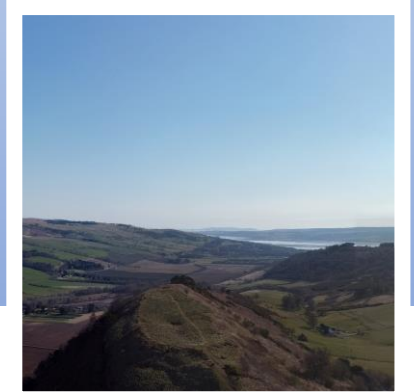


Knock Farril, Highland

Aerial Survey and Imaging

Report

May 2021



SKYSCAPE
SURVEY

Knock Farril, Highland

Archaeological Aerial Survey and Imaging

On Behalf of:

Forestry and Land Scotland Head Office
1 Highlander Way
Inverness Business Park
Inverness

National Grid Reference: NH 5045 5850

Prepared by: David Connolly

Date: May 2021

Contact Details :

Thornton Mill Cottage
Near Innerwick
Dunbar
EH42 1QT

T: 01368 840847

E : info@bajr.org

Skyscape Survey would like to thank Matt Ritchie; Forestry and Land Scotland,
The project was undertaken by David Connolly (*Pilot*), with the Hana Kdolska (*Flight Safety Officer and Photographer*).

The report was written by David Connolly

Contents

INTRODUCTION	2
TOPOGRAPHY	2
SITE SURVEY BACKGROUND	5
RESULTS	8
INTERPRETATION NOTES	13
GENERAL STATEMENTS	15
DES ENTRY	16
REFERENCES	17
SUPPLIED DIGITAL FILES (USB)	18

Illustrations

Figure 1: Site Location Map

Figure 2: Area of survey with recognised features and contours within the wider landscape setting derived from merged Lidar Data and Aerial Survey

Figure 3: Area of survey with derived contours marked with 5m, 1m and 0.20m contours

Figure 4: Area of survey annotated features derived from the surface contours

Figure 5: Various data models of Knock Farril and detail of interior

OASIS ID: connolly1-434091

Introduction

Skyscape Survey was commissioned by Matt Ritchie of Forestry and Land Scotland to carry out aerial works at the fort of Knock Farril, Highland (Ref: SK-018) in forestry land to the north of the small settlement of Knockfarrel.

The site lies 4km to the west of Dingwall, at NH 3487 0695.

