



AERIAL SURVEY REPORT

RTK Positioning & Accuracy Summary

East Road, New Brunswick · 14 July 2026

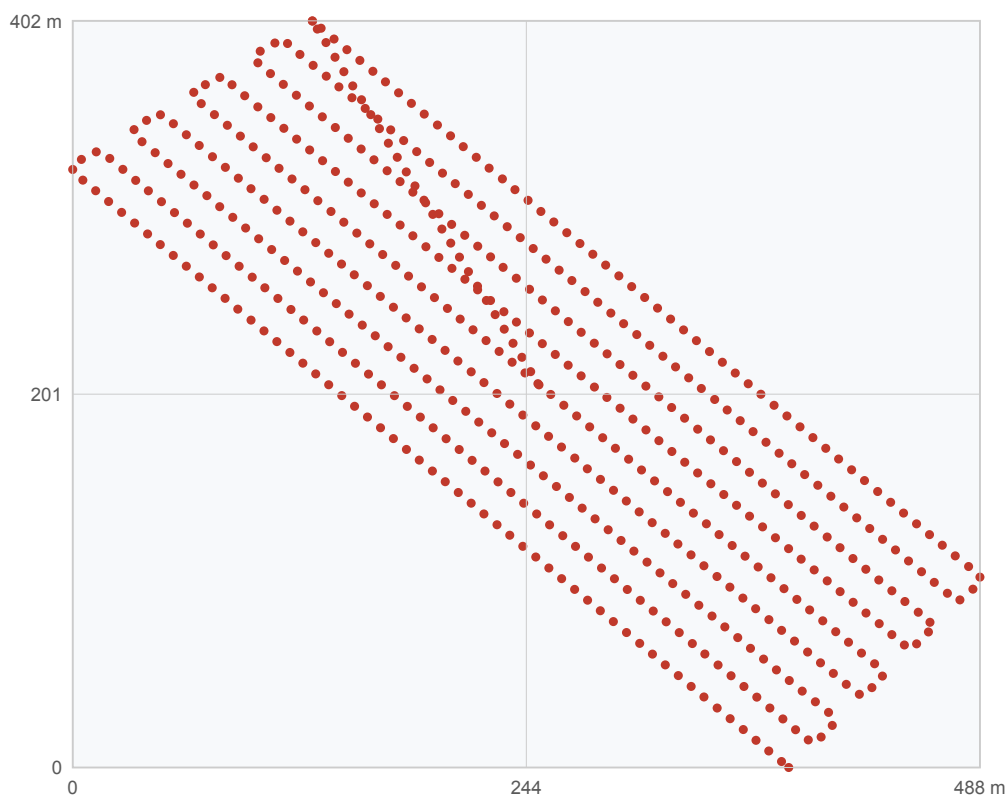


Figure 1 — Image positions & coverage: 529 exposures across $\approx 0.20 \text{ km}^2$.

1. Mission Overview

Site / Project	East Road, New Brunswick
Survey date	2026-07-14
Flight window (local)	$\approx 14:22 - 14:38$ ADT (Atlantic Daylight Time)
Flight duration	15.7 minutes
Aircraft	DJI Matrice 4E (M4E)
Camera serial no.	493ON1Q4AB1L8V
Dataset ID	DJI_20260714142245_0002
Images captured	529 (wide-camera JPG)
Recorded altitude (AGL)	≈ 42.5 m mean relative altitude
Mean ellipsoidal height	120.8 m (range 120.7 – 120.9 m; WGS84)

Site centre (WGS84)	45.668467° N, 66.012127° W
Coverage extent	≈ 401 m (N–S) × 487 m (E–W) · ≈ 20 ha bounding area

2. Positioning & Accuracy

Positions were captured by the aircraft's onboard RTK GNSS receiver using a live NTRIP correction stream from rtkdata.com on the “AUTO” mountpoint (real-time kinematic, mean correction age 1.9 s). Every image was tagged with a real-time RTK-fixed solution referenced to that network. Values below are derived from the DJI position log (.MRK) and the per-image XMP metadata.

