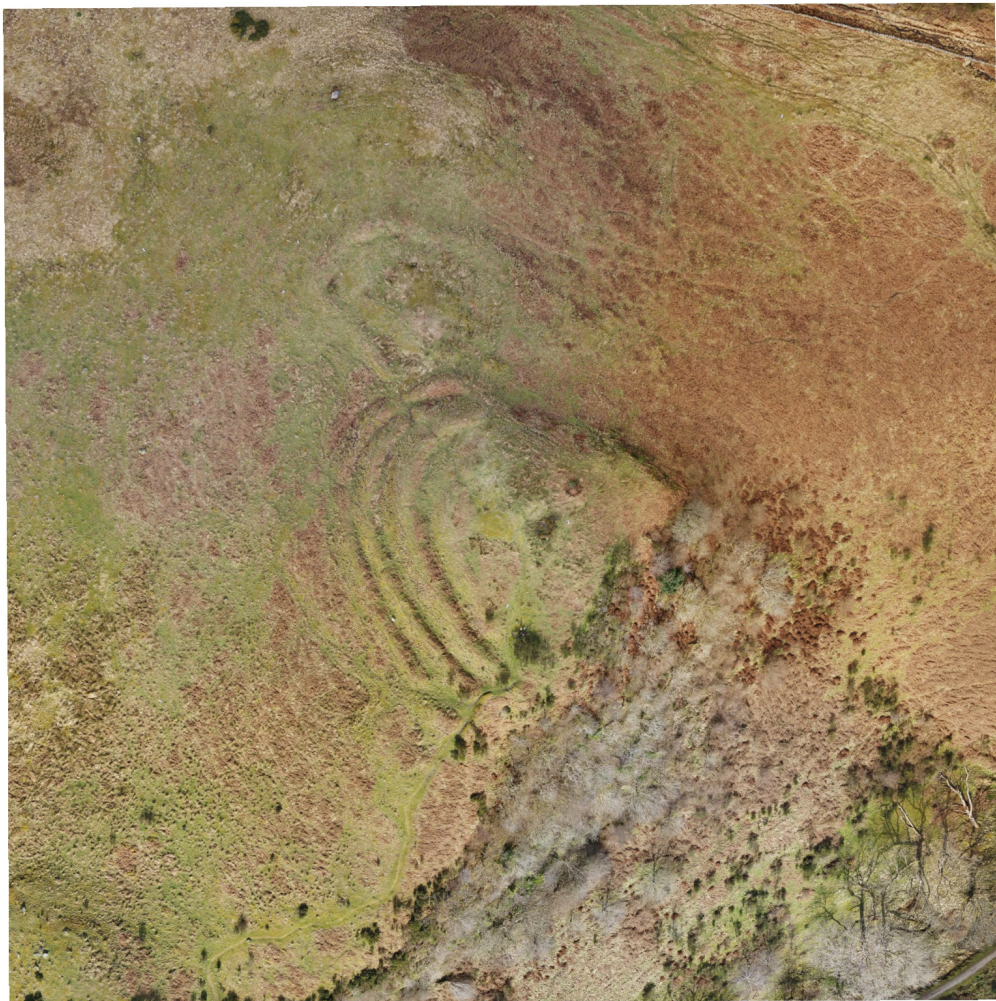


Agisoft PhotoScan

Processing Report, Dunmore fort
24 December 2020



Survey Data

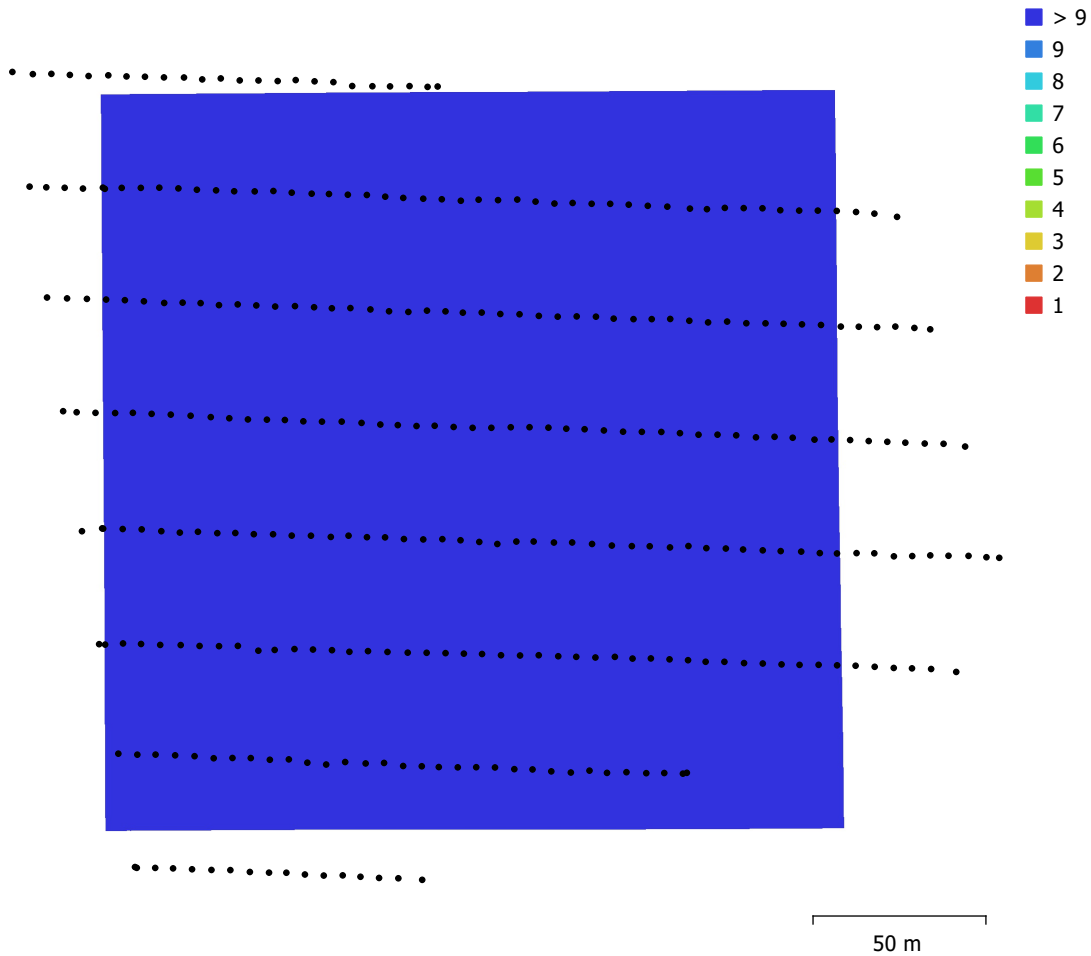


Fig. 1. Camera locations and image overlap.

Number of images:	316	Camera stations:	316
Flying altitude:	155 m	Tie points:	74,729
Ground resolution:	1.65 cm/pix	Projections:	1,145,211
Coverage area:	0.0453 km ²	Reprojection error:	0.372 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
FC6540 (35mm)	6016 x 4008	35 mm	4.03 x 4.03 μ m	No

Table 1. Cameras.