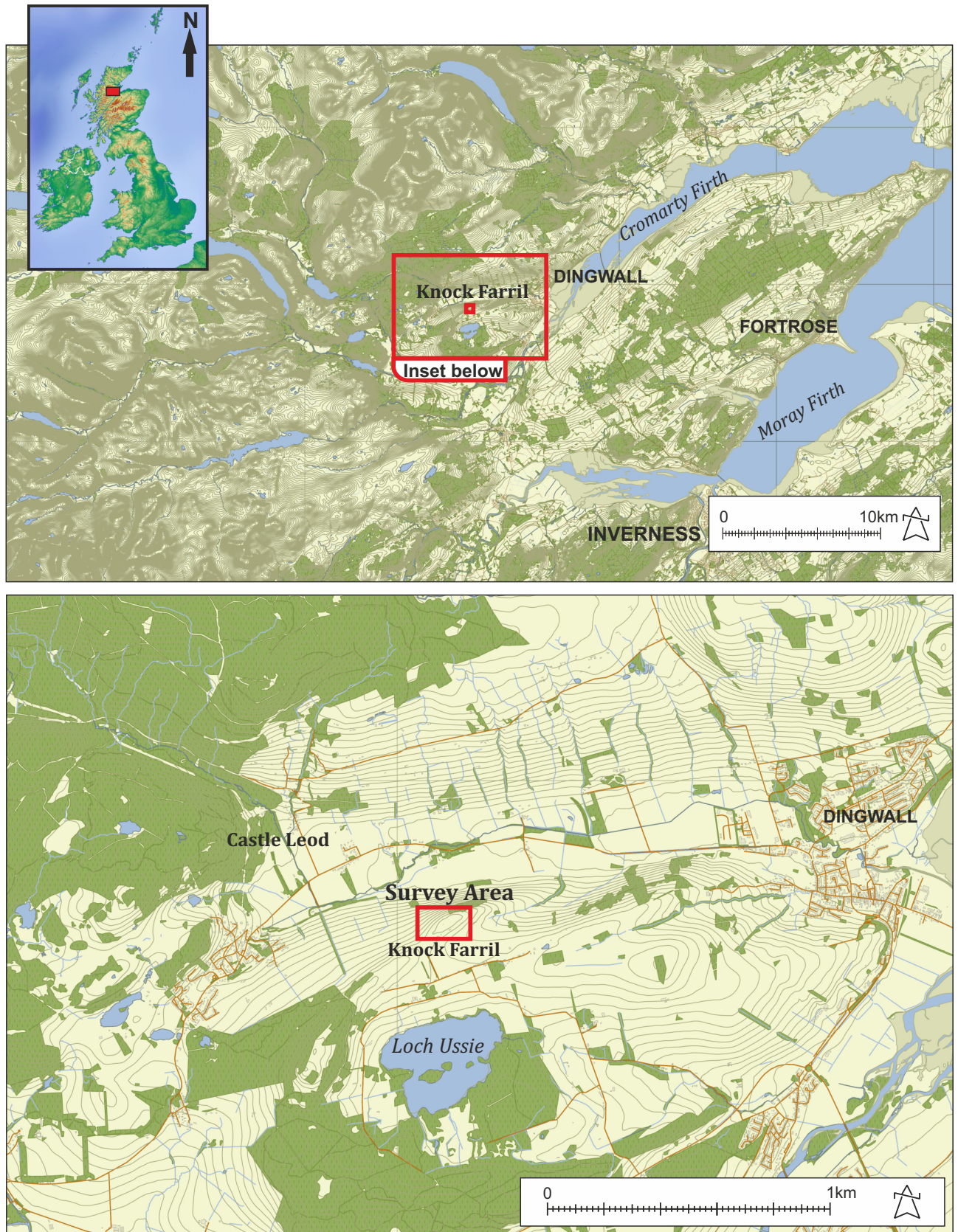
Although the site has been subject to survey in the recent past by Headland Archaeology (2011), the need was recognised to enhance this terrestrial survey and interpretation, as well as provide a 3D model and aerial images including a full panoramas .

Topography

Knock Farril is situated at the northeast end of a prominent, narrow ridge, some 4km west of Dingwall. The ridge is the highest point of raised land that is bounded by the River Conon to the south and the Peffer to the north with the confluence to the east where they join the Cromarty Firth at Dingwall. At the centre of this higher land, is Loch Ussie – which is a central feature in the surrounding landscape. The site itself is free of trees though there is some tree cover to the northeast and down the northern slopes beyond the cliff.

