

Data East, LLC

Functionality of CarryMap 5.4 application

for Android devices

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Overview of buttons located on map window



Create object – creates objects on the map (points, polylines, polygons).



Record track – records and saves GPS tracks.



Measure – measures distances and areas on the map.



Coordinates by GPS – defines current location of point object by GPS coordinates.



Compass – returns map northwards.



My location – defines current location of the user.



List of maps – shows and opens maps and projects stored on the device.

☰ *Main menu* – provides options to make settings of the app without leaving the current project, to add layers and maps to project, to manage layers visibility and to perform operations with layers (zoom in/out, delete, view legend, view layer properties, etc.).



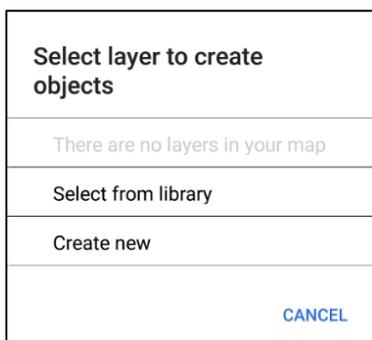
Change map scale – zooms in/out the map.

Creating new object

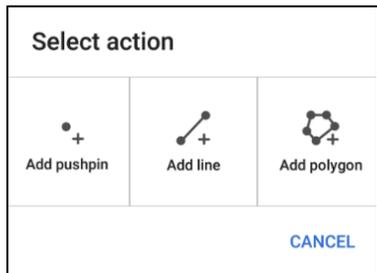
To create new object on the map, tap the *Create object* button.



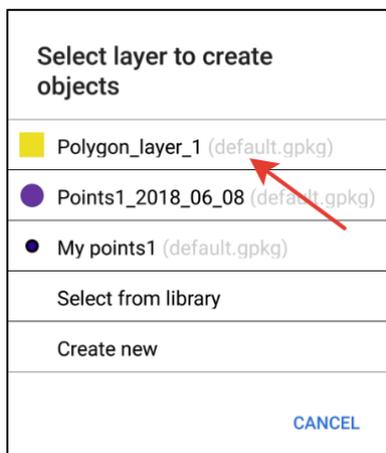
If there are no layers in your project, select the layer from the library or create the new one. To select the layer from the library, tap *Select from library* and select the required layer from the list of gpkg layers.



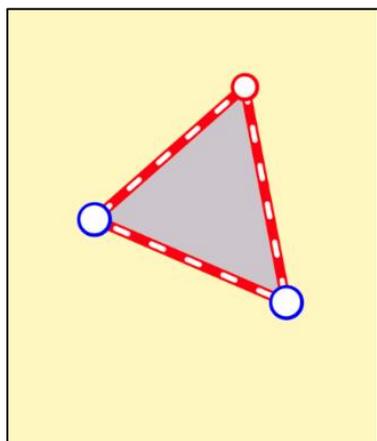
To create the new layer, tap *Create new* and select the required object type: point, line or polygon.



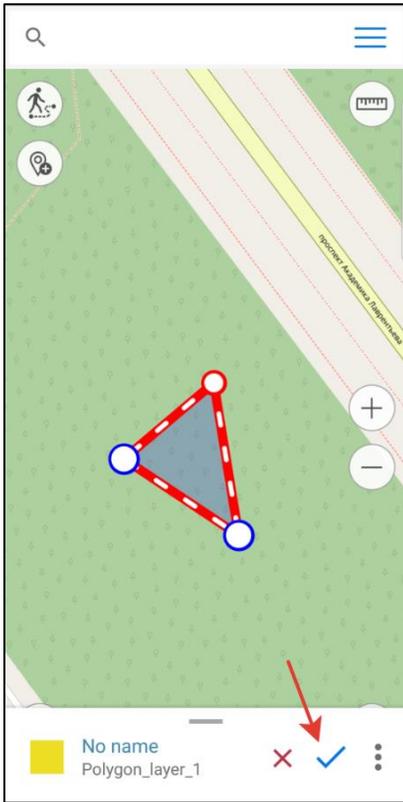
If your project already contains layers, select the needed one to create your object there.



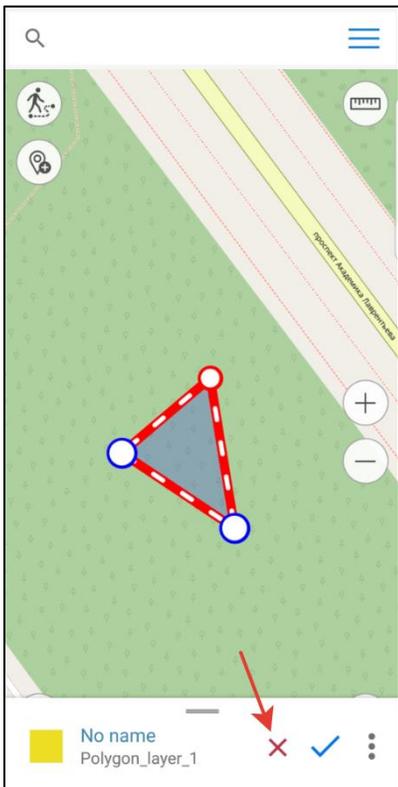
Now you need to specify the object geometry. To do so, consequentially tap the map adding the points.



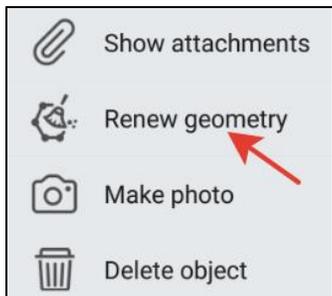
To delete the needless point from the map, tap this point again. To add the new point, pull the edge in the required place and the point will be added there. To change location of the added point, hold it and drag to the new place on the map, after that tap *Save*.



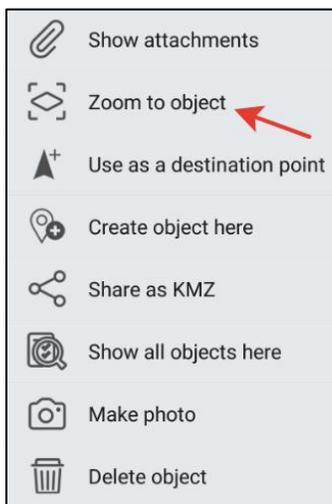
Your object will be saved. If during the process of object creation you decide to cancel the operation, just tap *Cancel*.



If you created wrong geometry and wish to delete it, go to main menu tapping tree dots icon and select *Renew geometry*. Geometry of the created object will be deleted and you will be able to create the new one without leaving the object creation mode.

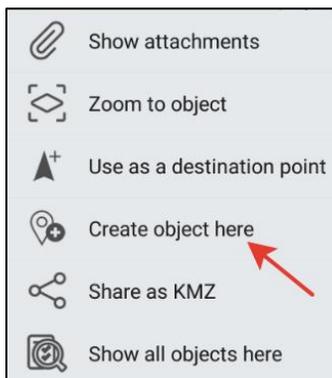


To zoom to the created object, tap *Zoom to object*.

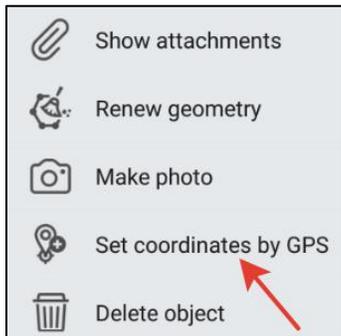


The object will be highlighted on the map.

To create the object in the specific place, tap the map in this place, tap the three dots icon and select *Create object here*.



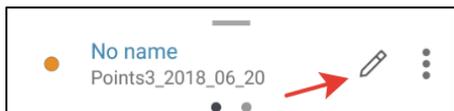
To create the point object by current coordinates, tap *Create object* and tap  in the map window or in the object card, tap three dots and then select *Set coordinates by GPS*.



Confirm object creation tapping . To cancel creation of the object, tap .

Editing objects

To start editing object, select it on map or find it searching by attribute or coordinates (*see “Searching on map” section for details*) and tap *Editing* icon in the object identification card.



You can change coordinates format, if needed. To do so, select the object and in the appeared identification window tap the line with coordinates to change the format.



Note that selected coordinates format will be saved for the current project.

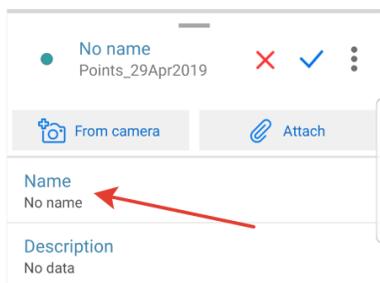
The available coordinate formats are as following:

- Degrees-minutes-seconds;
- Decimal degrees;
- UTM meters (if you selected Projected coordinate system in Settings, *see “Settings” section for details*).

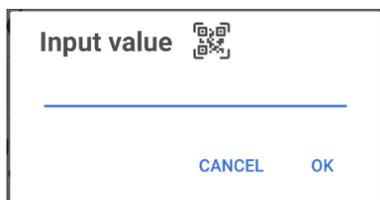
Being in the object editing mode, you can change the object geometry. To delete the point, tap it on the map. To add the new point, tap the empty place on the map. To move the point, select it on the map and drag it to required place on the map.

To save your changes, tap *Save* ✓. To cancel made changes, tap *Cancel* ✕.

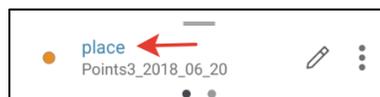
To change the object name, enable the editing mode and select *Name* in the object card.



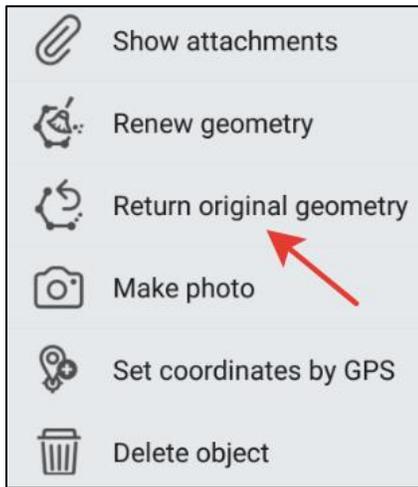
Enter the object name in the appeared window and tap *OK*.