Camera Calibration

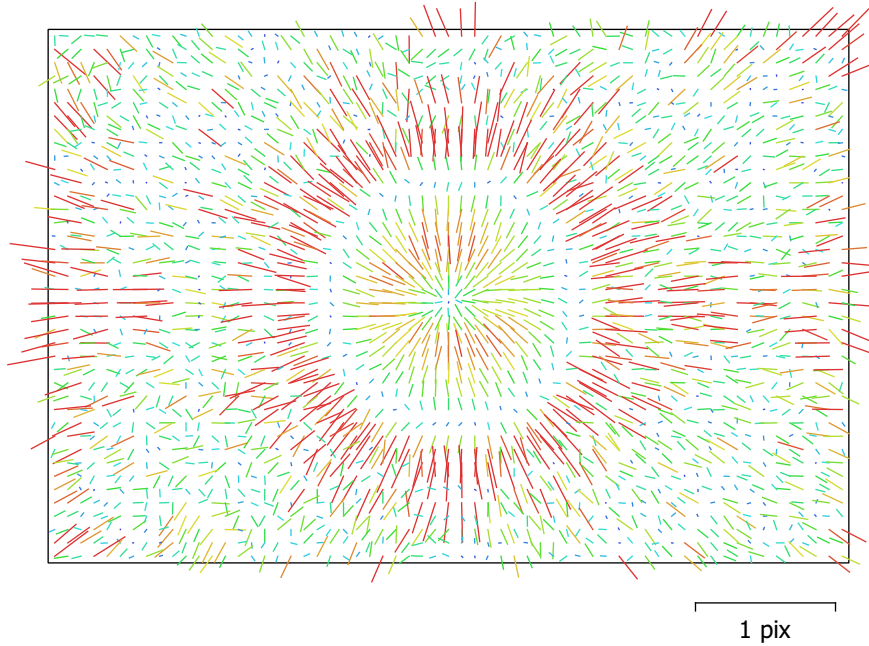


Fig. 2. Image residuals for FC6540 (35mm).

FC6540 (35mm)

316 images

Type
Frame

Resolution
6016 x 4008

Focal Length
35 mm

Pixel Size
4.03 x 4.03 μm

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	9214.43	0.18	1.00	0.05	0.06	-0.11	0.06	-0.06	0.00	0.01
Cx	-54.2003	0.042		1.00	-0.02	-0.02	0.02	-0.02	0.90	-0.01
Cy	31.4596	0.035			1.00	-0.01	0.00	-0.00	-0.03	0.86
K1	-0.00372033	5.5e-05				1.00	-0.95	0.90	-0.02	0.02
K2	0.0198567	0.00079					1.00	-0.98	0.03	-0.01
K3	-0.0962877	0.0035						1.00	-0.03	0.01
P1	-0.00245974	1.9e-06							1.00	-0.01
P2	0.00178013	1.5e-06								1.00

Table 2. Calibration coefficients and correlation matrix.