Parameter	Result	Assessment
GNSS positioning mode	Real-time kinematic (RTK)	✓ RTK
Correction source	rtkdata.com — live NTRIP stream	✓ Network
RTK solution state	Fixed (flag 50) on all frames	✓ Fixed
Images with RTK-fixed position	529 of 529 (100%)	✓ 100%
Float / single-GNSS frames	0	✓ None
Horizontal precision — North (σ)	2.2 mm (mean)	✓
Horizontal precision — East (σ)	3.1 mm (mean)	✓
Horizontal RMS (σ)	≈ 3.8 mm (range 3.6 – 3.9 mm)	✓ mm-level
Vertical precision (σ)	6.0 mm (mean; range 5.6 – 6.4 mm)	✓ mm-level
Differential correction age	1.9 s (mean)	✓ Live
Correction mountpoint	AUTO (North American regional frame)	—
Coordinate datum	NAD83(2011), epoch 2010.0 — ellipsoidal (see note)	✓ NAD83

Conclusion: the dataset is fully RTK-fixed from first frame to last, with mm-level positional precision on every exposure, referenced to the rtkdata.com correction network. Image geotags are survey-grade and require no ground control for horizontal accuracy.

***Datum note:** corrections were received on the rtkdata.com “AUTO” mountpoint, which applies the North American regional frame — NAD83(2011), epoch 2010.0. This is the true frame of the data; the aircraft's generic “WGS84” EXIF label is nominal only. NAD83(2011) agrees with NAD83(CSRS) — the New Brunswick standard — at the few-centimetre level, so the imagery is compatible with local survey control; it is not equivalent to global WGS84/ITRF, which differs by roughly 1–2 m.*

3. Survey Products

The 529 images were processed into the survey products below (output projection WGS 84 / UTM zone 19N). 505 of 529 images reconstructed (95%), at an average ground sampling distance of 1.20 cm, with an average gps error of 0.21 m.



Figure 2 — Orthophoto (true-colour orthomosaic, WGS 84 / UTM zone 19N).

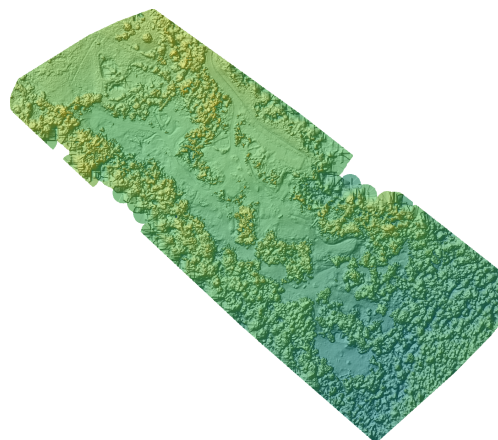


Figure 3 — Digital Surface Model (elevation -9.2 – 108.5 m).

Accuracy Statement

- **Ground resolution:** the orthomosaic resolves ground detail at approximately 1 cm per pixel, sufficient to identify features several centimetres in size.
- **Relative accuracy:** distances and areas measured between features within the survey extent are dependable to within a few centimetres.
- **Absolute positional accuracy:** coordinates derived from this map fall within 38 cm of their true position at 90% confidence (CE90); elevations on open ground are accurate to within 9 cm (LE90).
- **Vegetated areas:** surface elevations over vegetation represent canopy height rather than bare earth.
- **Basis of assessment:** each exposure was geotagged with a survey-grade RTK solution; the reconstructed model agrees with those positions within the tolerances stated above. Ground control points were not required.
- **Attainable with ground control:** supplementing a future flight with a small number of RTK rover-surveyed check points on open ground would allow absolute accuracy to be independently verified, typically to 2–5 cm horizontally and 5–10 cm vertically.

4. Processing Details

Processing engine	WebODM / NodeODM (local, ODX engine)
Options	auto-boundary: True, dsm: True, dem-resolution: 1.0, orthophoto-resolution: 1.0, skip-3dmodel: True, rerun-from: mvs_texturing
Total processing time	27.0m:37.0s
Reconstructed area	19.7 ha
Features detected / image	10,000 (mean)
Sparse points reconstructed	198,709
Dense point cloud	22,532,846 points
Mean reprojection error	1.19 px
GPS error	RMS 18 cm / 18 cm / 12 cm (x / y / z) · CE90 38 cm · LE90 9 cm

Prepared by Vantage Geoscience — Aerial Survey & Mapping

Report generated 2026-07-18. Precision figures are 1σ standard deviations reported by the onboard RTK solution; they express positional repeatability, not absolute network accuracy.