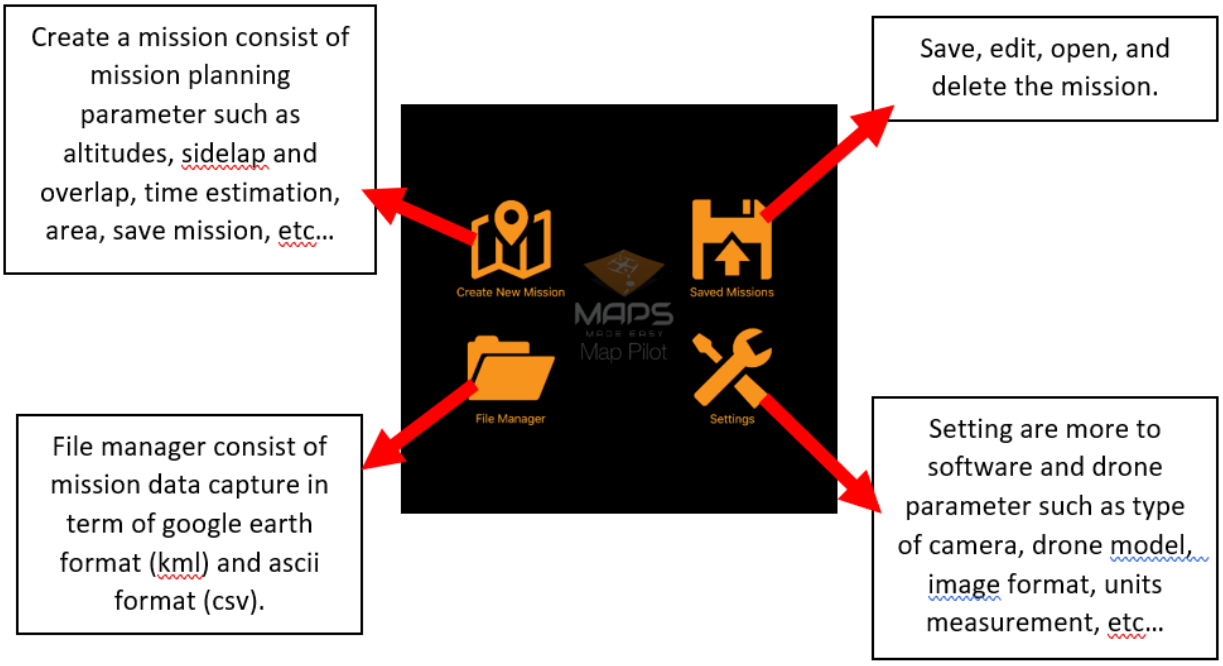
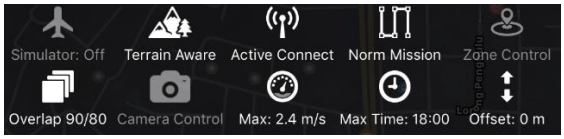
MAP PILOT
USER GUIDE

MAP PILOT SOFTWARE INTERFACE

Main Windows

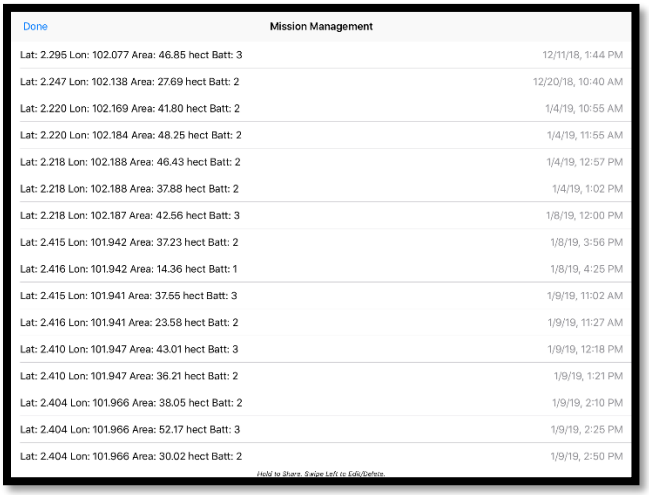


Create New Mission Window



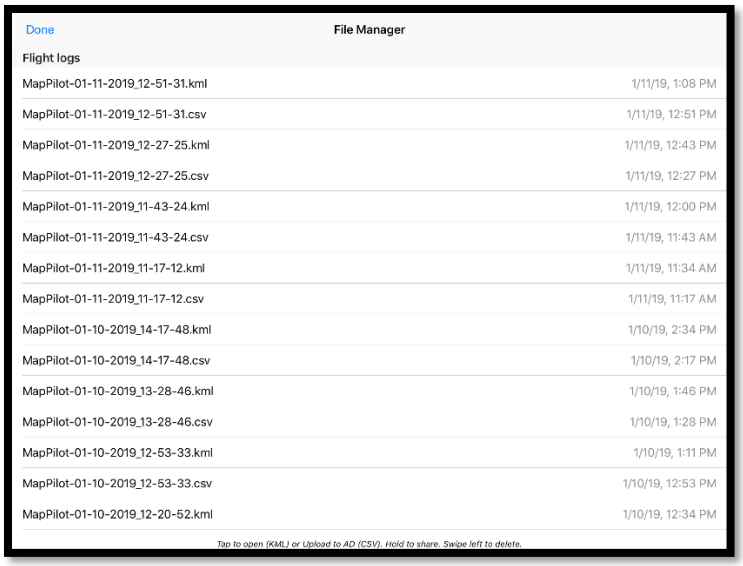
i. Simulator Function : Mission simulator before doing the real mission flight.
ii. Terrain Aware : Terrain profile at site before mission start.
iii. Active Connect : Able to connect
iv. Norm Mission : Types of mission such as normal mission, grid mission and etc…
v. Zone Control : No fly zone update map.
vi. Overlap : Setting for image sidelap and overlap.
vii. Camera Control : Camera control function.
viii. Max 2.4 m/s : Drone speed function for the mission.
ix. Max time : Maximum time for the mission.
x. Offset : Offset to survey target level.

Saved Mission Window



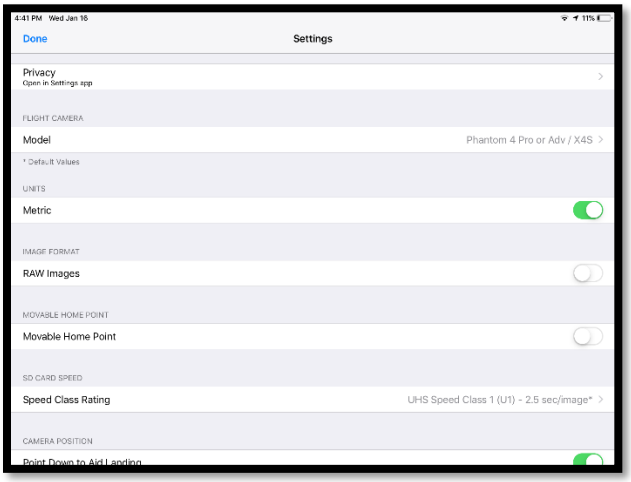
i. All the mission create and save can be open in this window.
ii. Double click on the mission in order to rename it.
iii. Hold the mission name to share.
iv. Swipe left for edit or delete the mission.

File Manager Window



i. Mission flight logs collected in kml and csv format for checking.
ii. Hold to share the flight logs.
iii. Swipe left to delete the mission flight logs.

Setting Window



i. Setting window function is for drone and software management.
ii. Consist of drone model, images format, units, types of camera and etc….

Quick Start - A Start to Finish Guide

Tudor - December 17, 2015 07:25

There are two main parts to successful data collection for drone mapping: Planning and Flight. For this Quick Start guide we will do a very minimal walkthrough to show the process from start to finish.

The walkthrough assumes that you already have the device connected to the remote and everything powered up. Open the DJI Go app just to make sure that everything is in working order. Close it before opening Map Pilot.

Note: Make sure you aircraft is set up properly for working with 3rd party apps by making sure it is set up properly and has the proper firmware.

PLANNING

1. Identify the Survey Area. Make sure the terrain of the area is known and all tall features or structures are taken into consideration.
2. Open the Flight Plan Stats pullout menu to see the metrics for the flight.

3. Open the Altitude Adjustment pullout menu to check the current altitude flight will be planned for.

4. Open the Map Control pullout menu to change the units.

5. Place Boundary Markers by tapping and holding the locations where you would like define as the corners of your survey area.

Boundary Markers can be single tapped to be removed or tapped and held again to be moved.

