

Case Study

Customer:

PDS Surveys

Project:

Limited access survey in residential area bordered by a river

Solution:

Parrot ANAFI



320g, measures 175x240mm and at ten times quieter than the average drone it would be the least obtrusive choice possible. A letter drop was also carried out to inform every property owner of the purpose of the survey along with its date and time, weather permitting. If on the day the weather, or any other issue, postponed the survey from commencing, it was agreed that a further letter would be issued.

The ANAFI requires very little take-off and landing space so a property with a large

The Parrot ANAFI is ten times quieter than the average drone

patio area was identified on Google Earth. Contact was made with the owner and a member of the PDS team explained what was planned. The householder agreed that throughout the survey only the drone team could

have access to the take-off and landing of the drone. As a back-up, two further areas were identified, one as a possible emergency landing upstream and one downstream of the initial take off location.

Carrying out the survey

On the day of the survey the ANAFI was flown upstream and downstream of the gardens capturing video and photos from various angles and heights. It was also flown down the river again ensuring good coverage of the wall and surrounding area.

Why the Parrot ANAFI was selected

- Unobtrusive, extremely quiet, small and lightweight
- Quality of data captured, even in inaccessible areas, with 4K/21MP camera with 180° vertical orientation
- Ease of operation with take off and landing in a confined space
- Flexibility and ease of planning an ad hoc survey using the Pix4Dcapture software

Keeping the noise down

The Parrot ANAFI drone has proved to be the perfect solution for retaining the goodwill of householders during a limited access survey in a residential area.

Based in Caerphilly in South Wales, PDS Surveys is a business that specialises in high quality surveys within the drainage and utility sector, often working for large utility companies in Wales and its environs. It was therefore contacted by engineering and construction company Black & Veatch, when a survey was required by their client, Natural Resources Wales (NRW)*, in the small town of Llwynypia.

The town is situated on the Rhondda River which flows past a residential area where many of the gardens back on to the river. These gardens are separated from the river by a long running concrete retaining wall with reinforced piles located along its length. It was felt that it may need refurbishment and therefore the aim of the contracted survey was to capture the relevant stretch of wall along with all the fixtures and fittings within those gardens backing on to the river.

Difficult access

The immediate problem for PDS Surveys was access to the wall which was built extremely close to the river. With the wall being located at the bottom of the gardens, this survey would establish the

location of any greenhouses, garden furniture, fixtures etc in relation to the boundary.

A full GPS or total station survey would either entail PDS having to wait until there was a long period of dry weather (the river is one of the fastest rising during rainfall with no safe access) or alternatively, gain entry to every garden/property that backed onto the wall. This second solution would be further hampered due to most of the gardens being separated from the houses by an alley way and 90% of them having secured access.

After completing pre site visits, Lee Husk, Director of PDS Surveys, felt that a small drone would be the most practical solution backed up by a small amount of measurement with a total station. Having recently purchased a Parrot ANAFI from KOREC, Lee knew that this would deliver the safest and least intrusive method whilst capturing the quality of data specified by the client via its a 4K/21MP camera with 180° vertical orientation.

Retaining goodwill

Both the client and Lee felt that it was vital to carry out the survey with the least impact on householders. The ANAFI weighs just



▲ Overlaid on Google Earth

Once this was completed, the PDS team found that they had over an hour left within their time frame providing them with the opportunity to give the client extra data. Nine ground markers were therefore placed in gardens which could be accessed along the river and whilst a PDS drone team member was carrying this out, a mission was created by the pilot using the Pix4Dcapture app for easy automated flight planning. Having already done pre site checks and risk assessments, PDS completed a site-specific task statement which was added to the original method statement and from this, a seventeen minute 3D flight mission was created. The mission was observed via the live, on-screen display with the drone operator having complete control of the survey whilst another member of the PDS team observed the air space and surrounding area as required. This provided data of sufficient accuracy (17mm) to check levels within the area.

No access to the river was required along with only limited access to the owner's properties ensuring that the survey was undertaken safely and with minimal disruption to the property owners. The data was delivered on time and exceeded quality expectations.

Images	median of 78195 keypoints per image	✓
Dataset	218 out of 218 images calibrated (100%), all images enabled	✓
Camera Optimization	1.76% relative difference between initial and optimized internal camera parameters	✓
Matching	median of 21113.4 matches per calibrated image	✓
Georeferencing	yes, 9 GCPs (9 3D), mean RMS error = 0.017 m	✓

Preview

▲ Quality check

*Natural Resources Wales ensures the environment and natural resources of Wales are sustainably maintained and used, now and in the future. Natural Resources Wales works with the Welsh Government.

View the point cloud data here: <https://bit.ly/2OnNsTk>

All information kindly supplied by Lee Husk, Director, PDS Surveys

Contact us:

Please do get in touch for further information on any of the products or services mentioned in this case study, a demonstration, support or just a chat about your requirements.

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