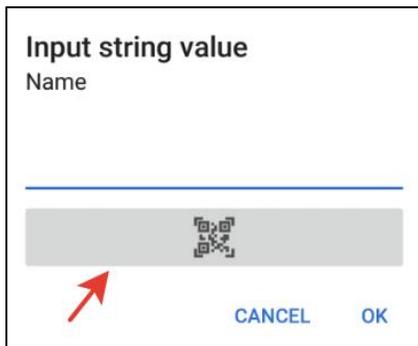
If object name has not been specified, the object card will have the default name *No name*, but the default name will be changed right after you specify the name of this object.



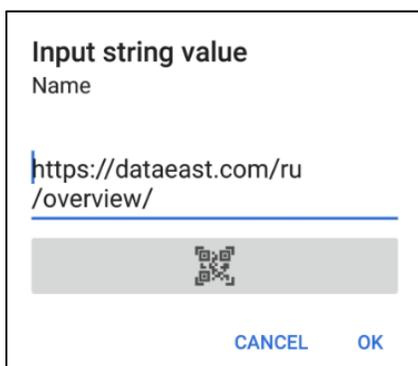
To restore the source geometry of the object, select *Return original geometry* tapping three dots in the object card. All changes made in the object geometry will be canceled.



You can fill in text fields in the object attributes using QR code. To do so, select the required field in the object card and tap the QR code icon.



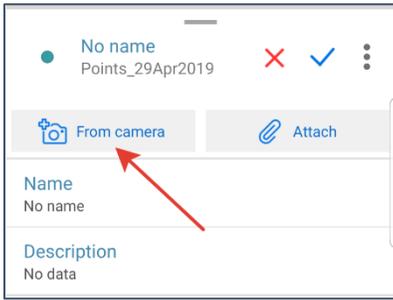
Scan the QR code and the retrieved information will appear.



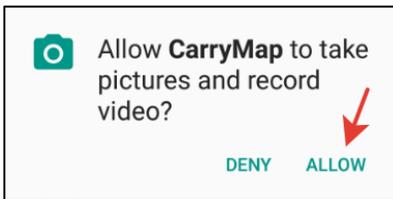
Tap *OK* to save it.

Adding attachments to object

You can add photos to any object on the map. To do so, select *From camera*



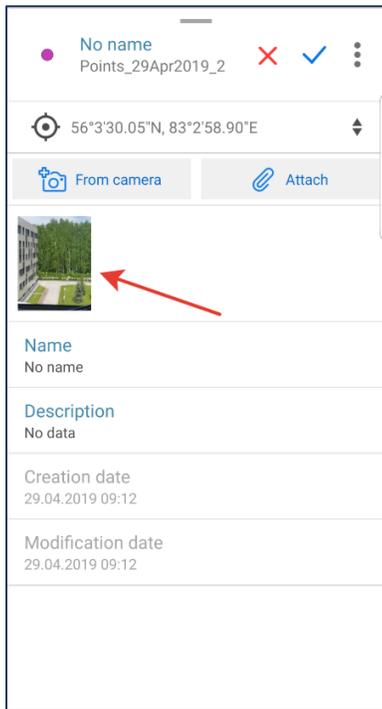
Allow the app to use the device camera tapping *Allow* in the appeared dialog.



Take a photo and tap *OK*, to add it as attachment to the object.



Added photos can be viewed in the object's card. To open the photo, tap the appropriate thumbnail.



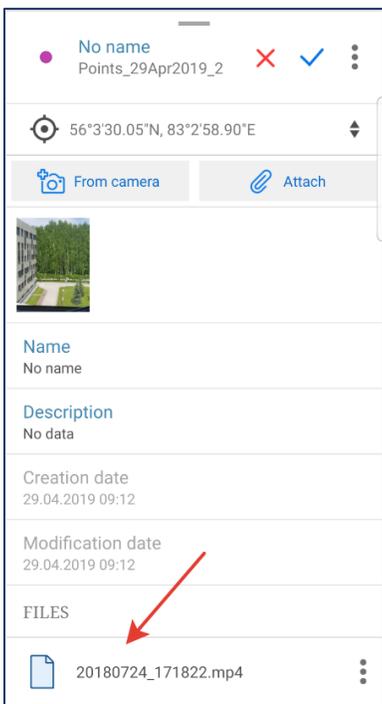
To delete the added photo, tap *Delete*.



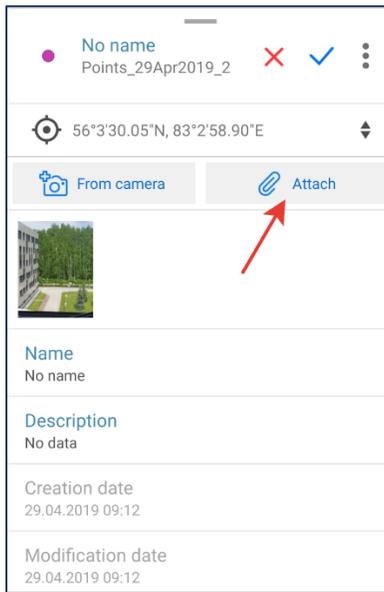
To share/send the added photo, tap *Share*.



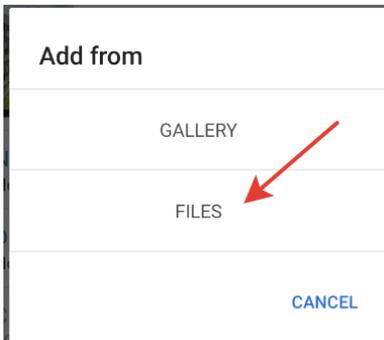
Added videos can be viewed in the *Files* section of the object's card. To view or delete the video, select it in the card and select the required option



To attach to object the file stored on your device, tap *Attach* in the object's card.

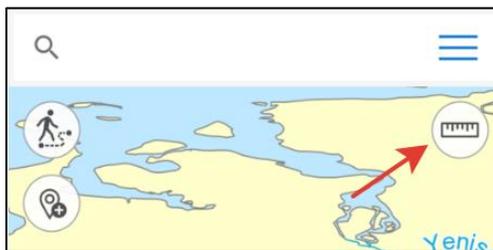


In the appeared dialog, if you need to add the media file from the gallery, tap *Add from gallery*, and if you need to add the document, tap *Add from files*.



Measuring distance and area

To measure distance or area, tap the *Measurements* button.



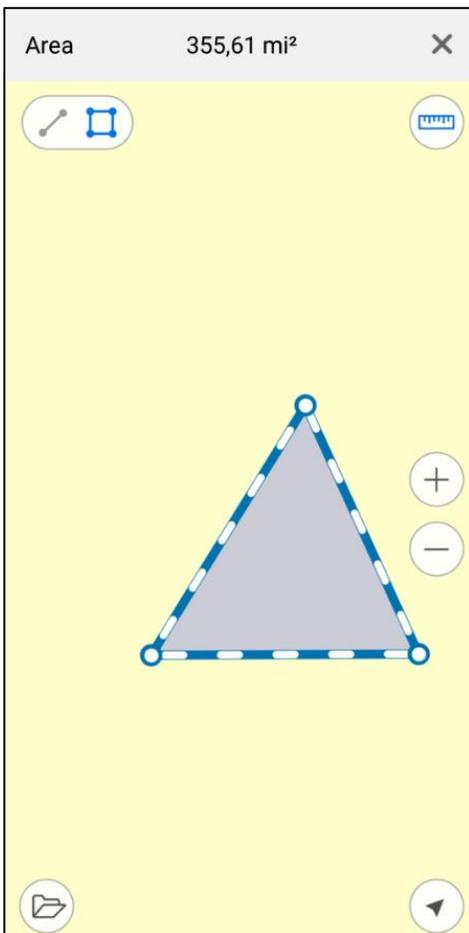
The button will change its color and the tool window will appear. If you want to measure distance, tap *Measure distance* icon.



If you want to measure area, tap *Measure area* icon, accordingly.



To start measurement, sequentially tap the map adding points.



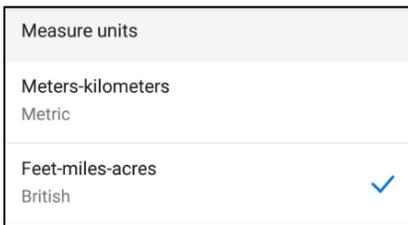
To delete the needless point, tap it again. The calculated distance or area will be shown in the upper part of the measurement window.



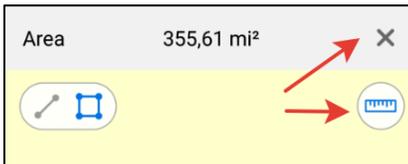
Measuring distances and areas is also possible using *My location* option. To start measurement from the point of your current location, tap  and then . Now the point of your current location will be used as the starting or one of the intermediate points of measurement.

To change measurement units, go to *Settings* of the map menu (note that changing units is possible if you are not in the measurement mode). In the *Measure units* section select the required units:

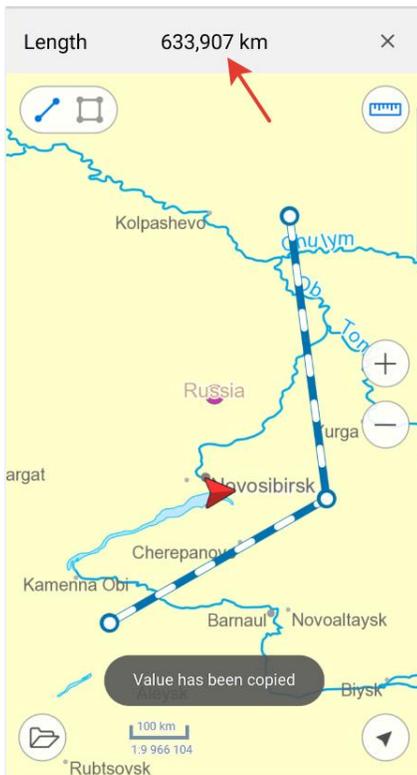
- *Metric*: meters – kilometers;
- *British*: feet – miles – acres.



To close the measurement window, tap the cross icon in the upper right corner of the window or tap *Measurements* button again.

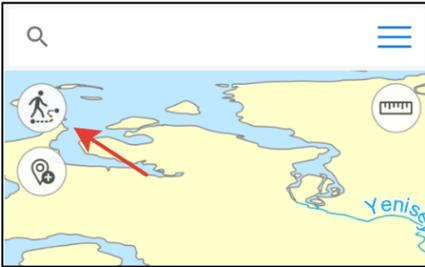


To copy the measurement result, long tap the output value.