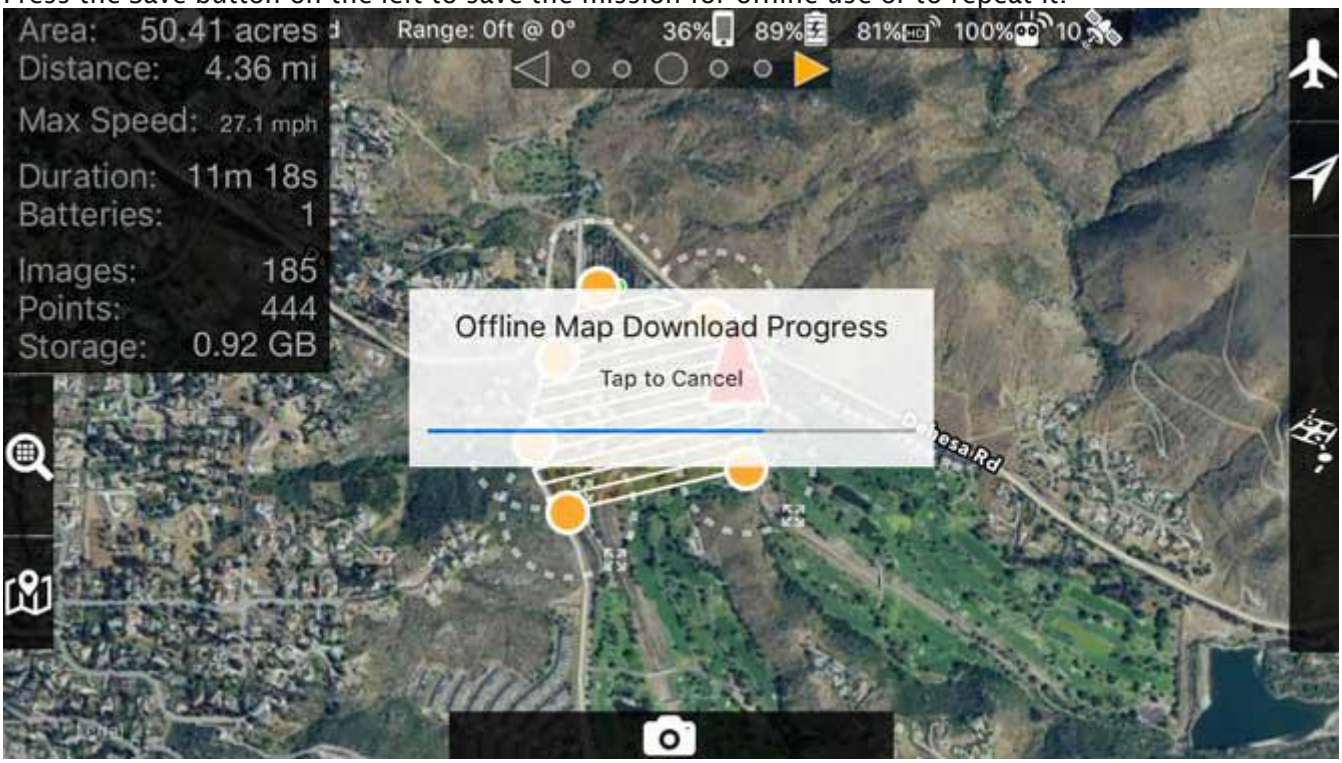
A line is drawn between the first and second points since a valid flight plan has not yet been defined.

As Boundary Markers are draw, the flight path with start to be formed.

6. Use the Altitude Adjustment slider to adjust the altitude of the flight which determines the level of detail. Fine adjustments can be made by tapping on either side of the slider.

7. Adjust Flight Path's primary pass direction using a two finger rotate gesture. Try to minimize partial passes while making sure the flight path is safe (including the flight path from the Home Point to the starting point and from the ending point to the Home Point).
8. Open of the Map Control pullout menu to save the mission.

9. Press the Save button on the left to save the mission for offline use or to repeat it.



FLIGHT

1. Manually launch the aircraft to a safe hovering elevation above the Home Point.

2. Open the Flight Control pullout menu and push the Upload button. This will execute a pre-flight check to makes sure the system is ready to collect data.

3. The mission will be automatically uploaded to the aircraft.

4. Press the Start button.

5. The aircraft will automatically ascend vertically to the cruising altitude and set the gimbal to nadir (straight down).

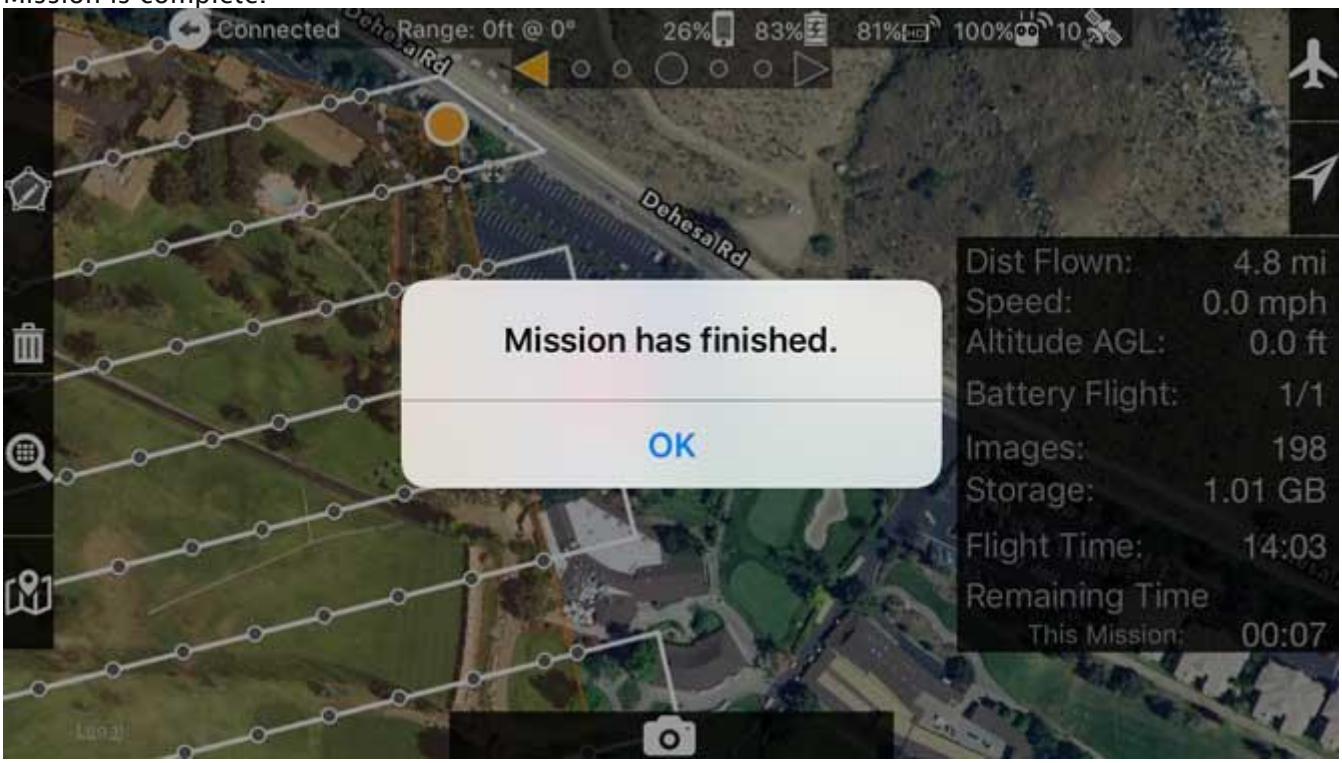
6. The aircraft will automatically proceed to the beginning of the flight path.

7. The aircraft will automatically navigate along the flight path taking images at appropriate intervals.

8. Once the mission is complete, the aircraft will automatically proceed to the point above the Home Point.

9. The aircraft will automatically descend and land at the Home Point.

10. Mission is complete.



Remote Firmware 1.4.30 Issues

Tudor - October 31, 2015 06:25

Chasing a Moving Target

DJI does a great job of adding new features and addressing issues as they arise while adding support for new hardware. The problem with that is for developers writing an app that supports various devices and versions of firmware, it can be a bit of a moving target.

Remote Control Firmware Version 1.4.30

Since we submitted our latest version of Map Pilot, version 1.2.2, DJI released a new and easy to install remote control firmware upgrade to add capabilities for the Inspire Pro. This firmware is not downgradable and has left experienced users wondering what happened.

With the changes made in this remote update, we have had increased reports of a few different types of issues relating to the use of Map Pilot.