Ground Control Points

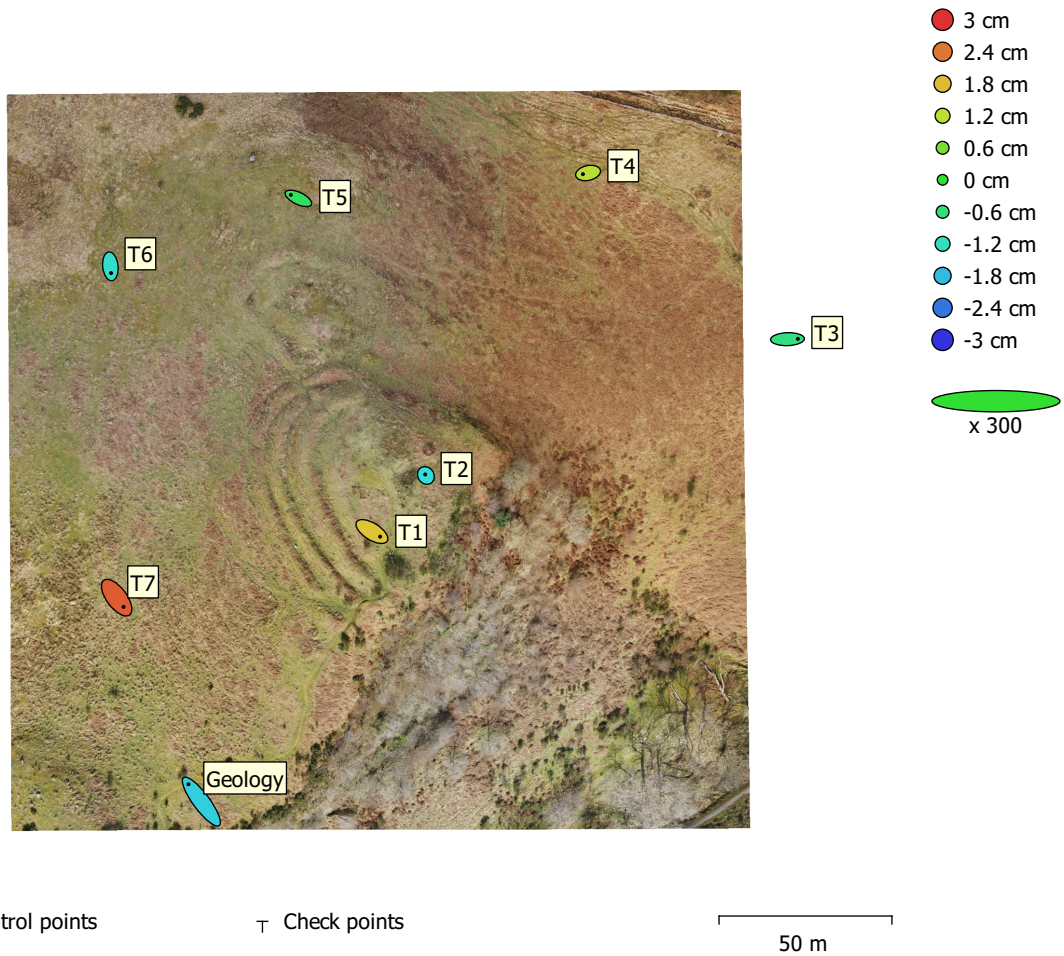


Fig. 3. GCP locations and error estimates.
 Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.
 Estimated GCP locations are marked with a dot or crossing.

Count	X error (cm)	Y error (cm)	Z error (cm)	XY error (cm)	Total (cm)
8	1.48432	1.48432	1.52145	2.09914	2.59253

Table 3. Control points RMSE.
 X - Easting, Y - Northing, Z - Altitude.

Label	X error (cm)	Y error (cm)	Z error (cm)	Total (cm)	Image (pix)
T1	1.58064	-0.990451	1.71449	2.53356	0.267 (29)
T2	-0.13304	0.193575	-1.50531	1.52353	0.282 (18)
T6	0.138282	-1.29755	-1.319	1.8554	0.529 (34)
T5	-1.45202	0.685974	-0.398099	1.65451	0.283 (29)
T3	2.0096	0.0622604	-0.653951	2.11425	0.337 (29)
T7	1.33177	-1.78458	2.63894	3.45287	0.422 (32)
Geology	-2.48913	3.34923	-1.6356	4.482	0.866 (35)
T4	-0.986919	-0.216923	1.161	1.53915	0.283 (26)
Total	1.48432	1.48432	1.52145	2.59253	0.476

Table 4. Control points.
X - Easting, Y - Northing, Z - Altitude.

