



# Aerial Photography



Good land resource information whether it is for forestry or farming is crucial to your business. At a time when monitoring and analysis is more important than the average year, farm mapping starts with good aerial photography. In the last few years there have been huge advancements in the imagery available and the way that we can use this data. There are many options available depending on the detail required and money you want to spend.

Some of the factors to consider with the imagery are:

**Age:** When requesting an aerial photograph the supplier generally uses existing imagery and may have several images of different ages. They can undertake a special run for new images if required. Using existing imagery is obviously considerably cheaper than having a new image taken. The need for up-to-date images will be dependent on what you require the image for, (such as vegetation cover) and whether the resolution is at a level that suits your purpose. The more recent the image, the greater the resolution the images will be captured at.

**Photo run:** when aerial photos are taken from a plane they do so in runs and the camera is clicked every so many 100 metres. A run will result in images that will overlap each other by at least a third, both top and bottom and adjacent runs. When buying images for your property, you will pay per tile, with the average farm requiring images that overlap ranging from 3 to 15 tiles. These tiles are normally stitched together to form one image.

**Orthophoto:** When an aerial photograph is taken, the image does not account for scale variations, displacements because of the shape of the land and the distortion from the perspective view of the camera. An orthophoto is a photographic image where these variations have been eliminated. An orthophoto should always be used when utilising farm mapping programs.

**Rectification:** when aerial photos are taken looking straight down from a plane, the outer edge is distorted due to the curvature of the earth and the camera lens. This can be corrected through a rectification process and utilising the overlapping images. Rectification is required when utilising the images to calculate areas also.

**Resolution:** The resolution represents the size of one pixel of colour on the computer screen. For a low resolution image one pixel may represent 25 m x 25 m whilst a high resolution image one pixel may represent 0.5 m x 0.5 m. This allows you to more clearly identify detail within the images (like stock yards) and the size that you wish to print your farm map at. The higher the resolution the larger the map you can produce without a blurry image.

Most new aerial photographic coverage is now being flown at 0.75 m resolution, which will give good results for most requirements for landowners.

**DEM (Digital Elevation Model):** a digital elevation model is a digital data file that represents ground surface as a set of 3D coordinates (east, north, and height). This enables the “flat image” to be draped over these points and give a 3D terrain effect to the photo or mapping data. They are very useful for precision agriculture where variations in ground level are more critical, and are often used in modelling. For example, the impact of a 1000mm storm event on a catchment. As this technology continues to advance we will see this become more and more common place and accessible.

Farm mapping is an easily accessible resource these days, and they provide invaluable information and tools to better manage the land resources. In our experience the paper maps, done with the map wheels, can be up to 25% out on sheep and beef hill country properties. This could mean that you are under or over stocking paddocks, and missing valuable production.



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There is no need to have the farm maps and aerials tucked away on a computer, they can now be printed on all sorts of materials. A whiteboard provides a great option for staff management and traceability of mobs and practises for example. Some of the farm mapping programs provide the ability to measure and re route fence lines, waterlines, and identify mob movement on a basic level.

Something to consider when printing maps for whiteboards and smaller maps: Firstly you should be looking for a high resolution that enables you to get a useable scale. Scale refers to the size of the printed image with respect to the actual on the ground size. For example an image with a scale of 1:10,000 means that 1 mm on the photo represents 10,000 mm or 10 metres on the ground. The most usefully scale for a hill country property is roughly 1:6,000 to 1:10,000.

**Satellite orthophotos** are becoming more common. Most of us have spent some time on Google Earth ([www.earth.google.com](http://www.earth.google.com)) which is sourced from the QuickBird Satellite. These images are now available at competitive prices and provide excellent contrast, detail and definition. These tend to be supplied at lower accuracies than normal aeroplane-captured orthophotos. So depending on your requirements these may do the job.

There are plenty of resources and products available. Farm mapping is advancing rapidly and provides many opportunities to achieve a more streamlined and productive farm business. Want to know more, contact LandVision at [www.landvision.co.nz](http://www.landvision.co.nz).