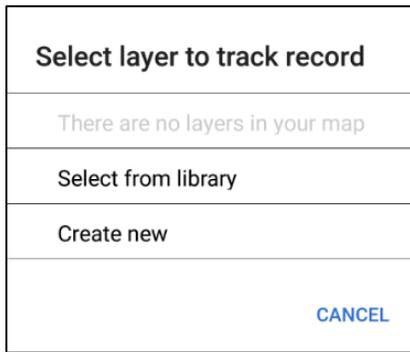


Recording tracks

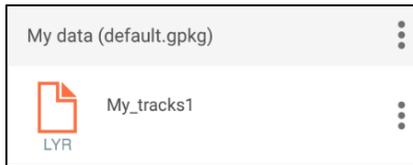
To start recording track, tap *Record track* button.



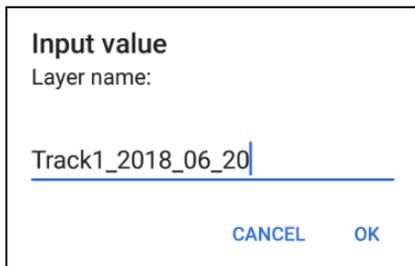
Select layer where to your track will be recorded. If there are no layers in your project where to your track can be recorded, you should select the existing layer from the library or create the new layer.



The app provides the default layer for recording tracks called **My_tracks1**.



To create the new layer, select *Create new*. In the appeared window enter the name of this new layer (you can leave the default name).



Confirm creation of the layer tapping *OK*, after that the record will start and the track record button will change its color to red.



To add the existing layer, tap *Select from library* and select the required layer from the list. After that the record will start.

Note that every 5 seconds your track will be saved automatically. That is, even if your device switches off by some reason, the track will be automatically saved to the selected layer and so will not be lost.

To stop recording track, tap the track button  again. After that the window showing the saved track location will appear.



The track record button will change its color again . Note that recording track does not humber any other operations provided with the app (for example, object creation or editing, adding new layers to project, etc.).

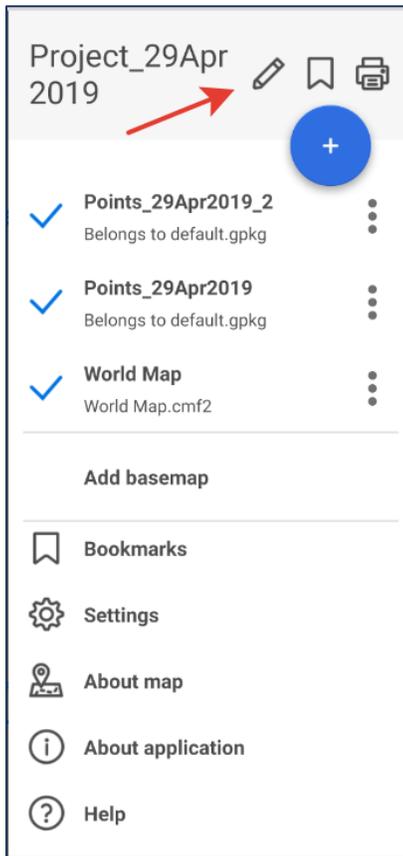
Recording track can be stopped:

- When you leave the project and go to the maps and projects list tapping  button.
- When you delete the layer from library, where to the track is being recorded.
- When you tap the *Record track* button  again.

Creating project, editing project name

To create project, open CMF2 map and data in GeoPackage, KML, KMX, SHP or GPX format (see *Importing data* for more detail), the project will be created automatically.

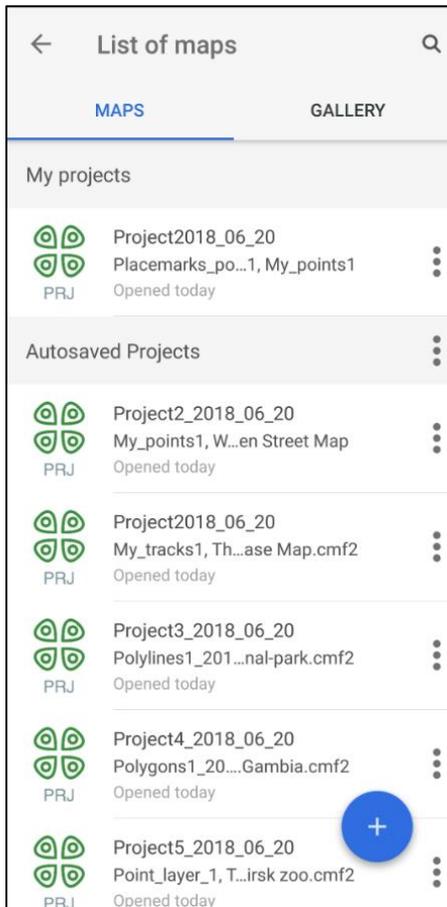
The project name can be changed in the map menu, to do so, tap the editing icon.



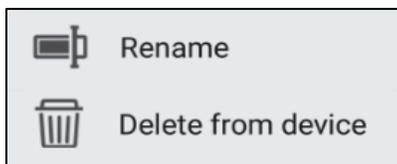
Enter the new name and tap *Enter*

Opening project

To open the project stored on your device, tap . In the *Maps* tab you will see all previously saved and autosaved projects.



To open project, select it from the list. To delete project, select three dots menu and select *Delete from device*.

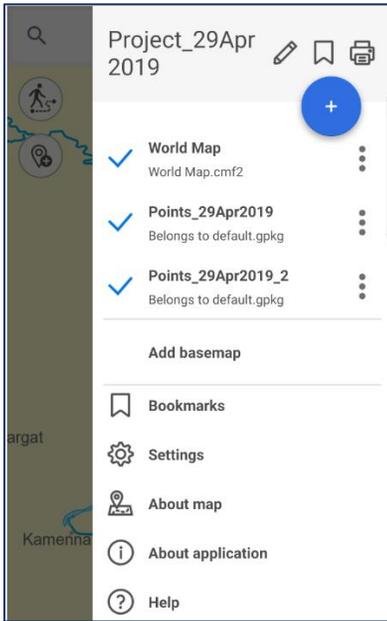


To change name for project, tap *Rename* in the menu, enter the new name, and tap *OK*. If you rename autosaved project, it will be moved to the *My projects* section.

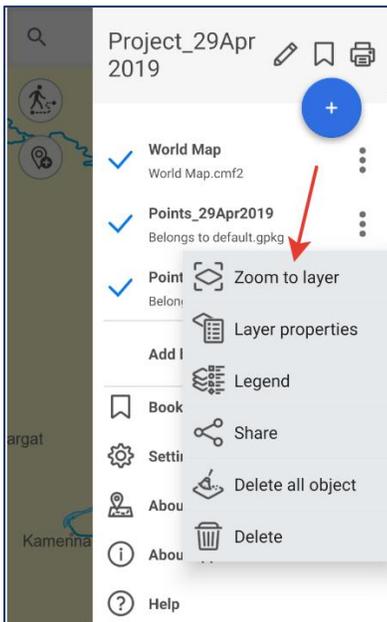
To open another map, tap  and select the required map from the list. To create new project for this map, add gpkg layers to map (see “*Creating new object*” and “*Working with layers in project*” sections for more details).

Working with layers in project

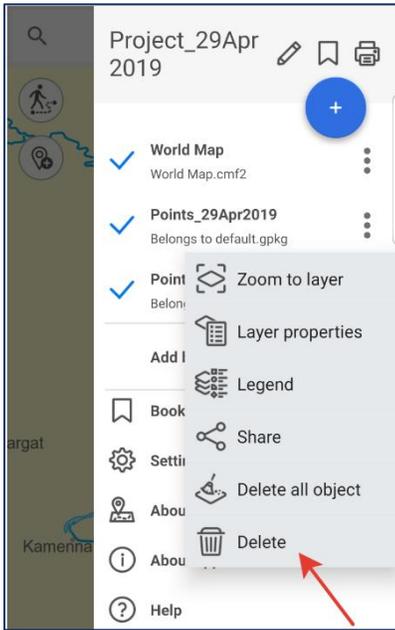
All layers added to project can be viewed in the map menu. You can change the layers order in the project. To do so, long tap the layer and drag it to the required position in the list of layers.



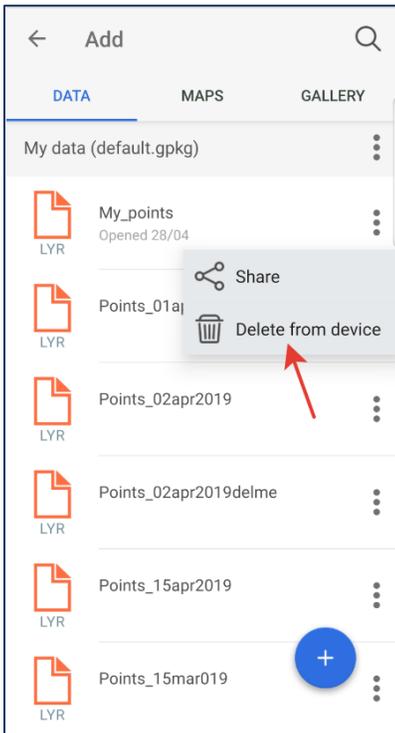
If the layer is the first one in the list, it will be displayed on top of all layers on your map, accordingly. To zoom to layer in the project, tap the three dots menu and select *Zoom to layer*.



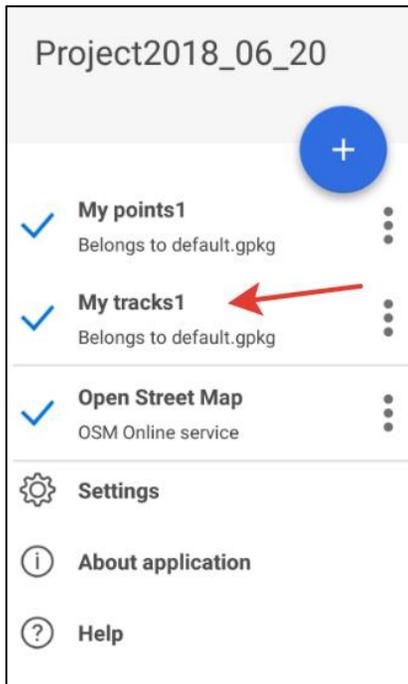
To delete layer from the current project, tap three dots menu and select *Delete*.



