

## OPERATION CASE STUDY

WHITE PAPER – LARGE AREA SURVEY

# CL90 LiDAR PROOF OF CONCEPT

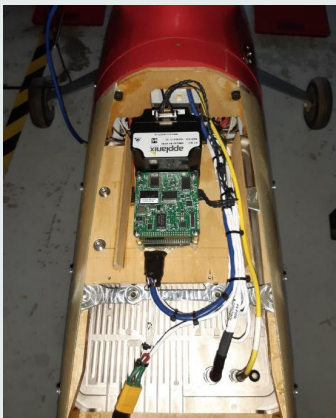
SILVERTONE UAV | 21 JULY 2022 | KEN TAYLOR

## BACKGROUND

BHP Mitsubishi Alliance (BMA) operate a group of mines in the Bowen Basin. These mines are surveyed by aerial means on a routine basis to capture pit progress.

Our client currently conducts survey activities for BMA and came to us with the question...“Can this survey work be conducted with a compact LiDAR fitted to an unmanned aircraft?”

Our Flamingo Mk3 was evaluated for fit, form and function of the Teledyne Optech CL90 LiDAR, coupled with the Applanix APX20 external IMU and GPS antenna. A proof of Concept project was undertaken.



## PAYLOAD

To integrate the CL90 LiDAR into the payload bay a full structural design and analysis was required to ensure the integrity of the installation under all intended flight loads (maneuver and gust) and landing loads.

The complete system was a tight fit with vibration analysis being a key consideration for data capture quality. Electrical interface and EMI/EMC testing were required to ensure no aircraft critical systems were adversely affected by the installation. Finally, the system was connected via our onboard PicoLAN to facilitate dynamic tasking of the payload through our proprietary Systems Panel on the GCS.

Flight testing was conducted at our test facility in Wagga Wagga to validate system operations and data capture quality.





## OPERATION

- 1 A small open cut pit located in the region was selected as a test case for the integrated system.
- 2 Operations took place in the early morning before shift for the day started.
- 3 The Flamingo Mk3 flew 2 separate flight paths in the one sortie, an East-West grid followed by a North-South grid.
- 4 The Flamingo Mk3 was launched and recovered from an unprepared section of the tailings pile.



## RESULTS

The data captured was processed to reveal a quality equal to that captured by manned aviation, just at a fraction of the setup and operational cost.

The operation was conducted with 2 crew, around one hundred kilometers from Wagga Wagga. The GCS and airborne system were mobilized on the day of operations and were tucked up back at home by mid afternoon.

