [Denmark](#), [Finland](#), [France](#), [Belgium](#), [New Zealand](#), [Switzerland](#).

A country specific Topo GPS app has a different icon from the universal Topo GPS app. If you have installed the universal app already, you could also go in the universal Topo GPS app to Menu > Maps > More maps > More > Restore earlier purchases.

If you have changed your Google Play account you cannot retrieve the earlier purchases. It is not possible to transfer purchase from one Google Play account to another. If you need to change an e-mail address connected to an account, make sure that you only change the e-mail address of that account, and not create a new Google Play account.

13.1.2.2 Routes and points

To transfer routes, on your Android device go to Menu > Routes > Saved routes. Tap the More button (top right), and tap 'Export all'. Save the file to a cloud storage service that you can access on you Android device, like for example Google Drive. Do the same with the points via Menu > Points. On your Android device go in Topo GPS to Menu > More > Import file and import the routes and waypoints files. Or in the cloud storage service app Google Drive app, tap on the file and choose 'Open with Topo GPS'. The points can sometimes be retrieved automatically from Android backup. But because the storage capability for an Android app backup is minimal, photos are not included and this possibility is not available for routes.

13.1.3 Transferring from Android to Apple

13.1.3.1 Purchases

It is not possible to transfer the purchase in Topo GPS from Android to Apple devices. This is because the purchases are connected to an Apple account on Apple devices and to your Google Play account on Android devices.

13.1.3.2 Routes and points

To transfer routes, on your Android device go to Menu > Routes > Saved routes. Tap the More button (top right), and tap 'Export all'. Save the file to a cloud storage service that you can access on your Apple device, like for example Google Drive or OneDrive. Do the same with the points. On your Apple device go in Topo GPS to Menu > More > Import file and import the routes and waypoints files. Or in your cloud storage app, tap on the file and choose 'Open with Topo GPS'.

13.1.4 Transferring from Apple to Android

13.1.4.1 Purchases

It is not possible to transfer the purchase in Topo GPS from Apple to Android devices. This is because the purchases are connected to an Apple account on Apple devices and to your Google Play account on Android devices.

13.1.4.2 Routes and points

To transfer routes, on your Apple device *export all routes in the saved routes screen* to gpx.zip format (including photos). Save the file to a cloud storage service that you can access on your Android device, for example Google Drive, OneDrive, or Dropbox. Do the same with the points. On your Android device go in Topo GPS to Menu > More > Import file and import the routes and waypoints files. Or in your cloud storage app, tap on the file and choose 'Open with Topo GPS'.

13.2 Payment methods

You can only make purchases in Topo GPS through the Apple AppStore or Google Play store. Available payment methods vary from country to country. If paying by credit card, mobile phone, or bank transfer does not work, you might want to consider buying a AppStore or Google Play store gift card in a for example a bookstore, supermarket or gas station.

13.2.1 AppStore

On the AppStore webpage the [possible payment methods](#) are listed. It is also explained how you can [add or modify payment methods](#).

13.2.2 Google Play

On the Google Play website the [accepted payment methods](#) are listed. There it is also explained how you can [solve issues with your payment method](#).

13.3 Mobile device management

If you are managing multiple devices via a mobile device management (MDM) system, you can automatically deploy Topo GPS for free on these devices using your MDM software.

The apps installed via MDM will initially not have access to any of the maps.

We can send you a MDM configuration xml, which contains a field for a secret license key that we can generate for you.

We can set the accessible maps according to your wishes.

Your users running the managed Topo GPS app will automatically get access to the accessible maps.

If you contact us we can make a quotation for you and setup things according to your wishes. Pricing is per device per map and the same as for normal customers. We only sell volumes of 50 licenses or more at a time. If everything is working as it should we will send you an invoice. If more devices will be added in the future, additional licenses should be bought later.

If you are interested or if you need more information, you can contact us by e-mail (support@topo-gps.com).

13.4 Voice commands

It is possible to give voice commands to Topo GPS with help of the Apple assistant Siri.

13.4.1 Setup

To set this up, first go to the settings app under 'Apple intelligence and Siri'. Here enable 'Talk with Siri' Maybe you also want to enable 'Allow Siri when device locked'. This allows you to always invoke Siri. Then scroll down to Apps and select Topo GPS. Here you can enable the various Siri options for Topo GPS. The more options you enable, the better the Siri integration will work.