Issues:

- "SD Card Info Info Read Failed" error
- Camera Not Taking Images
- Connection Issues

These problems are frequently caused by the PAF switch not being in the **F position when the app is launched**. It is also likely that the DJI Go app is running in the background and attempting to connect as well. Be sure to**fully close the DJI Go app**.

Sometimes the DJI Go app will have a pretty good hold on the connection so **unplugging the cable** and **closing both apps** will sometimes be required.

The case with the camera not taking images is an especially troubling one since you can waste a whole lot of battery without noticing that anything is wrong. Make sure that the **camera preview window is blinking** as it takes the still images and that the **grey circles are being dropped** along the flight path as the aircraft executes the mission. When the non-imaging condition occurs, we have found that an aircraft and remote power cycle is needed to recover.

We are working diligently to address these issues and submit a fixed version. It has been taking us about 9 days to get through the App Store review process so please use the workarounds listed above in the meantime.

Mission Estimates

Tudor - October 17, 2015 02:19

Map Pilot can be used to estimate a number of different metrics without being connected to the aircraft.

As the Boundary Markers and the Estimated Takeoff Point are added/relocated, the Flight Plan Statistics pullout menu shows the updated flight metrics such as area covered, distance flown, estimated flight time, number of batteries required and number of photos that will be taken.

The number of photos that will be taken directly translates into the number of points Maps Made Easy processing will require.

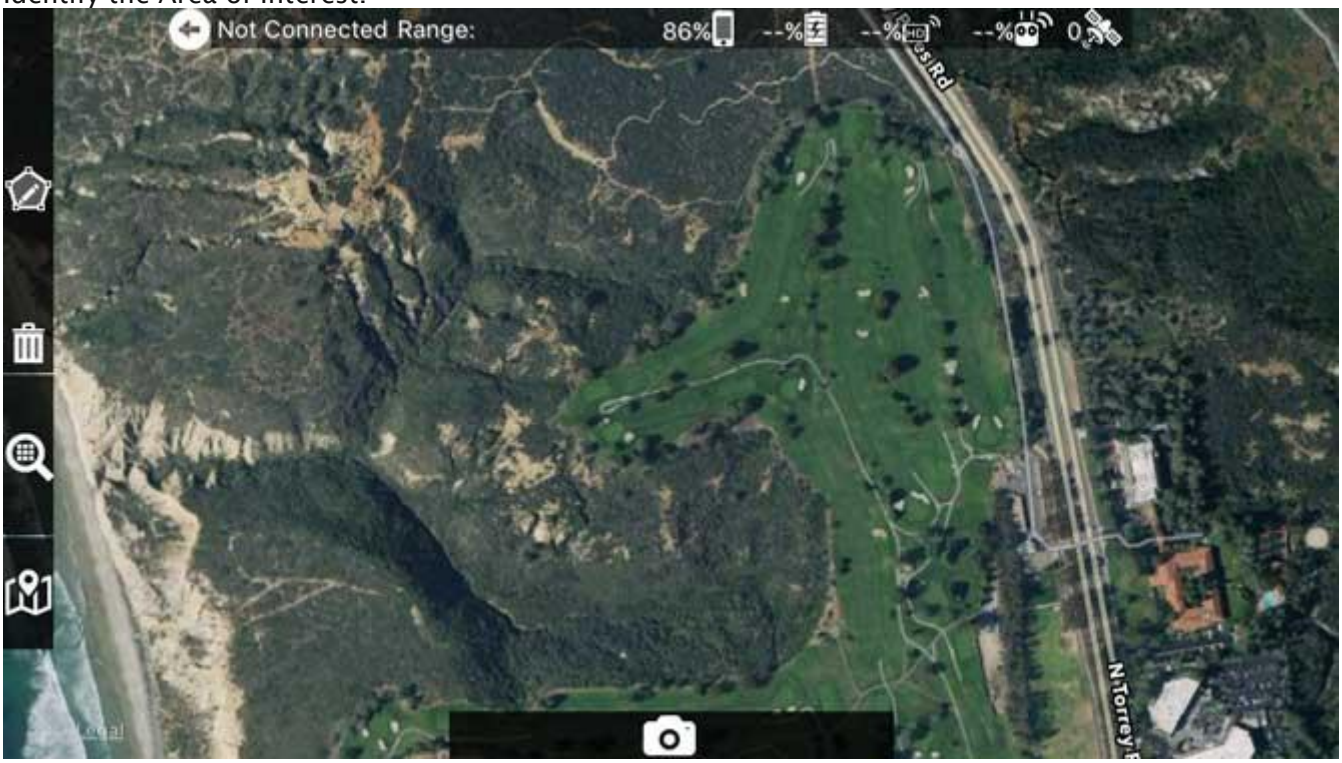
Adjusting the Altitude slider also affects the flight plan metrics.

Whether you plan on charging by the acre or by the image (like we do), using the Map Pilot app will make sure that you show up to the site properly equipped, with the data you need and a solid understanding of what your processing costs will be.

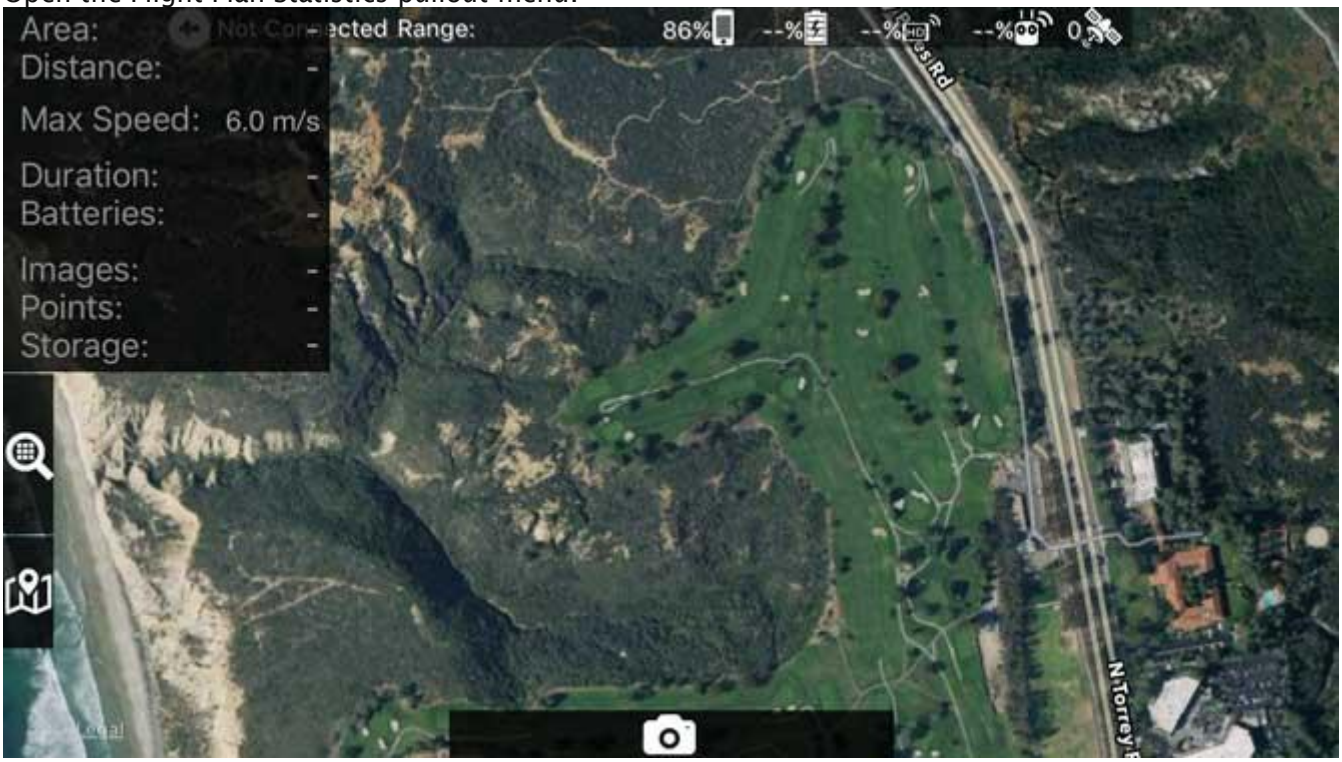
This walkthrough assumes that your device has a data connection but is not connected to the remote.