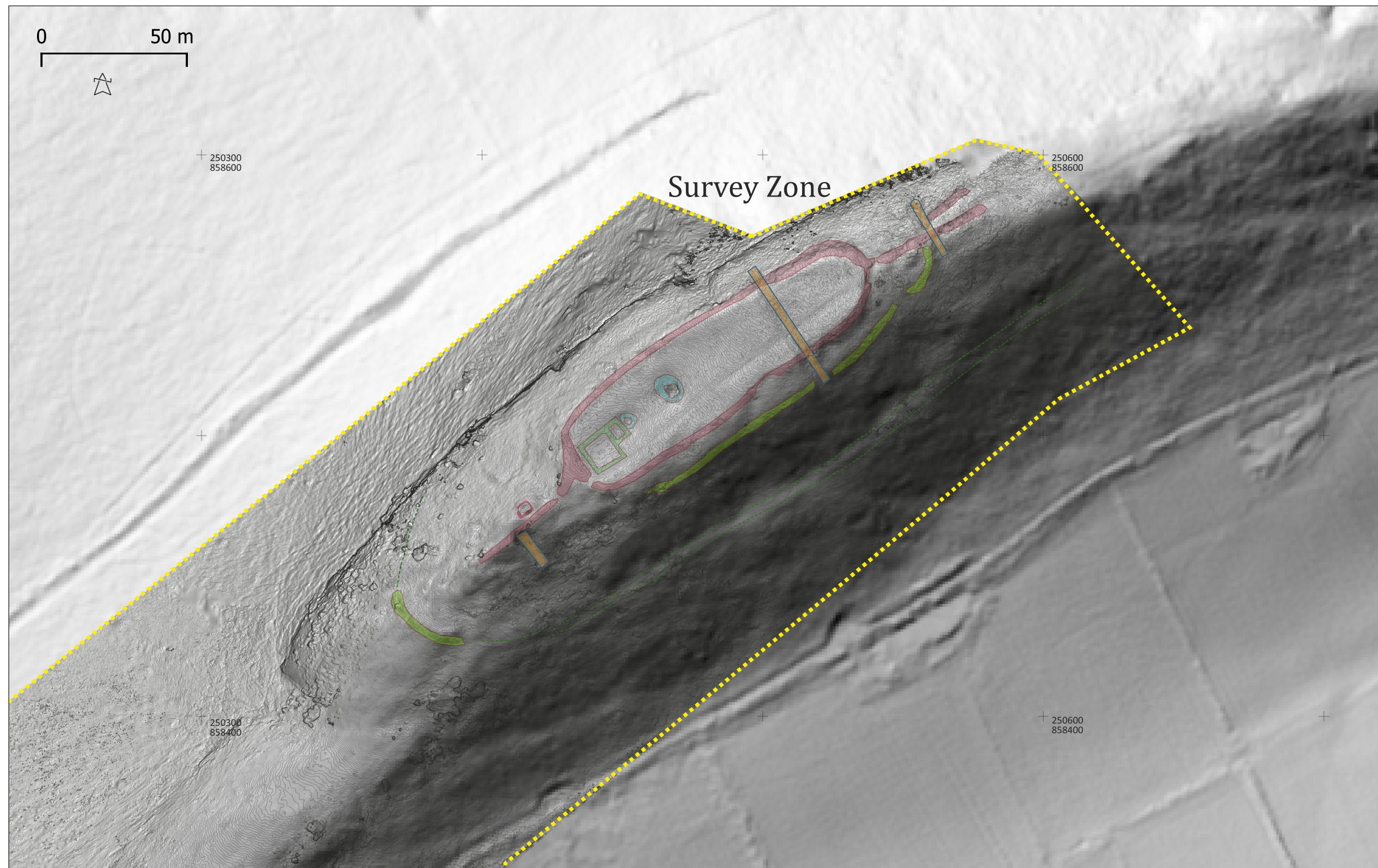


Plate 1: View over site, showing saddle and ridge to continuing to southwest – the Glen of the Strath Peffer is to the right.



Contains OS data © Crown Copyright [and database right] 2018

Figure 1: Site Location Map



LiDAR for Scotland Phase 1 DTM data used under Open Government Licence v2.0. 2021

Figure 2: Area of survey with recognised features and contours within the wider landscape setting derived from merged Lidar Data and Aerial Survey

Site Survey Background

Information taken from Canmore: <https://canmore.org.uk/site/12782/knock-farril>

Site Number NH55NW 10 (Fort, Vitrified Stone)

A detailed archaeological measured survey was undertaken at the site in late June 2011. by Headland Archaeology Ltd.