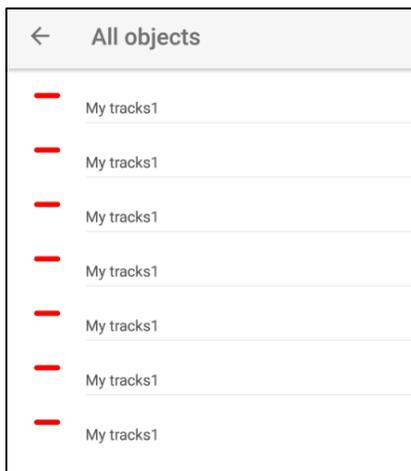
To delete layer from the device, go to library tapping  in the layer menu and select *Delete from device* tapping the three dots menu of the layer you want to delete.



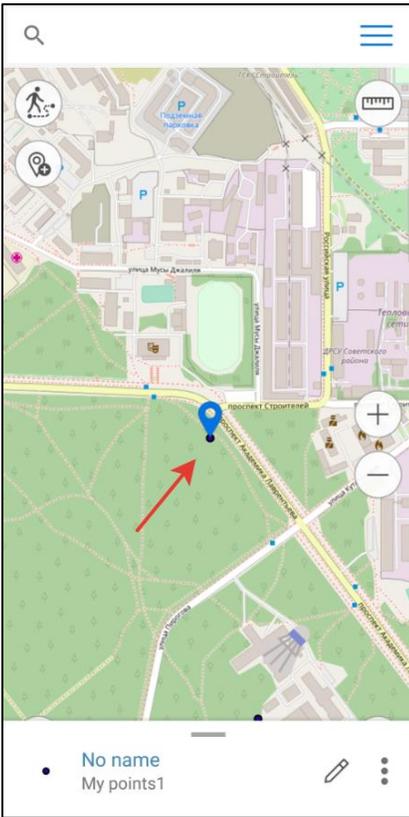
The layer will be deleted from the device. To view all objects containing in the layer, press the layer in the main menu of the map.



All objects containing in the layer will be shown in the list.

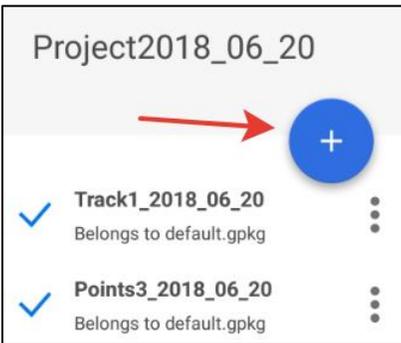


To view object on the map, select it in the list and it will be highlighted on your map.

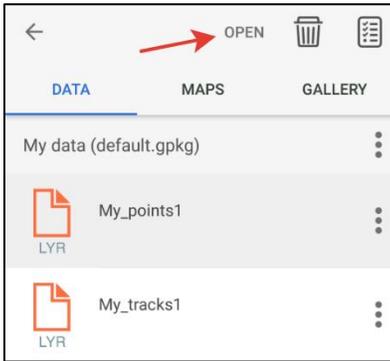


Adding layers to project

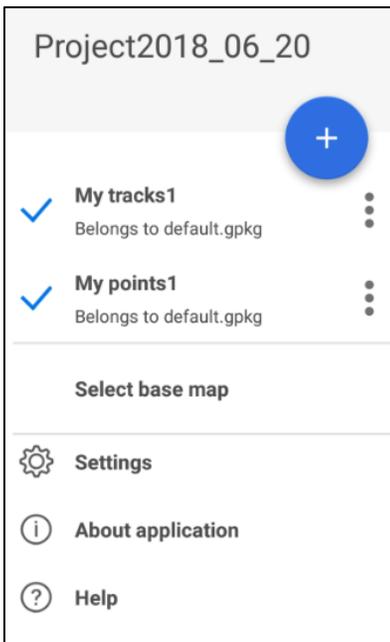
To add layer to current project, tap *Add* button in the map menu.



Select the required layer from library and it will be added to your current project. If you need to select multiple layers, tap *Select all*  or long tap the required layers and then tap *Open*.



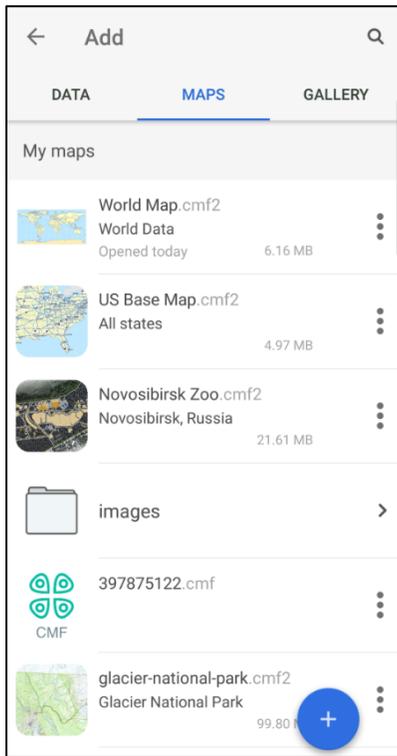
Selected layers will be added to the project.



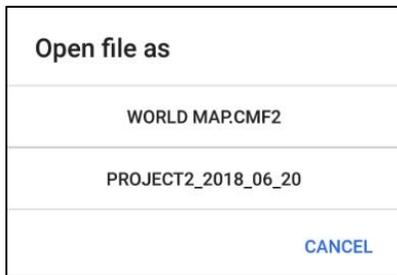
To turn off layer visibility, tap  near the required layer name and the icon will change its color to grey . Note that the layer will not be deleted from the project, it just will not be shown on the map. To turn the hidden layer on, tap the icon near its name again.

Adding map to project

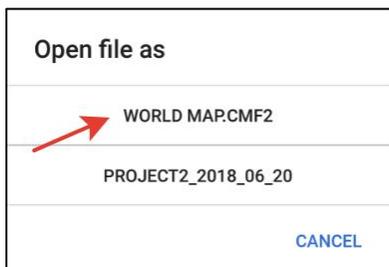
If you want to add map to project, tap *Add*  and go to *Maps* tab showing all CMF and CMF2 maps stored on your device.



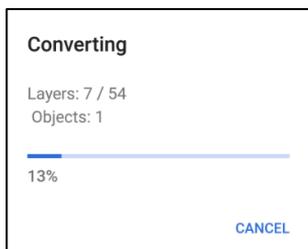
Select the map you want to add from the list. If the selected map is used in other projects, the appropriate message will appear.



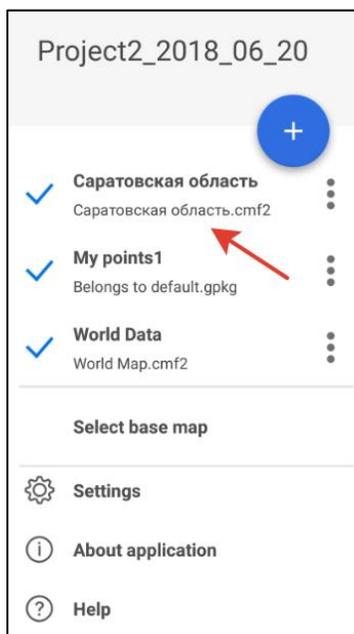
To open map as a project, select the project from the list. If you need to open the map only, select it from the list.



When you open map in CMF format, it is automatically converted to CMF2 format. The matter is that CarryMap Mobile does not allow adding old CMF maps to projects, so the conversion is automatically done, and the appropriate window appears.



If you want to add the map in CMF2 format, it will be added to the current project right after you select it.



CMF map can also be used as the base map (*see “Selecting base map” section for details*).

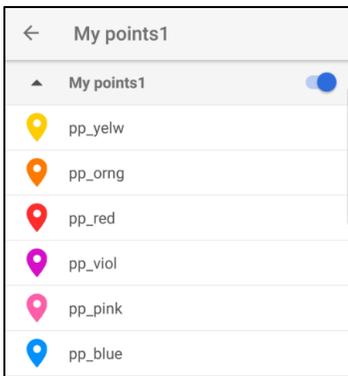
Same as with adding to project, if you want to use old CMF map as the base map, it will first be converted to CMF2 and after that will appear in the list of maps available for adding. Select the converted CMF2 map from this list and it will be added as base map.

Changing settings for layer parameters (selecting symbology, setting labeling, adding fields)

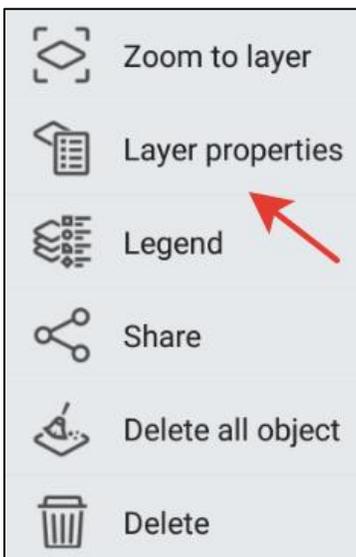
To view symbology used for layer, tap three dots, and select *Legend* in the menu.



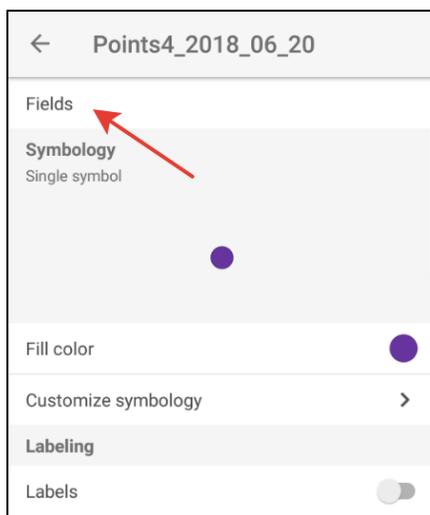
In the appeared window you can view all symbology used to display this layer. To turn the layer off, pull the layer visibility shift.



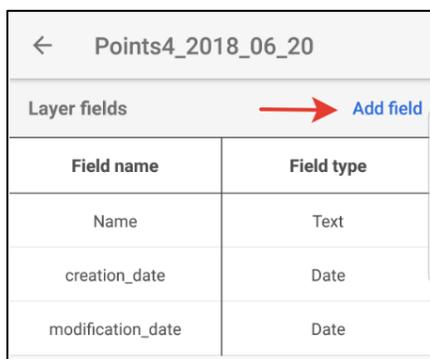
To add fields to the layer attributes, select *Layer properties* in the menu.