1. Select "Create New Mission" on the Main Menu.

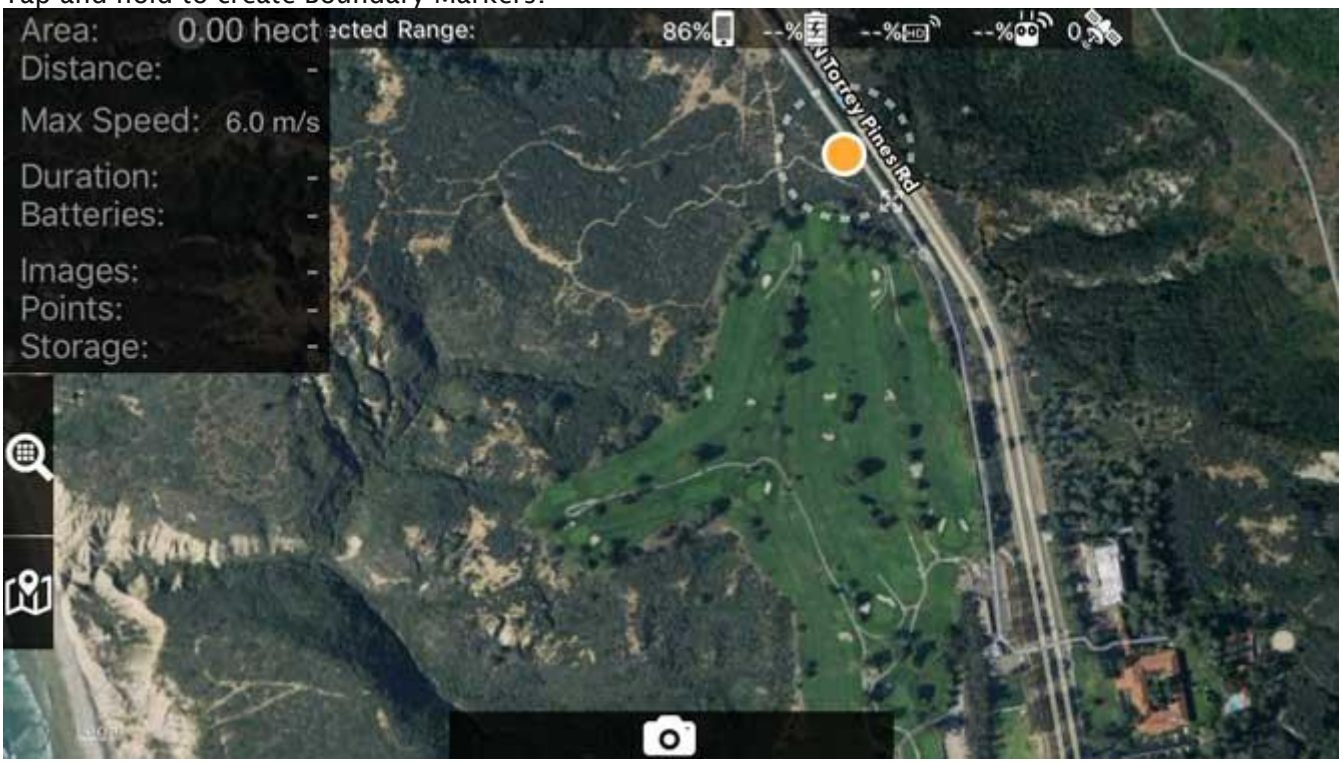
2. Identify the Area of Interest.



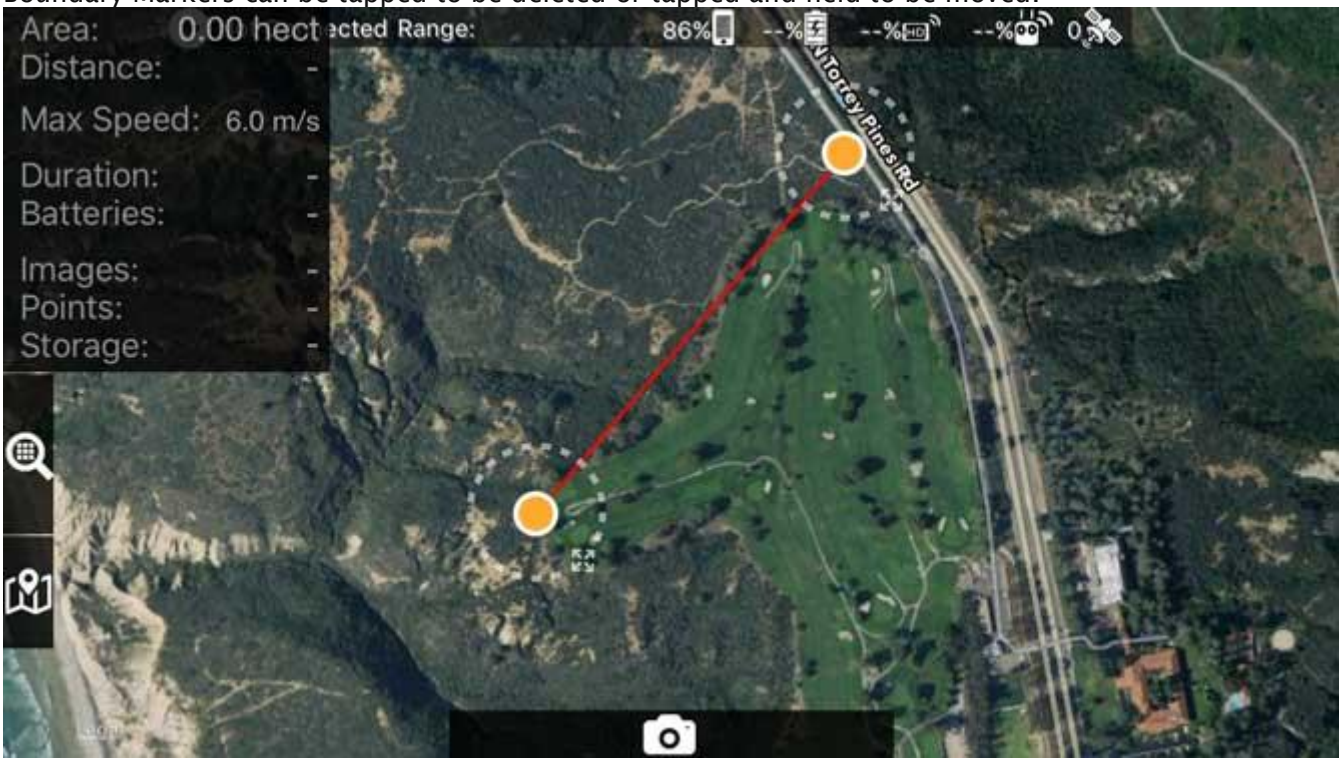
3. Open the Flight Plan Statistics pullout menu.



4. Tap and hold to create Boundary Markers.



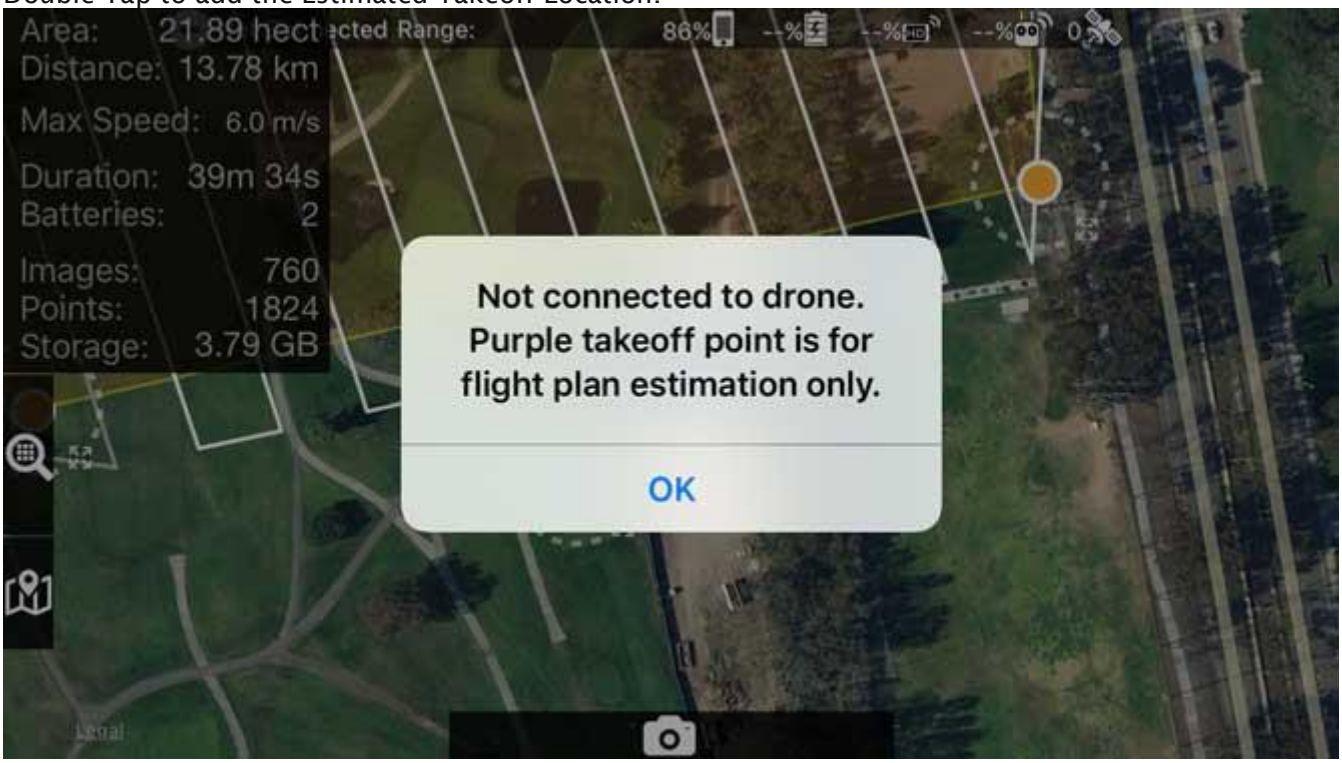
Boundary Markers can be tapped to be deleted or tapped and held to be moved.