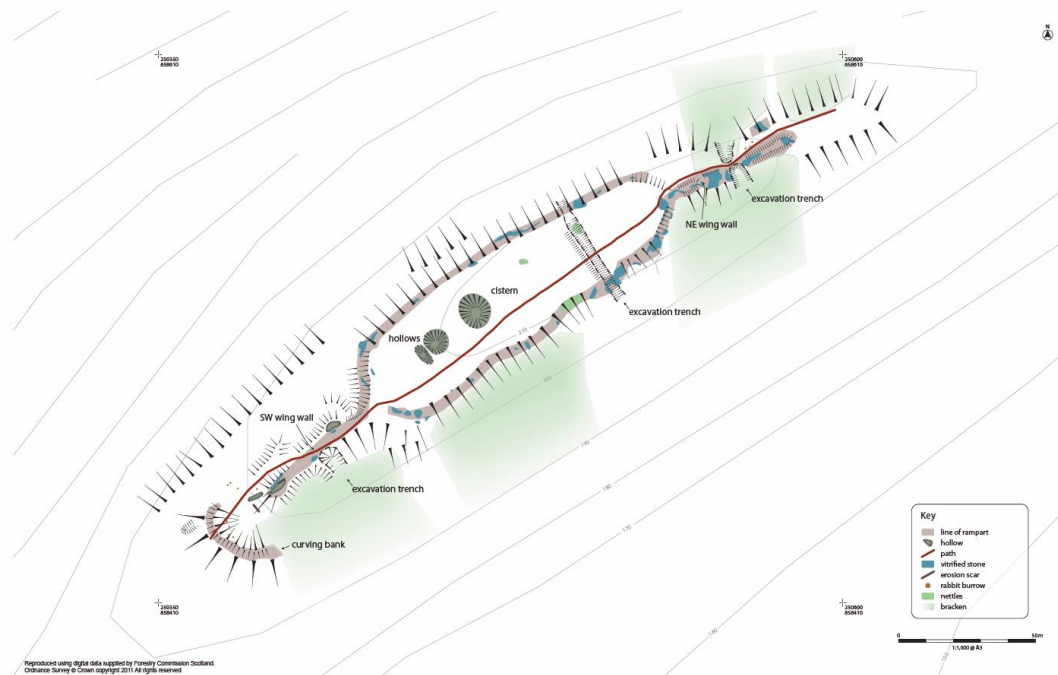


Plate 2: Interpretive plan of fort by Headland Archaeology Ltd

Several previous surveys have taken place such as Fraser in 1904 and of course the Ordnance Survey in the 1970s (see Plates 3 and 4)

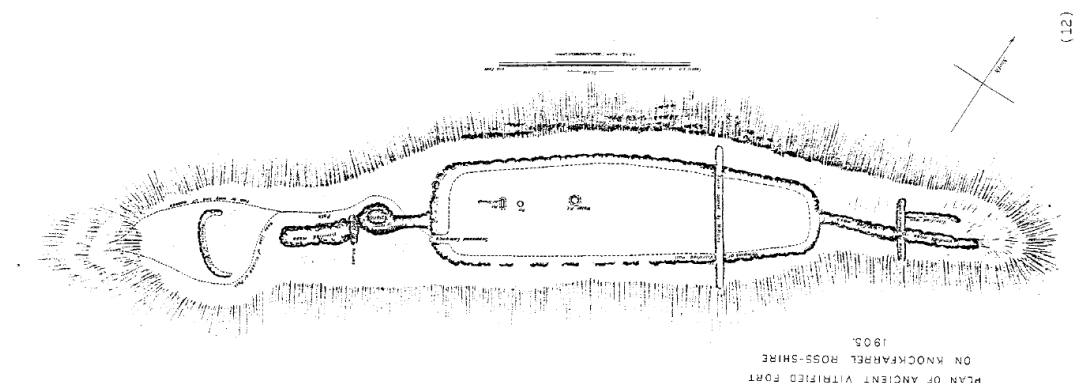


Plate 3: Plan from Fraser, 1899-1906 Transactions of Inverness Scientific Society : VI