Now tap the *Fields* section.



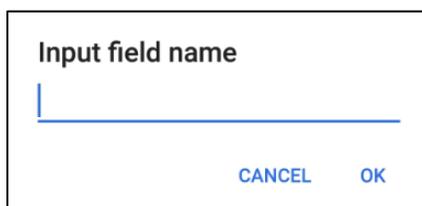
In the appeared window tap *Add field* button.



In the appeared field

Field name	Field type	
------------	------------	---

 tap the *Field name* line and enter the name of the new field, then tap *OK*.



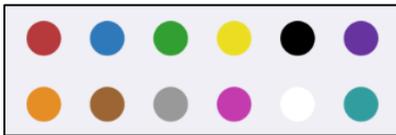
Now tap the *Field type* line and select the required field type from the list.

Select field type
TEXT
INTEGER NUMBER
DOUBLE NUMBER
DATE
BOOLEAN(YES/NO)
CANCEL

To delete created field, tap *Delete* . To save made changes, tap *Save*  in the upper part of the window. To change the object fill color, select *Fill color* in the *Layer properties* menu.

Fill color 	
Customize symbology	>
Labeling	
Labels	<input type="checkbox"/>

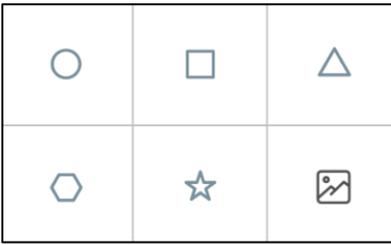
In the appeared list select the required color and all objects will be changed accordingly.



To change properties of the layer symbology, select *Customize symbology*.

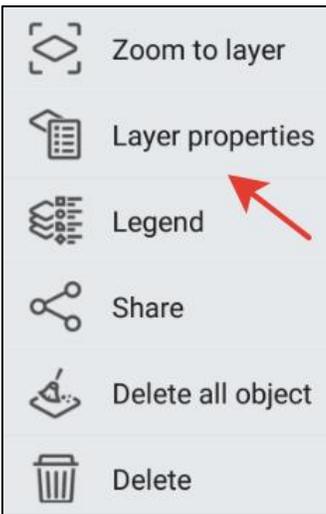
Fill color	
Customize symbology 	>
Labeling	
Labels	<input type="checkbox"/>

With the *Customize symbology* option you can change the symbol shape, size, show/hide its border and select border color, set transparency. To change symbol shape, tap *Shape* and select the required shape from the appeared list.



To select image as symbol, tap  and select the required image from the Gallery.

To show labels for objects, select *Layer properties*, tapping three dots menu.



Pull the switch in the *Labeling* section to display labels.



In *Label field* line select the field which attributes will be used to label all objects.

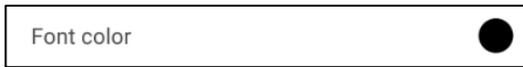


To add the new field, see “*Setting layer symbology. Adding new fields.*” section above.

In the *Font size* line specify the font size pulling the shift to the required value.



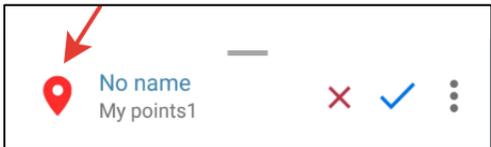
Select the labels color in the *Font color* line.



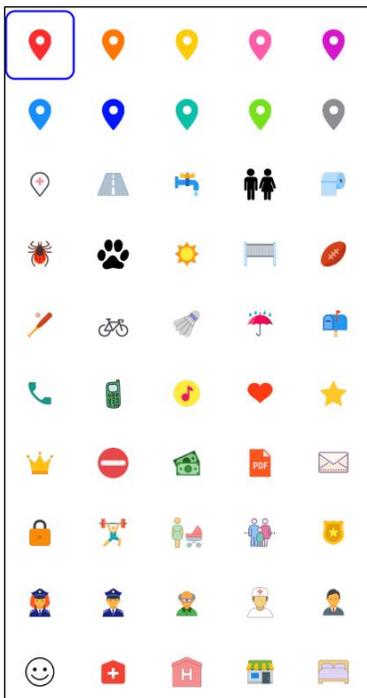
Setting symbology for default layers in the app

When creating point objects in the default app layer called **My_points1**, you can specify different symbology for objects in this layer.

To do so, create the new object and tap the pushpin icon in the object card.



In the appeared list select the required symbol.



Tap *Save* ✓. Changing symbology for the object is also possible when editing mode is on.

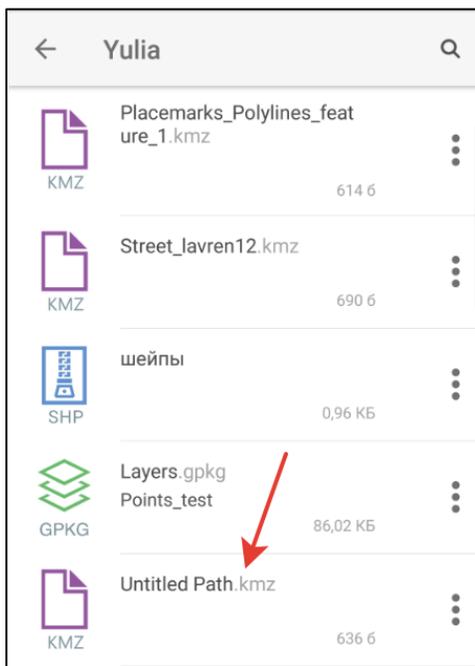
Importing data

To add data to current project, tap *Add*  in the map menu. All data that can be added to project are shown in the *Library* section consisting from *Data*, *Maps*, and *Gallery* tabs.

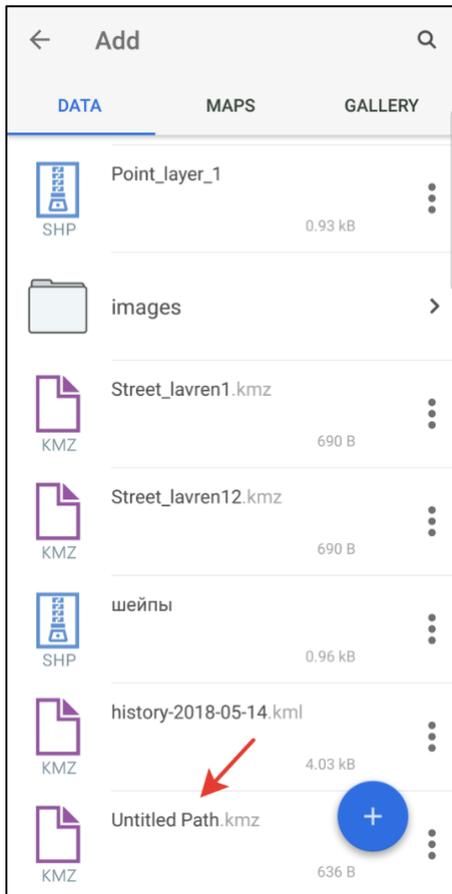


The *Data* tab contains data in GeoPackage, KML/KMZ, SHP and GPX formats. To add the existing KML/KMZ, SHP, GPX file to the project, select it and select CarryMap from the list of apps to open this file.

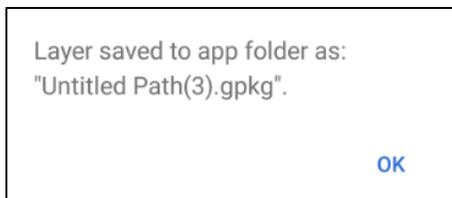
To add KML/KMZ, SHP file to the project, press  in the *Data* tab in the appeared list select the folder where the required file is stored and then select the file.



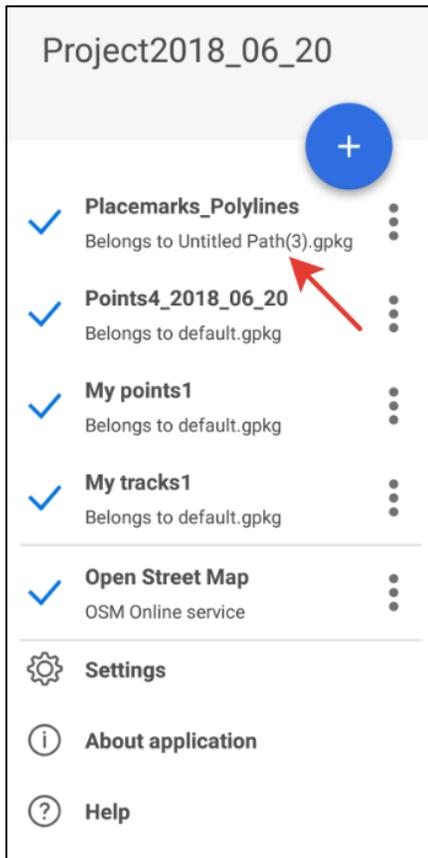
The file will be added to *Data* tab.



To add gpkg layer, tap again the added file, it will be converted to gpkg layer and added to the project, and the appropriate message will appear.



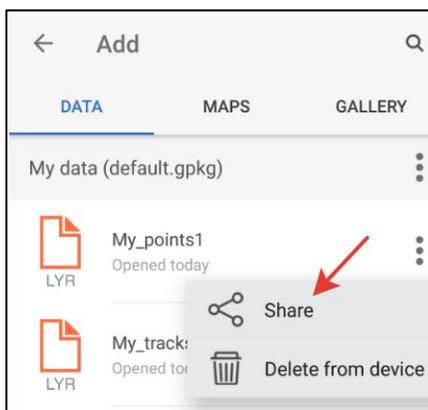
Converted gpkg layer will be added to the project.



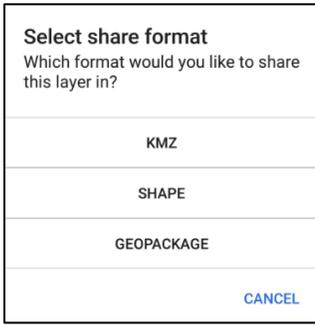
The same steps mentioned above should be done to add KML/KMZ, SHP, GPX files.

Exporting data

You can share files in GeoPackage, SHP, KML/KMZ, GPX formats or share KML/KMZ, SHP, GPX files stored on your device. To do so, open the object menu tapping the three dots icon and select *Share*.