As Boundary Markers are added, the survey area boundary is drawn.

The shaded area shows the current survey area. The Flight Plan Statistics window is now being populated since there is valid data.

5. Double Tap to add the Estimated Takeoff Location.



This is only valid when the iOS device is not connected to the drone. When connected, the drone's current location is used as the takeoff location.

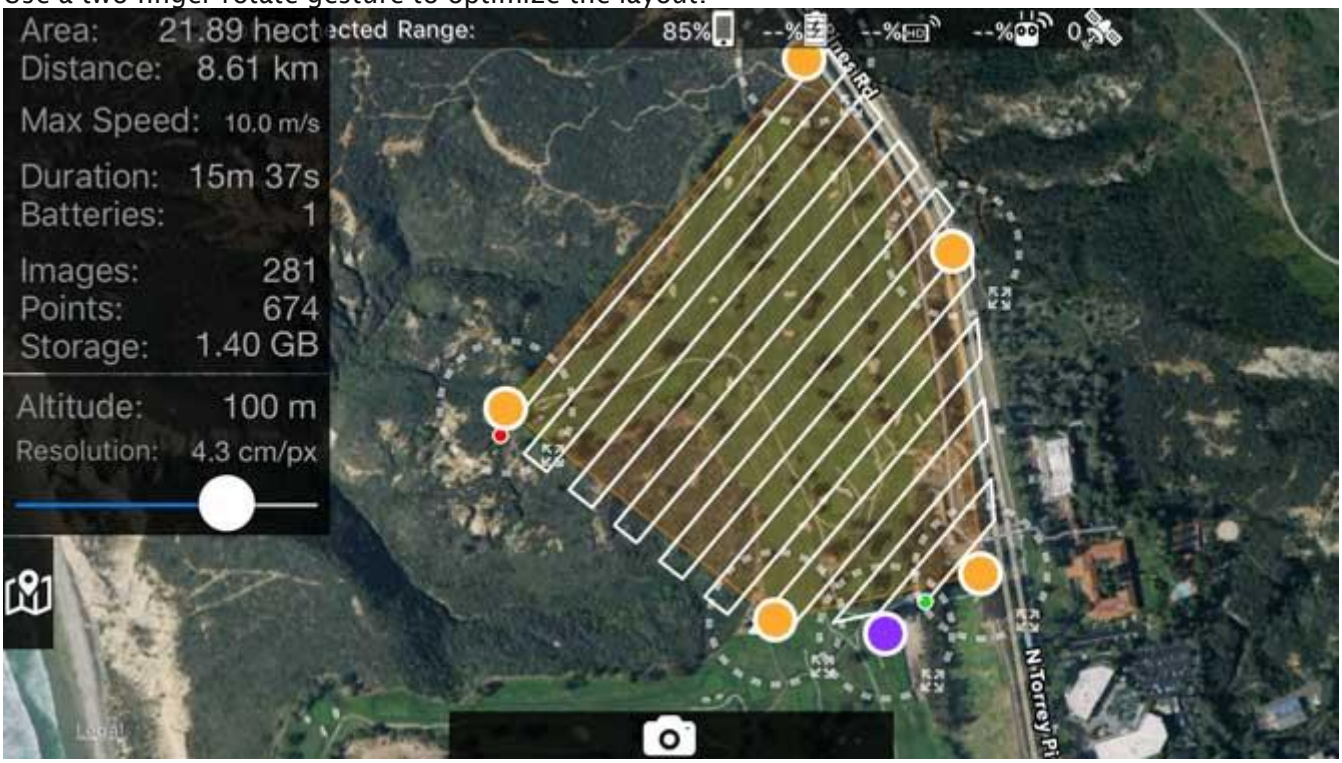
6. Review the currently planned flight details and created flight path.Note that two batteries will be required to cover this area with these settings.

7. Open the Altitude Adjustment pullout menu. It is currently set at 60 m (default).

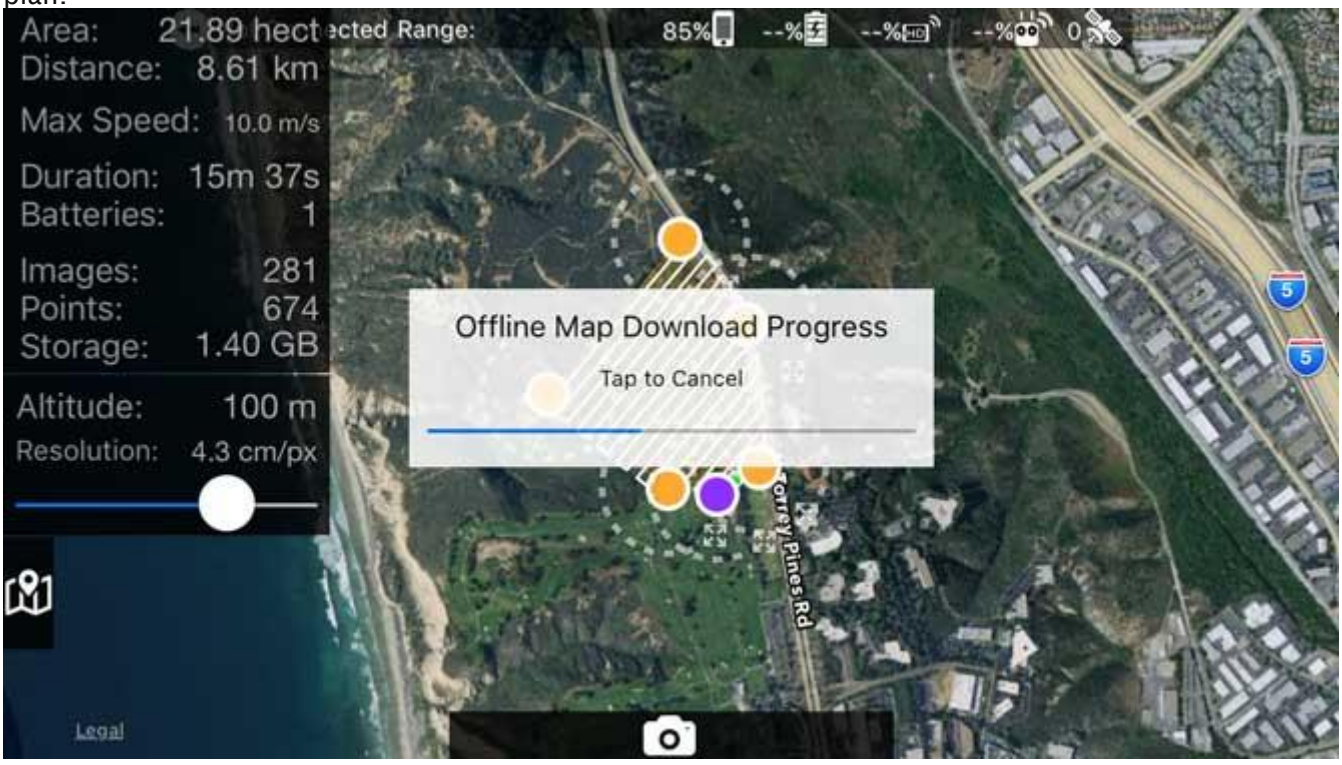
8. Adjust the Altitude using the slider. Fine adjustments can be made by tapping on the left or right side of the slider.

