

GROUND CONTROL POINTS, CHECK POINTS AND ACCURACY

GROUND CONTROL POINTS & CHECK POINTS

An accurate drone survey still requires some work on the ground, for technical and verification reasons. Ground control points and check points are obtained in the same way, but serve a slightly different purpose.

GROUND CONTROL POINTS

A GCP is used with PPK data. Ground control points are used to anchor the points in the images to an accurate location on earth. GCP's are essential to stitching the images together accurately and creating a detailed map.

Ground control points are surveyed on the ground using precision GPS equipment.

CHECKPOINTS

Checkpoints are used with RTK projects, they are the same as GCP's in the way that they are set, but they are different in the way they are used in the process. There is no need for 'anchors' in the photogrammetry process because the RTK GPS built into these drones geolocates the images very accurately. Instead, the points can serve as checkpoints to verify the accuracy after it's processed.

SETTING GROUND CONTROL

When you fly at a lower altitude the resolution will be higher, but there will be less data in each image, and more ground control will be required to fill in the large number of images that will not contain a GCP.

- GCPs should be shot and marked with high precision and accuracy
- The GCP's should be large and contrasting enough from the background to be seen from altitude
- Make sure the GCP's cannot be moved
- Try to put GCP's on different elevation levels in the project if possible
- When flying non-RTK, set a minimum of 5 GCP's per flight battery

SURVEYING BY DRONE

It is a common misconception that anyone can produce survey-grade accuracy from a drone. In reality, flying is only a piece of the puzzle – it takes skill and experience in photogrammetry to achieve a high quality of data outputs.

Here are just a few variables that affect quality outcomes:

- The type and quality of the drone
- Camera resolution
- Flight altitude
- Density of land cover – vegetation, water, sand
- Use of ground control and method of geolocation capture

Land surveying is a challenging profession and drones are not going to eliminate the need for surveyors. Rather, they should be treated as a valuable tool to increase efficiency. Some sites can only be surveyed from the ground. Where higher accuracy is required than what is possible with a drone, for example building corner measurements and areas with high tree density cover, a ground survey will still have to be undertaken with for example a laser scanner. By reducing the amount of time required onsite, drones can offer quicker and more cost-effective survey solutions, but a deeper understanding of photogrammetry is an essential requirement to achieve more accurate results and gain the trust of surveyors and clients.