Finally you should go to the Apple shortcuts app, navigate there to the Topo GPS page. Here tap the info button on the top right of the screen and enable 'Siri'. Once this is done you can give voice commands to your phone.

13.4.2 Supported voice commands

You can give various commands, they should all start with 'Hey Siri', to activate Siri. If you have enabled 'Allow Siri when device locked' in the device settings, you can always give commands. The commands should contain with/using/via Topo or Topo GPS to let Apple know that the command should be performed with the Topo GPS app. The following voice commands are supported:

- Hey Siri, record route with Topo
- Hey Siri, stop recording route with Topo
- Hey Siri, save location with Topo
- Hey Siri, share location using Topo
- Hey Siri, plan route with Topo
- Hey Siri, search location with Topo

- Hey Siri, take photo with Topo
- Hey Siri, enter coordinates with Topo
- Hey Siri, scan coordinates with Topo

13.5 Control panel

You can make the most important commands from Topo GPS anywhere accessible on your device by putting them on your Control Center, also called Control panel.

For this open the control panel making pull down movement from the top of your screen. Press long on the control panel to be able to modify it. Tap in the bottom on the option 'Add a control'. Then search for Topo GPS.

A list of possible controls for Topo GPS will be shown. You can tap one of the controls and it will then be added to your control panel. You can then move the control to the desired position on the control panel and optionally enlarge or shrink it. You can repeat the procedure to add more Topo GPS controls.

The available controls for Topo GPS are:

- Route recorder, a toggle with which you can start or stop a route recording.
- Take photo, the camera in Topo GPS will be opened and if you take a photo it will be automatically added to a new waypoint and saved in your photo library.
- Save my location, a window will appear in which you can enter a title and description and save your current location as a waypoint.
- Search location
- Plan route, the route planner will be opened.
- Generate route, the route generator will be opened.
- Enter coordinates, you can directly enter coordinates.
- Scan coordinates, you can directly start scanning coordinates.
- Compass direction, you can directly enter a compass direction.

The great advantage of adding Topo GPS controls to your control panel is that you can now much quicker start recording a route for example. Just add the controls you need more often once. Then everytime you need to perform one of these commands, pull down the control center from anywhere on your device and tap the required command.

13.6 Keyboard shortcuts

On MacOS and iPadOS it is possible to control the app using the keyboard. Below the most important keyboard commands are listed for MacOS and iPadOS.

13.6.1 Mac OS

- Escape: Cancel, or close pop-up window
- -/: Zoom the map out
- +/-: Zoom the map in
- Option-↑: Zoom the map out
- Option-↓: Zoom the map in
- Arrow keys: Scroll the map
- Command-drag: Hold the command button together with the mouse/trackpad button to select an map area
- Shift-drag: Hold the shift button together with the mouse/trackpad button and move upwards to zoom in, and outwards to zoom out.
- Command-A: Creates a point at the location of the pointer
- Command-B: Enter coordinates
- Command-C: Center map
- Command-D: Create compass direction
- Command-E: Export route, point or layer
- Command-F: Search a location
- Command-G: Generate route
- Command-H: Hide window
- Command-I: Import file
- Command-J: Switch to planning screen
- Command-K: Switch to main map screen
- Command-L: Show route, point, or layer on map
- Command-Shift-L: Remove route, point or layer from map
- Command-M: Minimize window
- Command-N: New copied window. The contents of the current map screen is copied to the new window.
- Command-Shift-T: New empty window. The new window is opened without any geodata loaded.
- Command-P: Print. It will open the print pop-up for the currently visible area
- Command-R: Shows map ruler, for measuring distances, angles and height profiles.
- Command-Q: Quit. It will quit Topo GPS
- Command-S: Save. Saves a modification
- Command-Shift-S: Opens or closes the sidebar
- Command-T: New copied tab. The contents of the current map screen is copied to the new tab.
- Command-Shift-T: New empty tab. The new tab is opened without any geodata loaded

- Command-W: Close window or tab
- Command-Z: Undo
- Command-,: Settings
- Command-1: Opens saved routes screen
- Command-2: Opens shared routes screen
- Command-3: Opens waypoints screen
- Command-4: Opens layers screen
- Control-1: Switches the map to the main topographic map
- Control-2: Switches the map to an alternative topographic map of same region, if available
- Control-3: Switches the map to OpenStreetMap
- Control-4: Switches to aerial imagery, if available.