9. Review how adjusting the altitude affects the distance flown, number of images taken and number of batteries that will be required. Note that the number of required batteries went down to 1.

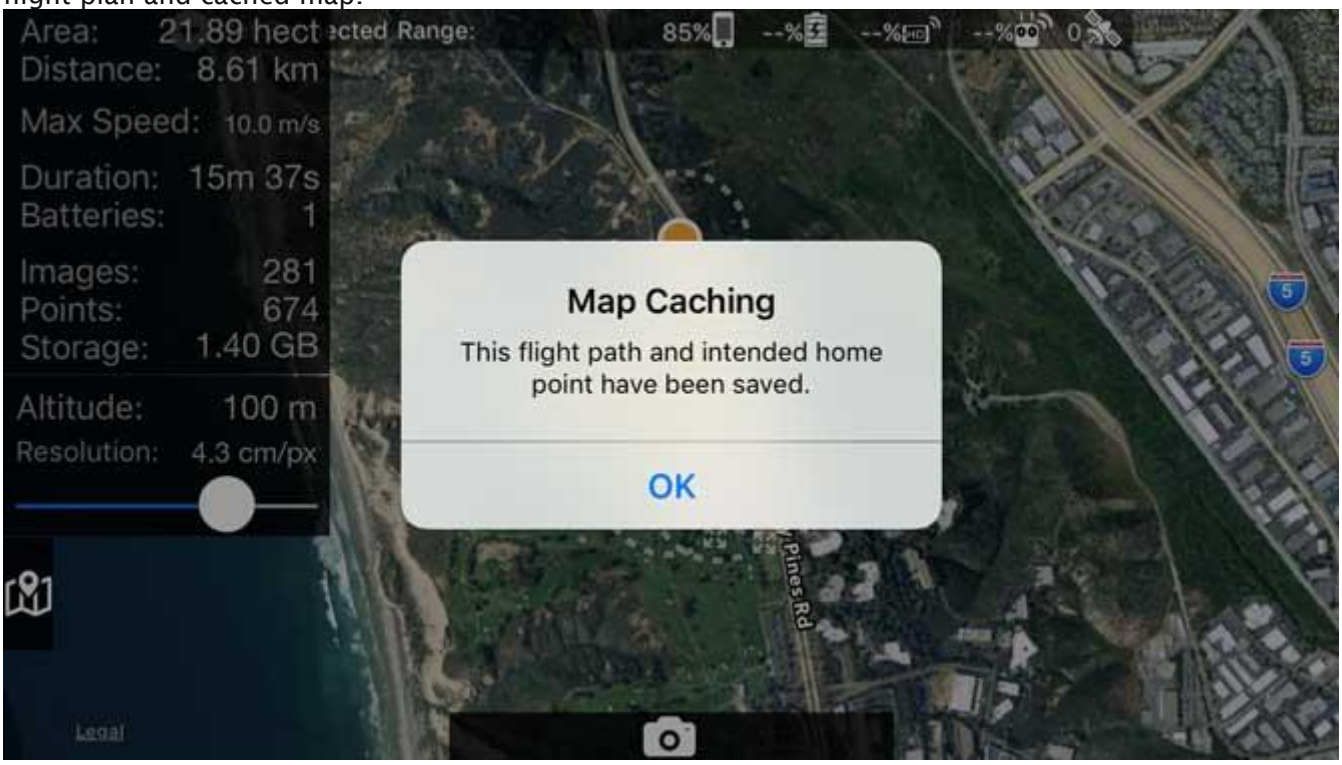
10. Use a two finger rotate gesture to optimize the layout.



11. Review the generated flight path for potential obstacles. The the flight path line alternates between white and gray to denote each estimated battery flight that will be required based on the current settings.
12. Open the Map Control pullout menu and select the Save button if desired. This will allow for later repeated or offline execution of the plan.



13. When saving, the current overlap and battery limit timers are saved to be recalled along with the flight plan and cached map.



WARNING: Always inspect the intended flight path once on-site to be sure that real world obstacles are taken into account with any previously generated flight path.

Mission Management Walkthrough

Tudor - October 17, 2015 02:20

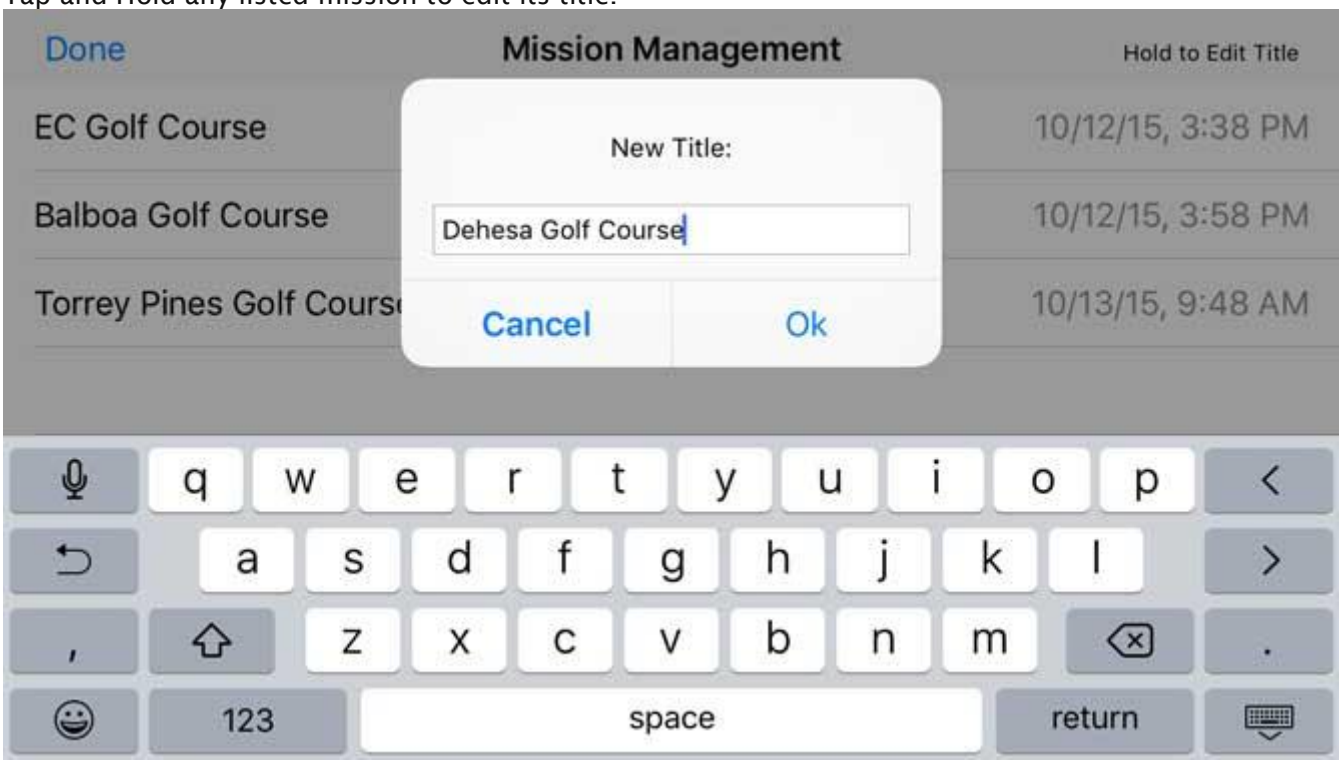
The beauty of the Map Pilot app is that you can create a mission before venturing into the field while your device has an internet connection, pack the data up, and take your device with you into the field where there is no data service. Map Pilot saves the flight planning information and a portable version of the basemap to use and reuse at the job site.

Creating a mission and saving it is covered here: Mission Estimates.