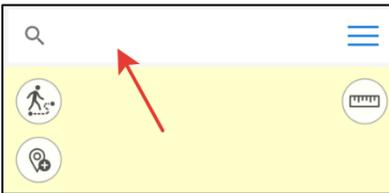
When sharing gpkg layer you can select the format: SHP, KMZ, GPKG or GPX.



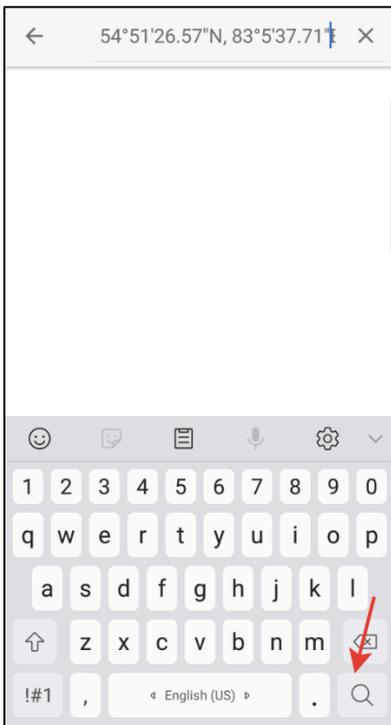
After selecting the format, select the method you want to use to share your file.

Going to coordinates. Searching objects.

To go to object by coordinates, open the Search window tapping the search line.



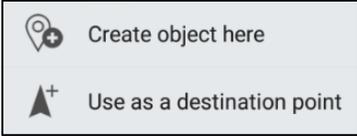
Enter the coordinates and tap Enter.



Found point will be marked with the pushpin  on the map. The specified coordinates will be shown in the object card.

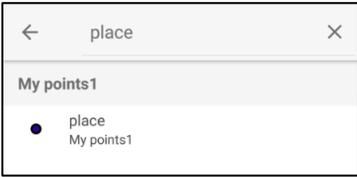


The found point can be used to create the object or as a destination of your route. To create the object in this point, go to three dots menu and select *Create object here*.

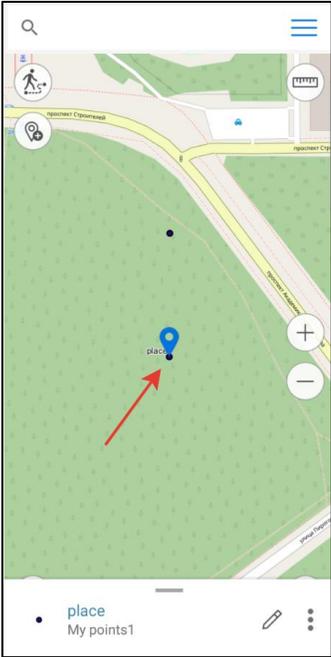


After that follow the steps described in the “*Creating new object*” section. To use the found point as destination point, go to three dots menu, and select *Use as a destination* (see “*Specifying destination*” section for more details).

To search object by attributes, open the search window and enter the required attribute, for example, point name or description. Type the search text and tap Enter. The search results will be shown in the search window.



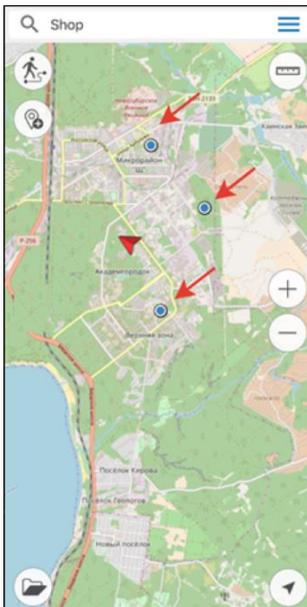
To view found object on the map, select it in the search history and it will be marked with pushpin on the map.



To view all the found objects, click on the arrow



, the found objects will be shown on the map.



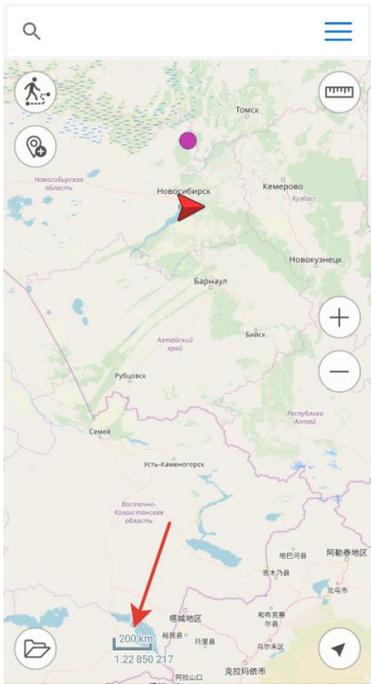
To clear current search results, tap the cross icon in the search window.



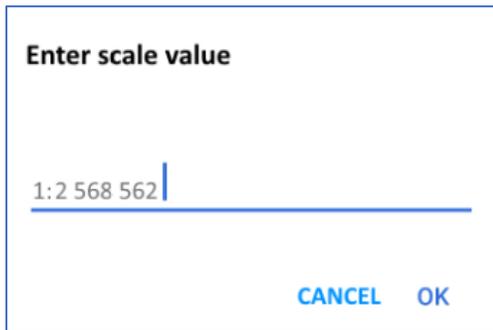
If no objects have been found during search, the appropriate message appears.

Selecting map scale

To set map scale open the map window and click on the scale bar.

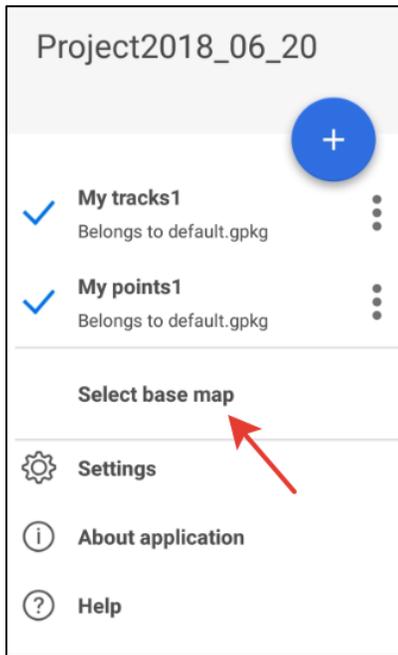


In the window that opens, enter the scale and click OK, the map will be drawn at the specified scale.



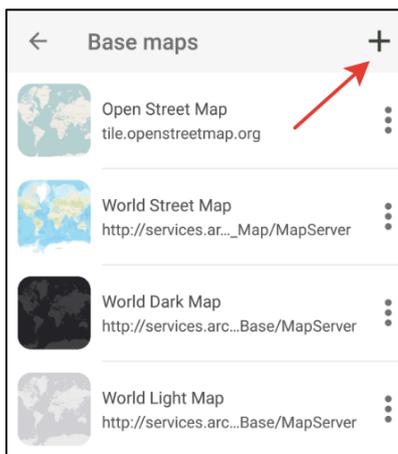
Selecting base map

To select base map for your map, tap *Select base map* in the map menu.

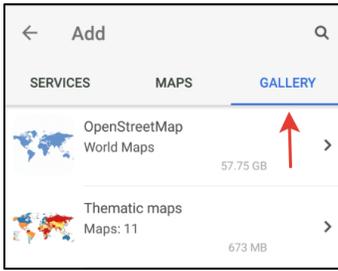


You can select basemap from ArcGIS Online maps or WMS online services or use any CMF/CMF2 map (specific format for mobile maps created using extension for ArcGIS Desktop called CarryMap Builder).

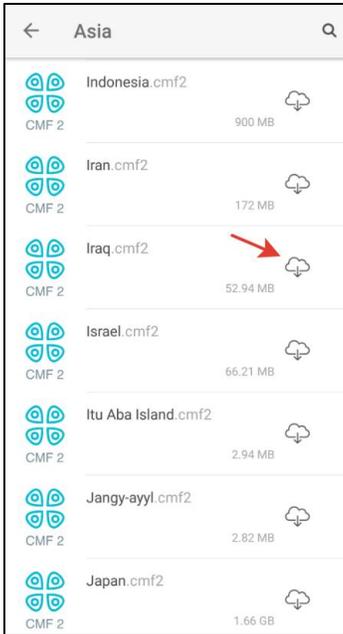
You can also select base map from OpenStreetMap or use any thematic map converted to CMF/CMF2 format from the app Gallery. To do so, tap *Select base map* in the map menu and then tap *Add*.



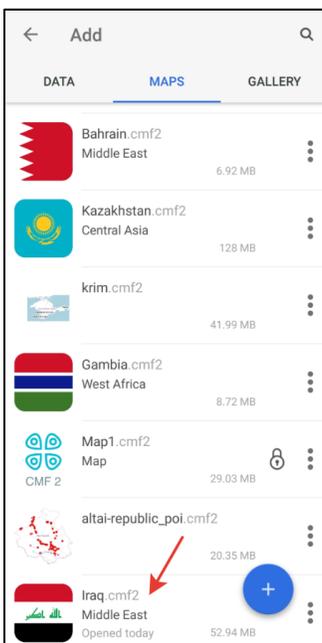
Go to *Gallery* tab.



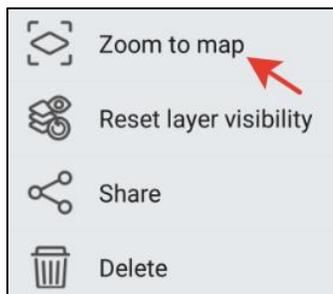
Select the needed map from the Gallery and tap *Download*.



The downloaded map will be added to *Maps* tab.

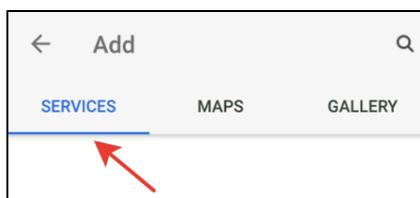


Select this map to add it as base map to your project. To zoom to base map, select three dots menu and tap *Zoom to map*.



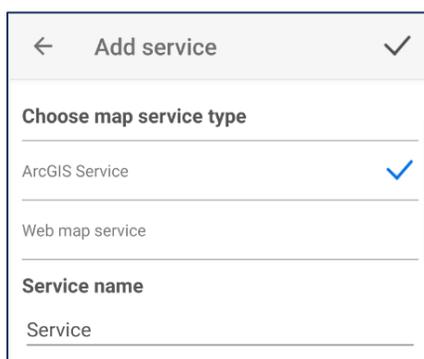
Adding online services

To select the basemap from the maps available in ArcGIS online service or WMS, tap *Add basemap* and then tap *Services*.

