Fera UAV

Heights Quarry UAV Survey

Case Study

Project Background

Heights Quarry is a limestone quarry located on the northern slopes of the Weardale Valley in County Durham. The Operations Manager at Heights was interested in obtaining high resolution imagery of the quarry and surrounding area to assess current operations.

The Fera UAV team worked with Heights Quarry to undertake an aerial survey of the quarry in order to demonstrate the capabilities of Fera's fixed wing UAV as a high resolution imagery acquisition tool.

Flight Planning

Before undertaking the flights, the UAV team conducted a number of desk based pre-flight surveys and developed flight plans to ensure that imagery covering the entire area of interest was collected safely and in-line with CAA regulations. Once on site, an additional onsite survey and risk assessment was completed to ensure that all dangers and hazards were identified and mitigated prior to launch.

With the team confident that the UAV could be flown safely, two flights were undertaken at a height of 400ft. These flights allowed the UAV team to collect imagery at a resolution of 5cm covering the entire Heights Quarry site in line with the CAA legal requirements for visual line of sight UAV operations.

Figure 1 – 5cm high resolution mosaicked imagery

Image Processing & Output

The collected imagery data was processed using Pix4D. Within this software the images were mosaicked (see figure 1) and a 3D point cloud and Digital Surface Model (DSM) were created. Figure 2 shows the imagery draped over the 3D DSM.

The imagery data and DSM were then used to create a 2D Web Application and 3D Web Scene to allow the customer to view and interact with the imagery over the internet.

This web application can be viewed by visiting: https://uav.fera.co.uk/heightsquarry/

Key Information

Size of study area: **1.74km² (174ha)**
Total number of flights: **2**
Total number of images: **2367**
Total distance flown: **28.8km**
Imagery collection altitude: **400ft**
Ground Sample Distance: **5cm**

Figure 2 - Natural colour imagery draped over the 3D Digital Surface Model

Want to know more about Fera's UAV, GIS and Remote Sensing Services?

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