1. From the Main Menu, select Manage Missions.

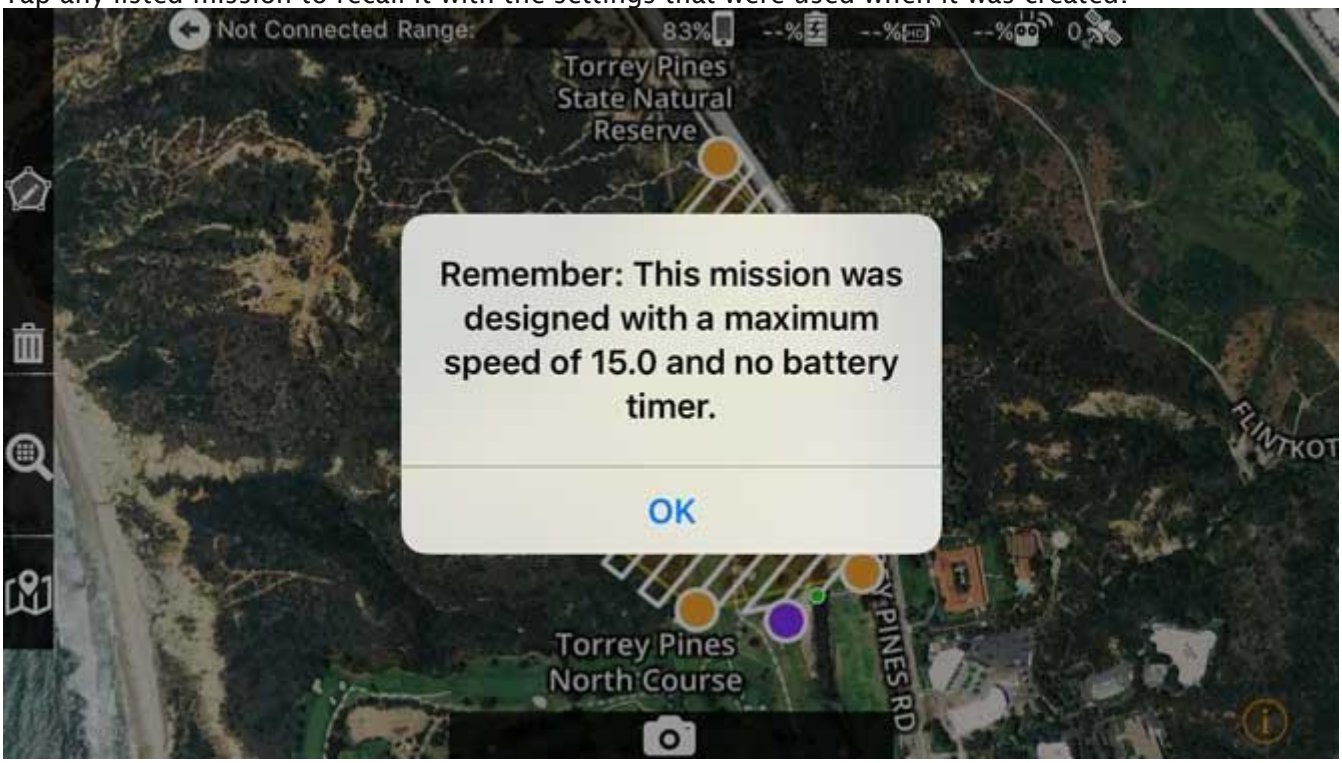
2. View the saved missions and the date they were created.

3. Tap and Hold any listed mission to edit its title.

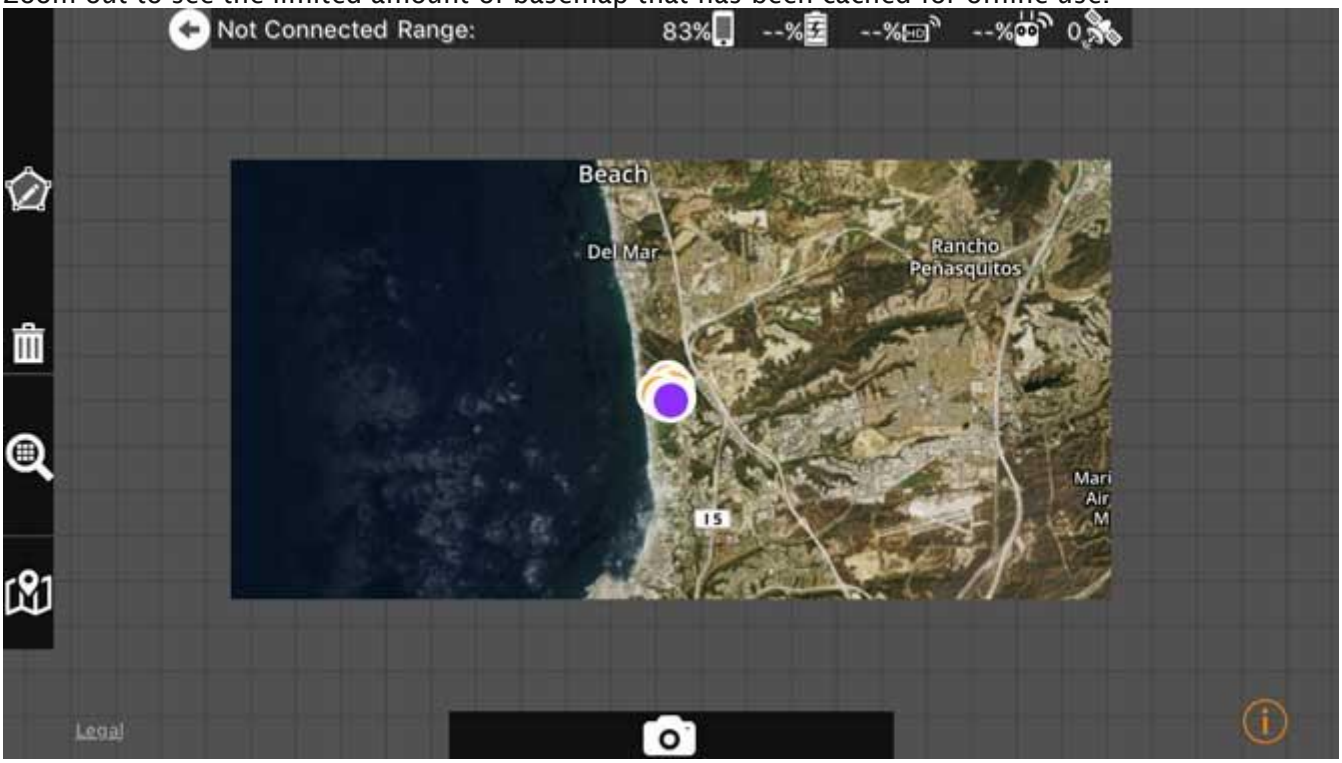


4. Use the standard iOS swipe left gesture to delete. Click the red Delete button to confirm deletion.

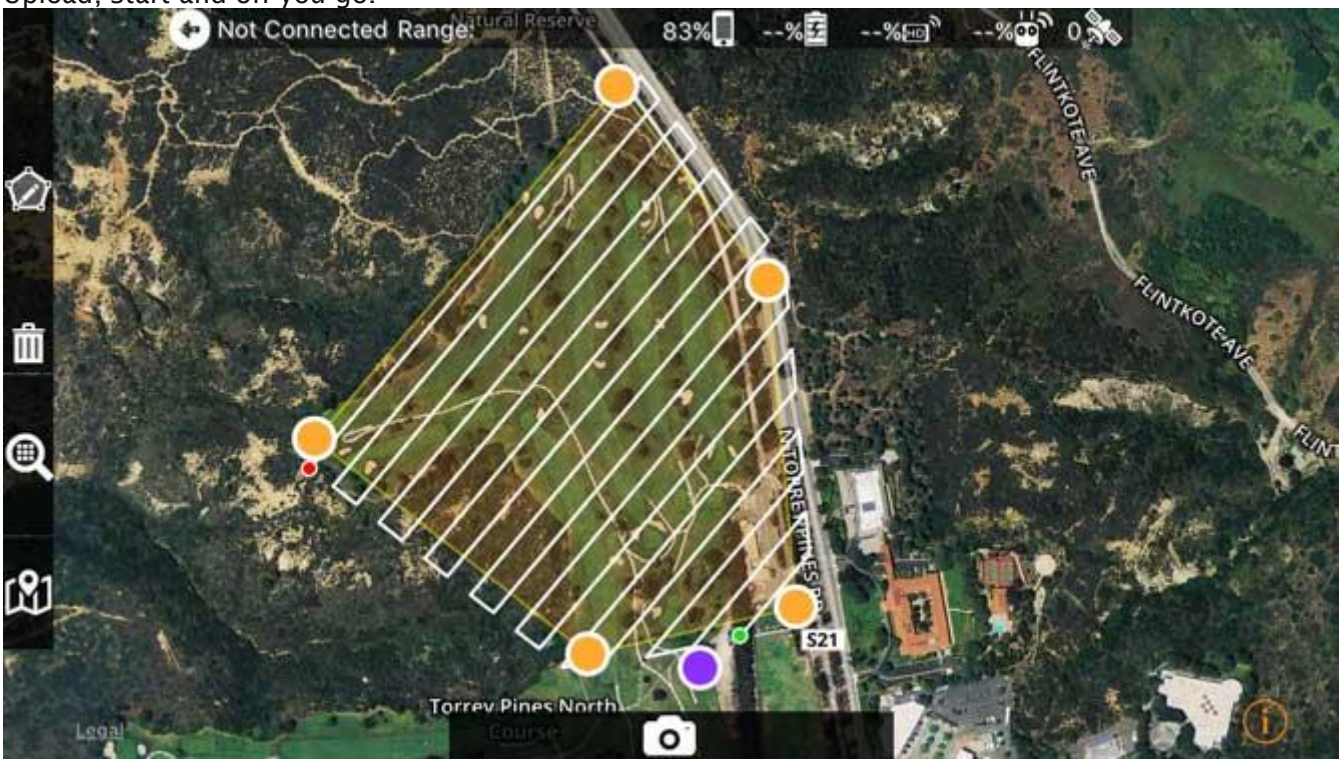
5. Tap any listed mission to recall it with the settings that were used when it was created.