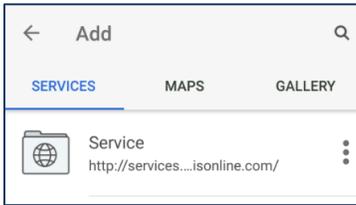


If you already have connected services, they will be shown in the list in the *Services* tab. If you need to add another service, tap *Add* , fill in all the required fields and tap *Ready*.

Select the required service type, enter its name and link to this service.



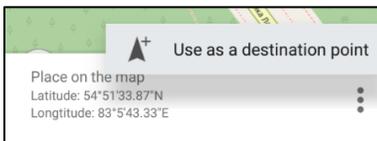
The added service will be shown in the *Services* tab.



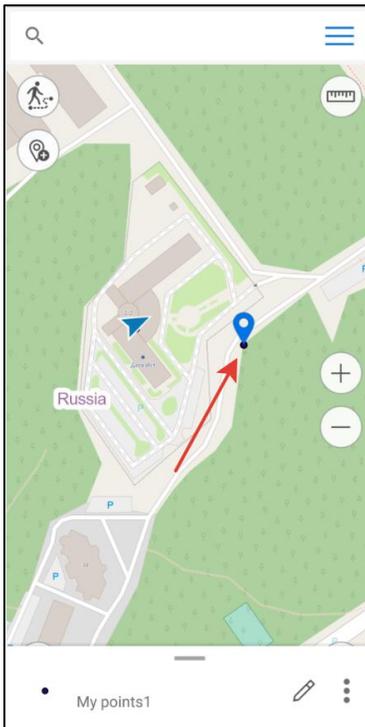
Select the required map from the service and it will be added as base map to your project.

Specifying destination

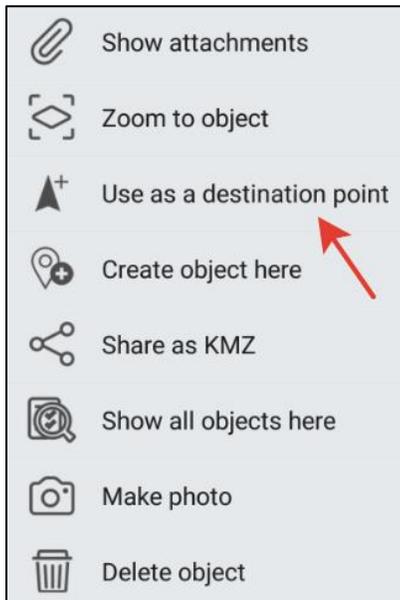
The *Use as a destination point* option allows selecting the object or place on the map as a destination you want to reach. To specify the place as your destination, tap the required place on the map, open three dots menu and select *Use as a destination point*.



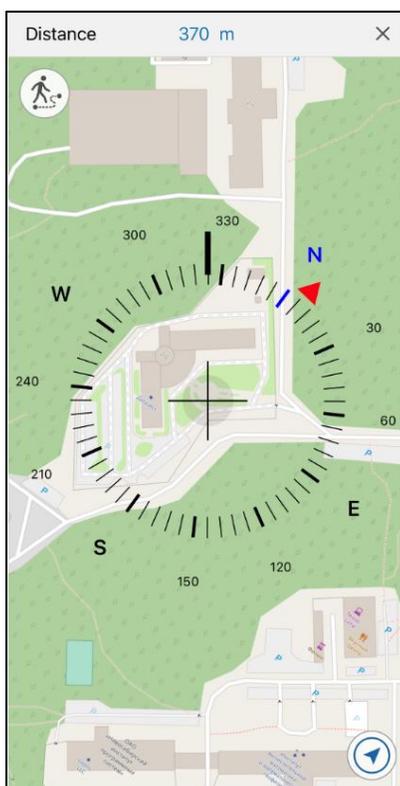
To select object as destination, select it on the map.



Now go to three dots menu and select *Use as a destination point*.

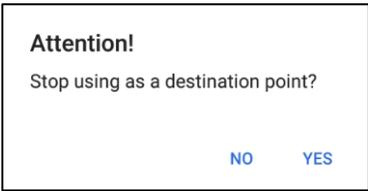


When the *Use as a destination* option is enabled, the arrow showing direction to specified target and distance to this target appear on the screen.



The target object will be marked with the flag symbol 🚩.

To disable use of the *Use as a destination* option, tap the cross icon in the upper part of the screen and then tap *Yes* in the appeared dialog.



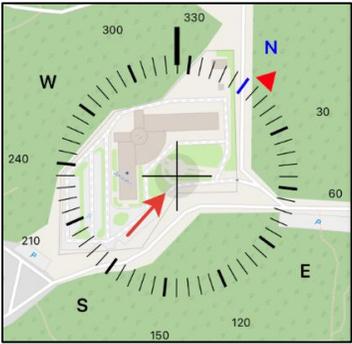
The *Use as a destination* option will be disabled.

When the *Use as a destination* option is enabled, the distance to specified target object appears in the upper part of the screen.

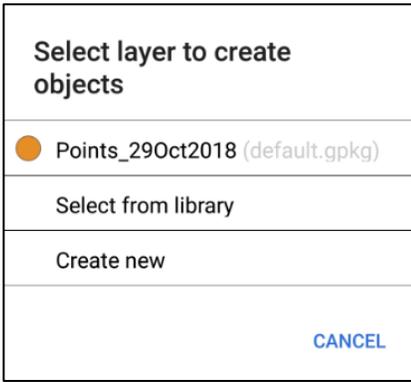


Your current location will be marked with the cross button  and direction to the target will be marked with the red arrow .

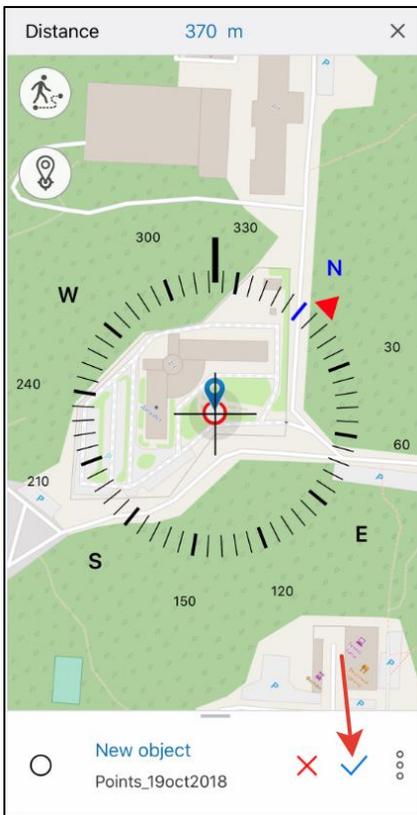
During use of the *Use as a destination* option you can create a point object in your current location point. To do so, tap the cross button .



Now select the existing layer from the library or create the new layer where to the new point object will be added.



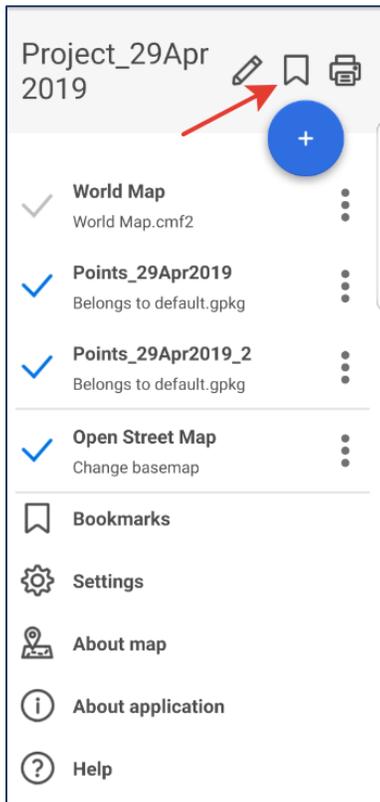
Tap ✓ to confirm your choice.



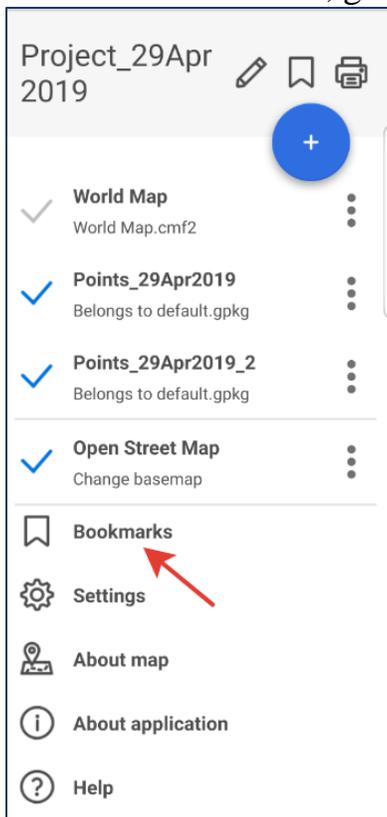
Tap ✕ to cancel.

Creating bookmarks

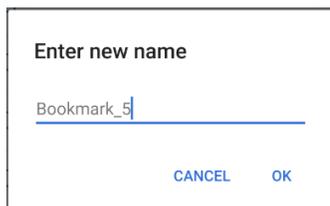
Bookmarks are provided for storing the needed map extents and data. To create the bookmark, set the required map area boundary, go to the project menu and tap *Create bookmark*.



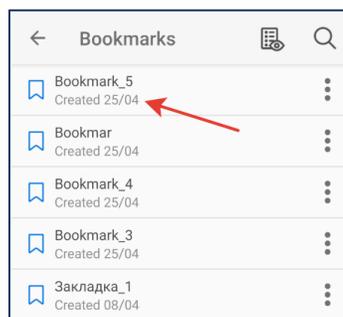
Enter the bookmark name or leave the default name. To save the bookmark, tap *OK*. To view the created bookmark, go to *Bookmarks* section in the project menu.



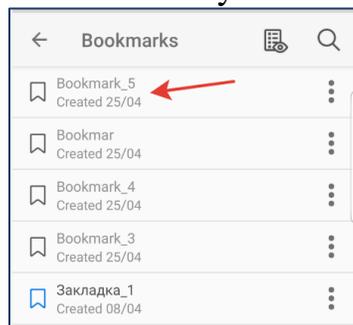
To delete the bookmark, tap three dots and select *Delete*. To rename already created bookmark, tap *Rename*, enter the new name and tap *OK*.



