Case Study

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Environment Agency

Drone Inspection of a Culvert for the Environment Agency

Background

Avoiding the need to enter confined spaces unless necessary is the wish of all organisations, so when the Environment Agency heard about the new drone technology we had invested in, they were interested to find out more and see if it could be used to inspect culverts and tunnels – work that would have previously been undertaken by two teams totalling six people. A three-person team walking through the culverts and tunnels, taking pictures and videos to use in the report they then collated. And a further three-person rescue team on standby in case of an emergency.
Using a drone removes the need for people being in this hazardous environment as well as reducing cost and time.

Initial Trial

Our specialist drone pilots initially undertook a small trial at a culvert in Nottinghamshire using our drone, to show the agency team what was possible and the quality of information that could be collated.

> The images far outperformed the traditional CCTV cameras. Because the drone battery life is 10 minutes, the survey must be planned, but that is completely do-able.
>
> *Neil Whitehead, Flood & Coastal Risk Management Technical Advisor for the East Midlands Environment Agency*

We conducted an initial risk assessment to ensure there was sufficient height above the water to fly the drone through the culvert.

The drone cannot operate under water and must be kept above water ensuring it is not too close for the water to be drawn up by the propellors (which are at the base of the drone so can cause down draft).

Confident the water height was not an issue, the drone was then put to flight and using its innovative data capture capabilities, it took hundreds of images and video footage, highlighting any problems or issues in the culvert.

These photos and videos identified that the incoming entrance was blocked with debris washed in by the river that had collected in the entrance and built up over time. If this debris were dislodged, it could travel down the culvert and cause serious harm to anyone working in there.

The images also found deterioration in the concrete roof with exposed metal reinforcing apparent – which could fall and cause injury at any time.

Neil Whitehead, Flood & Coastal Risk Management Technical Advisor for the East Midlands Environment Agency was very pleased with the initial results.

Next Steps

Following the initial trial, the Environment Agency are now interested in internal dimension surveys of two more culverts in Nottinghamshire to obtain up to date information and imagery of the current situation regarding debris/blockages.

T: 01283 819555

E: southmids@mrsl.co.uk

MRS Training and Rescue
Units 1-3 Marquis Drive | Rawdon Business Park
Moira | Swadlincote | Derbyshire | DE12 6EJ