6. Zoom out to see the limited amount of basemap that has been cached for offline use.



7. Flying a saved mission operates the same way a normally created mission would. Connect, Upload, Start and off you go.



NOTE: The boundary markers are not movable on a saved mission. If you wish to create a new mission using the cached basemap, click the Trash Can icon to delete the current flight path.

This doesn't delete the saved mission itself but just clears it so you can create a new mission as you normally would.

Emergency Takeover and Flight Interruption

Tudor - October 17, 2015 03:22

The first thing pilots should be concerned with before and during flight is whether this flight is safe or not.

As with all remote controlled aircraft, right of way must be given to passenger aircraft should they come near where you are flying.

During and automated mission as you are doing with Map Pilot, you do not have to totally abandon your mission's progress in order to remain a safe distance away from other aircraft.

At any time, you can switch the PAF switch from F to A or P and manually pilot the aircraft out of harms way. You are the pilot, this is your responsibility.

If you have more time in order to react and wish to be able **to resume your mission** afterwards, **press the Go Home button first** to record the point of abandonment. Once it is on its way home, you can then interrupt the flight using the emergency takeover method. When you want **to restart the mission, press and hold the Restart button**, switch the PAF switch back into the **F position**, and **go through the Pre-Flight and Takeoff process** all over again and it will pick up where it left off.

Line of Sight Indicator and Signal Strength

Tudor - October 17, 2015 05:19

Flight control of the aircraft is handled by DJI Waypoint system, so once you have a mission loaded up, that is what it is going to do. To enable faster and more adjustable framing, Map Pilot needs to maintain a strong connection to the aircraft to manage the taking of images and deliver telemetry.

We two things very early on it our testing: the **signal quality goes away quickly** in various conditions and**drones are really hard to keep track of** when flying high and fast.

We attempt to address both of these issues by providing a direction indicator under the top status bar. It's orange circles and arrows show you when you are pointed in the right direction or where you need to turn towards to maintain signal integrity.

Also, there is an **audible beep** that occurs when the signal strength dips **below 85%** in case the pilot is asleep at the wheel. In our testing, the quality of the connection degrades very quickly below 85%. If you need to operate at a lesser signal and things are working, feel free to mute the audio with your devices mute switch.

This is an example of a properly aligned remote. The blue arrow shows that the middle large circle in the indicator is highlighted which means that the mobile device is pointed straight at the drone.

This is an example of a poorly aligned remote. The orange arrow on the right is highlighted which means that the pilot needs to turn at least 90 degrees to their right in order to be properly aligned.

Antenna alignment has a lot to do with maintaining signal quality too. This is a good video from DJI that explains how to get the maximum signal out of your remote's antennae.

Flying Multi-Battery Missions

Tudor - November 01, 2015 09:27

Creating Big Maps Using Multiple Batteries

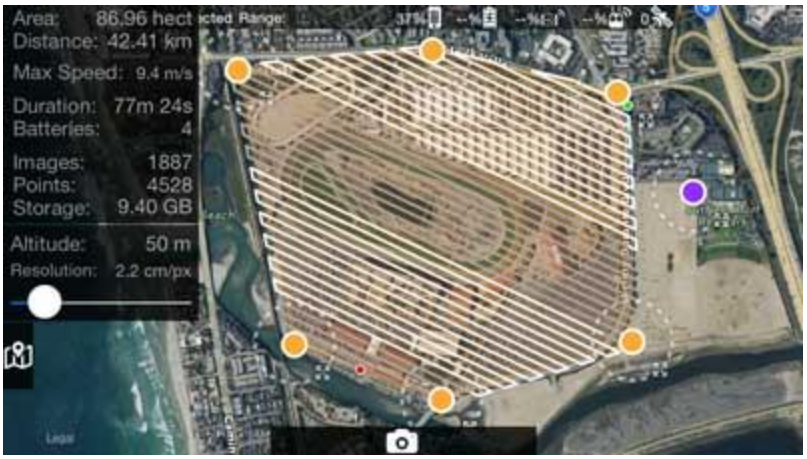
The best part of Map Pilot is its ability to help mappers estimate and optimize the flight path required to map a given area. Even when this area will require more than one battery to complete, Map Pilot will estimate the number of batteries required and keep track of where each battery leaves off.

Changing Batteries

After the aircraft lands, power it down normally, swap the battery and power it back up normally. As soon as the camera preview window has live video in it again, the aircraft is ready to manually takeoff and upload the remainder of the flight.

Mission Estimates

When planning a mission, the requirement for multiple batteries is denoted in the Flight Plan Statistics pullout (top left) and also on the map shown by the alternating white and grey flight paths. The image below shows a flight plan which will require 4 batteries.



Mission Planning only takes the Battery Maximum Flight Duration setting into account. Battery Timer settings from 11 to 18 minutes will be reflected in the estimated flight duration and flight path estimations. Battery Limited operation simply reflects a battery duration of 24 minutes which is longer than any DJI aircraft can currently fly (aside from the Matrice with two batteries). Estimates for Battery Limited operation will be less accurate than the Battery Timer settings.

There are three things that can bring an aircraft home to swap out a battery:

- Battery Timer Running Out
- Battery Running Out of Power
- Return to Home Buttons

Any time the aircraft lands, there will be a message that states the Flight N is complete where N is the count of total flights.

Battery Timers

A Battery Timer of 11 to 18 minutes will send the aircraft home when the aircraft has been in the air for the nominated amount of time. This can be useful for cases where you know that conditions will limit your battery duration and you want to have a really accurate count of required batteries.

The pilot will know more about the state of their batteries than Map Pilot will and can use Battery Timers to share this information with the app.

Return To Home Buttons

At any time during flight, the user can either push the "Go Home" button in the Flight Control pullout (top right) or the Return to Home button on the remote control. This will drop an Abandonment Point and the aircraft will return home.

Remember to set you Return to Home height appropriately in the DJI Go app.

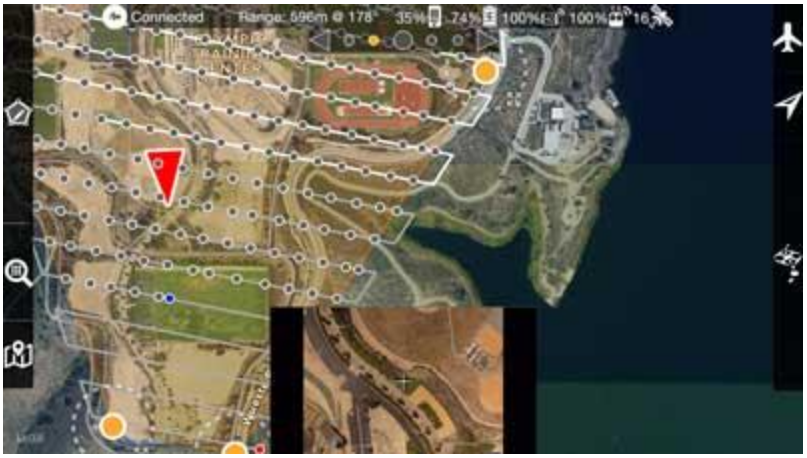
Battery Power Triggered Return To Home

The smart batteries in the Phantom 3 and Inspire 1 drones know how much power it will take them to get home. When the aircraft realizes that it is further away than it has power to get home, it will immediately head for home and draw a Abandonment Point on the Map Pilot map.

We have tested this extensively and have had no problems with it. Remember that the aircraft's distance to home power requirement will likely be wrong in the case of a stiff headwind so keep that in mind.

Abandonment Point

Abandonment Points are the blue dots that get drawn any time the aircraft leaves its intended flight path to head for home. After going home and getting a new battery, it will proceed back to the blue point and continue on with the mission.


Connected
Range: 596m @ 178°
35%
74%
100%
100%
16