To go to the bookmark on map, select it from the list and it will be shown on the screen.



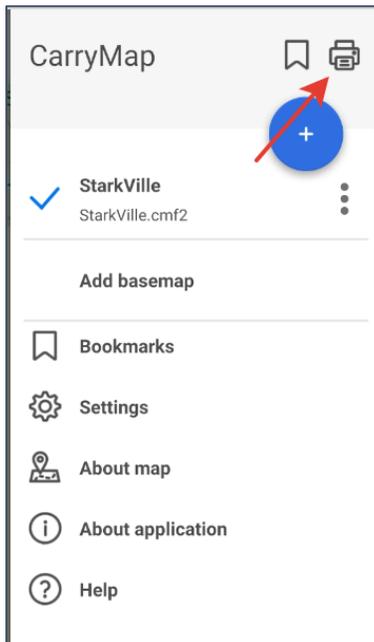
If previously created bookmark does not fall into the current map extent, it will be grayed out in the list and you will not be able to view it.



To view all active bookmarks of the current map, tap .

Saving map extent

To save the map extent for printing or to save it to PDF document, set the required map area boundary and tap *Save to PDF*.

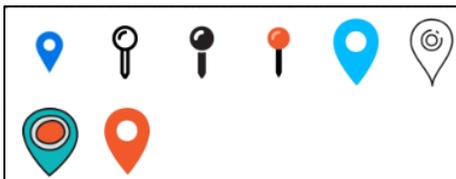


In the dialog that opens, select the required action to save or print the created map extent.

Application settings

The *Settings* tab provides the following options to specify the app settings:

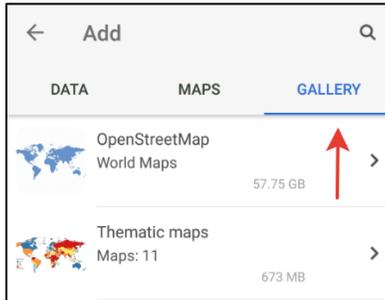
- Change measurement units;
- Hide or show buttons to change map scale  ;
- Turn on/off device screen lock during app work;
- Specify maximum cache size for the app. To set the size, tap *Set max size of cache* and select the required size value.
- Clear cache and select cache size for the app data. To clear cache, tap *Clear cache*.
- Select symbol for pushpins, my location and destination. To do so, open the appropriate section (Pushpin, My Location, Destination point) and select the required symbol from the appeared list.



- In the *Coordinate system* section, you can select UTM zone, if WGS-84 coordinate system is used in the current project.

Working with Gallery

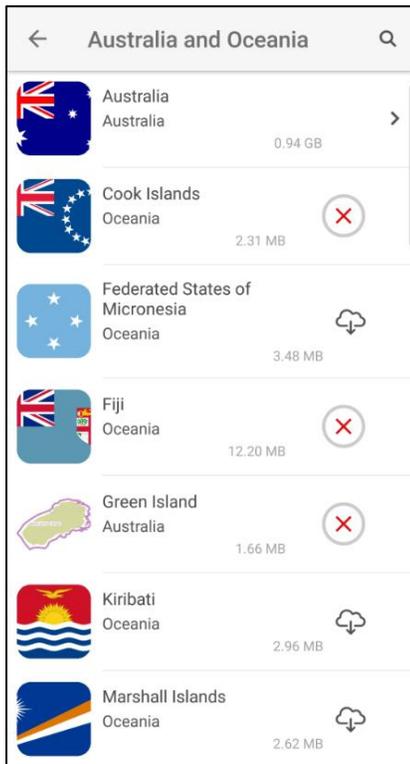
The *Gallery* tab contains maps in CMF2 format. All maps are divided in two groups – Thematic maps and World maps. To go to *Gallery*, tap *Add*  in the map menu or tap  and select *Gallery* tab in the appeared window.



The *Thematic maps* group contains maps created using extension for ArcGIS Desktop called CarryMap Builder and provided by our clients and partners.

The *World maps* group contains OpenStreetMap maps converted to CMF2 format and sorted by countries and regions. After downloading, the maps are ready to be used in CarryMap app.

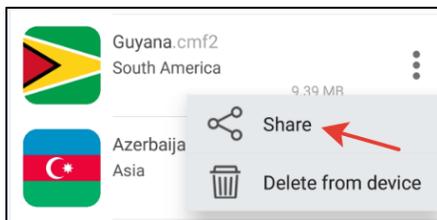
To download a map from *Gallery*, select it from the list and tap *Download* . The download process will start. To cancel the process, tap *Cancel* .



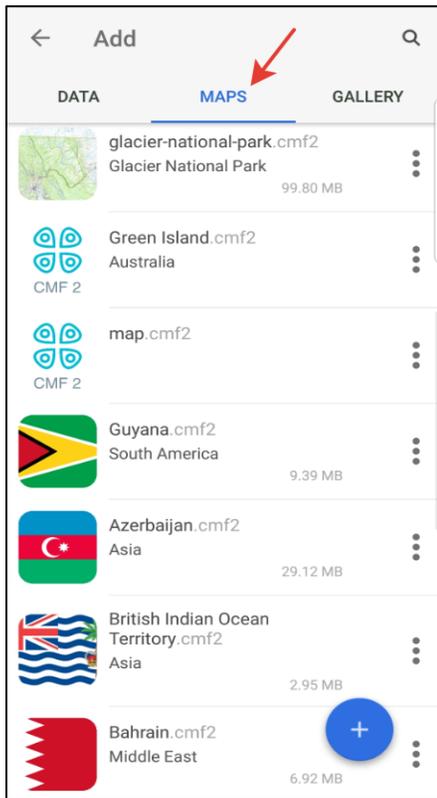
After downloading the map to your device, the download icon will change to . If the map has available updates, you will see the icon near this map name. Tap this icon to download the updated version of the map.

To delete map from device, tap the three dots menu and select *Delete*. You can download it again from *Gallery*, if needed.

To share map, tap the three dots menu and select *Share*. Note that you can share maps downloaded to your device only.



All downloaded maps can be viewed in *Maps* tab.



Finding current location

To define your current location on the map, tap *My location* .

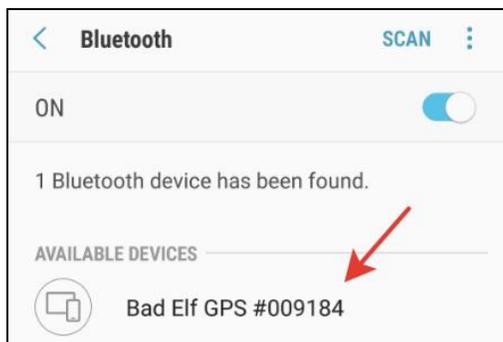


When the *My location* option is enabled, the button changes . To disable the option, tap any place on the map. If you tap the location button again, the map will go to the tracking mode and the button will look as . Being in the tracking mode, the map will rotate according to your current location. To disable tracking mode, tap any place on the map.

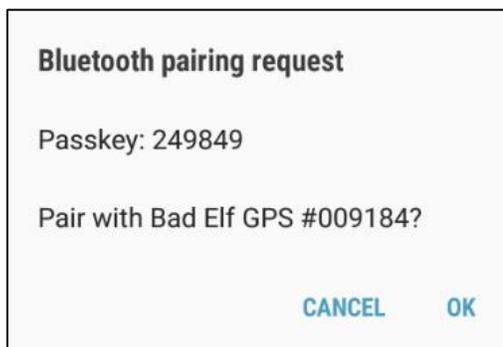
Using external GPS receivers

Starting from version 5.3, CarryMap app supports external GPS receivers from Bad Elf. Using these GPS receivers allows to specify coordinates of your current location more accurately.

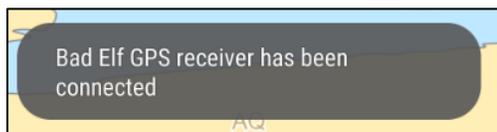
Note that making all settings for Bad Elf GPS option is done outside CarryMap app. To connect Bad Elf receiver, enable Bluetooth on your device and all available receivers will be shown in the appeared list.



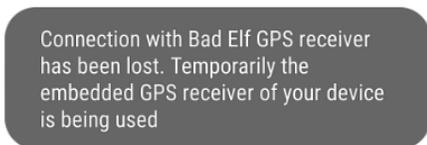
Select the required GPS device and set connection with your mobile device. To do so, tap *OK* on your device and on Bad Elf receiver.



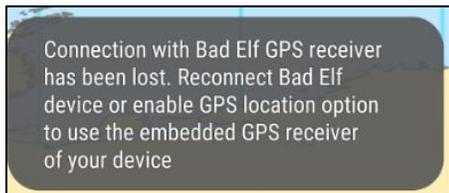
Bad Elf GPS receiver will be connected and you will see the appropriate message.



If by some reason Bad Elf receiver works inappropriately, CarryMap app will automatically use the embedded GPS receiver of your mobile device (if geolocation option is enabled), and the following message will appear.



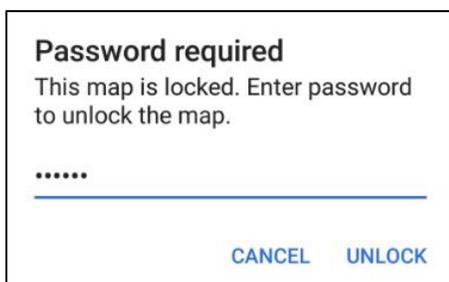
If geolocation option of your device is disabled and connection with Bad Elf receiver is lost, you will see the following message.



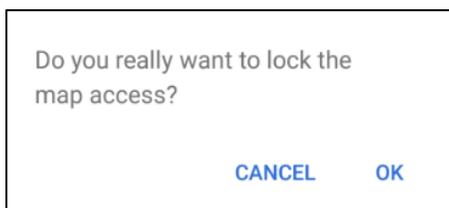
To find your current location and to record tracks, enable geolocation option on your device or check connection with Bad Elf receiver.

Working with protected maps

The maps protected with password are marked with the lock  icon. To open the password protected map, tap its name, enter password in the appeared window and tap *Unlock*.



The map will be opened in the project. Now access to this map is allowed, to lock it again, go to *Maps* tab, press  in the appeared window, and then *OK*.



Access to your map is locked and you will need to enter password again to continue working.

If the validity time of the map has expired, the map icon looks as  and the appropriate message appears.