Digital Elevation Model

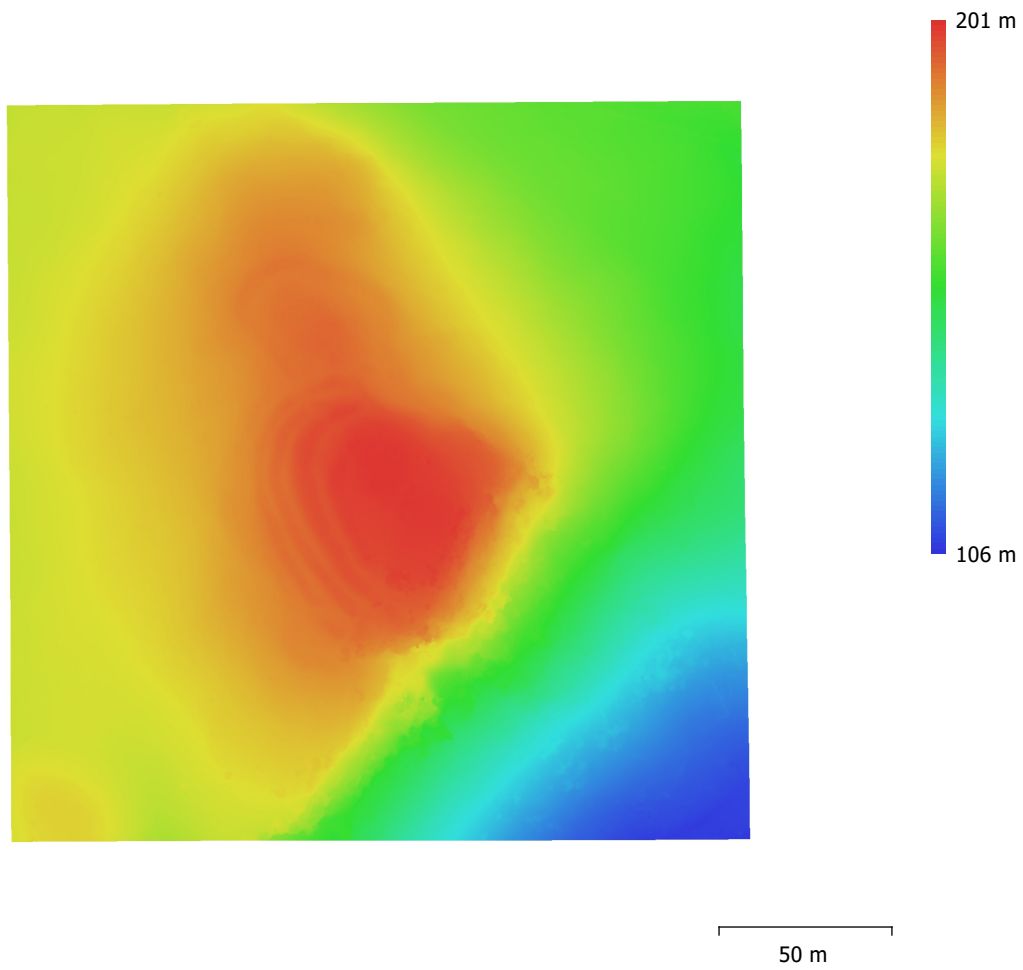


Fig. 4. Reconstructed digital elevation model.

Resolution: 6.59 cm/pix
Point density: 230 points/m²

Processing Parameters

General

Cameras	316
Aligned cameras	316
Markers	8
Coordinate system	OSGB 1936 / British National Grid (EPSG::27700)
Rotation angles	Yaw, Pitch, Roll

Point Cloud

Points	74,729 of 83,856
RMS reprojection error	0.160639 (0.372395 pix)
Max reprojection error	0.793599 (5.98374 pix)
Mean key point size	2.33487 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	16.18

Alignment parameters

Accuracy	High
Generic preselection	Yes
Reference preselection	Yes
Key point limit	40,000
Tie point limit	4,000
Adaptive camera model fitting	No
Matching time	5 minutes 8 seconds
Alignment time	1 minutes 21 seconds

Optimization parameters

Parameters	f, cx, cy, k1-k3, p1, p2
Adaptive camera model fitting	No
Optimization time	6 seconds

Depth Maps

Count	316
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Depth maps generation parameters

Quality	Medium
Filtering mode	Aggressive
Processing time	55 minutes 12 seconds

Dense Point Cloud

Points	31,197,004
Point colors	3 bands, uint8

Depth maps generation parameters

Quality	Medium
Filtering mode	Aggressive
Processing time	55 minutes 12 seconds

Dense cloud generation parameters

Processing time	28 minutes 35 seconds
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DEM

Size	3,281 x 3,270
Coordinate system	OSGB 1936 / British National Grid (EPSG::27700)

Reconstruction parameters

Source data	Dense cloud
Interpolation	Enabled
Processing time	14 seconds

Orthomosaic

Size	4,296 x 4,283
Coordinate system	OSGB 1936 / British National Grid (EPSG::27700)
Colors	3 bands, uint8

Reconstruction parameters

Blending mode	Mosaic
Surface	DEM
Enable hole filling	Yes
Processing time	58 seconds
Software version	1.6.3.10732

System

Software name	Agisoft Metashape Professional
Software version	1.6.3 build 10732
OS	Windows 64 bit
RAM	190.63 GB
CPU	Intel(R) Xeon(R) Silver 4116 CPU @ 2.10GHz
GPU(s)	Quadro P4000