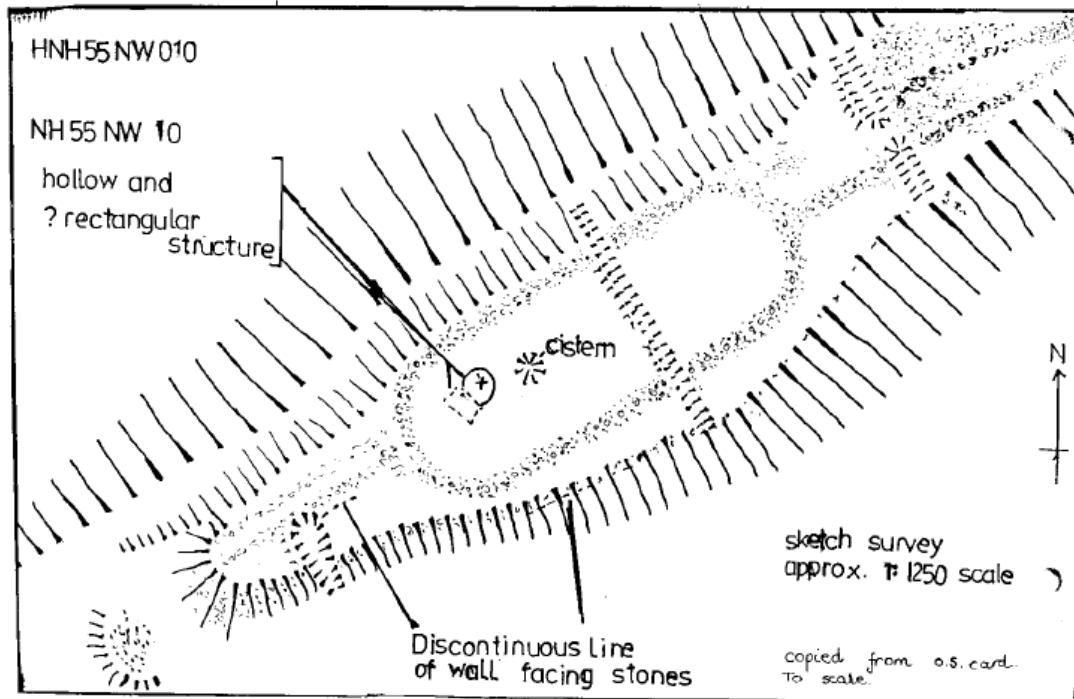


Plate 4 OS sketch survey at 1:1250 scale - 1974

This survey goes to enhance previous work, and uses a new level of resolution to reveal further features and accurately maps the topography of the site.



Plate 5: Vertical Orthographic image (north to top right) of main fort area.

The fort is subrectangular in plan, and the stone rampart element is heavily vitrified. Masses of vitrified rock outcrop along the south rampart in particular are visible. An unusual feature of this fort is that lines of vitrified rampart lead out east and west from either end. These may have been ramparts with breastworks each side, built to prevent attack along the narrow spine of the ridge. There are traces of an outer rampart round part of the circuit to the south (See Figure 4).

Thermo-luminescence dating of the vitrified stone suggest the main rampart may belong to the bronze age, but more evidence is needed. The plan of the fort is confused by three deep cuts across the fort: one across the vitrified wall east of the fort, one across the fort itself and the other across the western wall, each with a

bank on its west side. These were trenches excavated by the engineer John Williams in the 1770s as part of the first ever examination of vitrified forts.

Inside the fort, a near central depression was probably a rock-cut r. West of the pond are the foundations of two more recent structures.

Information from 'Exploring Scotland's Heritage: The Highlands', (1995).

The slopes surrounding the site contain a few scrubby trees. The surrounding area is mainly scree slope, and bracken which was still down at the time of flight, allowing a good image capture of the area.

Information taken from Canmore: <https://canmore.org.uk/site/12782/knock-farril>

Results

Forestry and Land Scotland Archaeologist Matt Ritchie requested oblique photographs of site for publication and promotional. A vertical shot of the site – potentially created from stitched images and a SUA based aerial survey for creation of a detailed topographic image. Which would allow further interpretation and engagement.

Using over 895 oblique images across the site, a high resolution 3D model of the site was created using Agisoft Photoscan – the resulting Data Surface Model (DSM) was processed to remove vegetation, to leave a Data Terrain Model (DTM).

The resulting high resolution model was transformed into a referenced GeoTIFF Digital Elevation Model (DEM) used as the base for a 5cm interval contour model in CAD and as GIS shp files. In addition, a georeferenced ortho-image of the site (Plate 5) was produced and 3d model viewable on html browser.

The area covered by the survey included the site and up to 60m from the outer ramparts to all directions.

The final project archive comprises:

- ❖ A summary statement of results
- ❖ A location plan of the site and works
- ❖ A folder of Publication images
- ❖ A folder of Terrain Modelling images
- ❖ A georeferenced CAD format flat file of the contours
- ❖ A georeferenced contour file and DEM and orthographic image
- ❖ A pointcloud ply file

A digital copy of this report with plans in PDF format has been supplied to the **Forestry and Land Scotland** on a usb. Photographs, plans and illustrations fall within the current guidelines for archival standards set by the Archaeology Data Service. A full copy of all digital photographs and digital data is included on the usb in archive stable format. A DES Entry has been created and presented at the end of this report as well as submitted for inclusion within the relevant year for publication.

In addition to the above requirements, the project details are recorded via the online OASIS (Online AccesS to the Index of Archaeological InvestigationS).



Plate 6: View to west over the main site.



Plate 7 Across site and along ridge to the northeast and Digwall, the Cromerty Firth just visible in the background



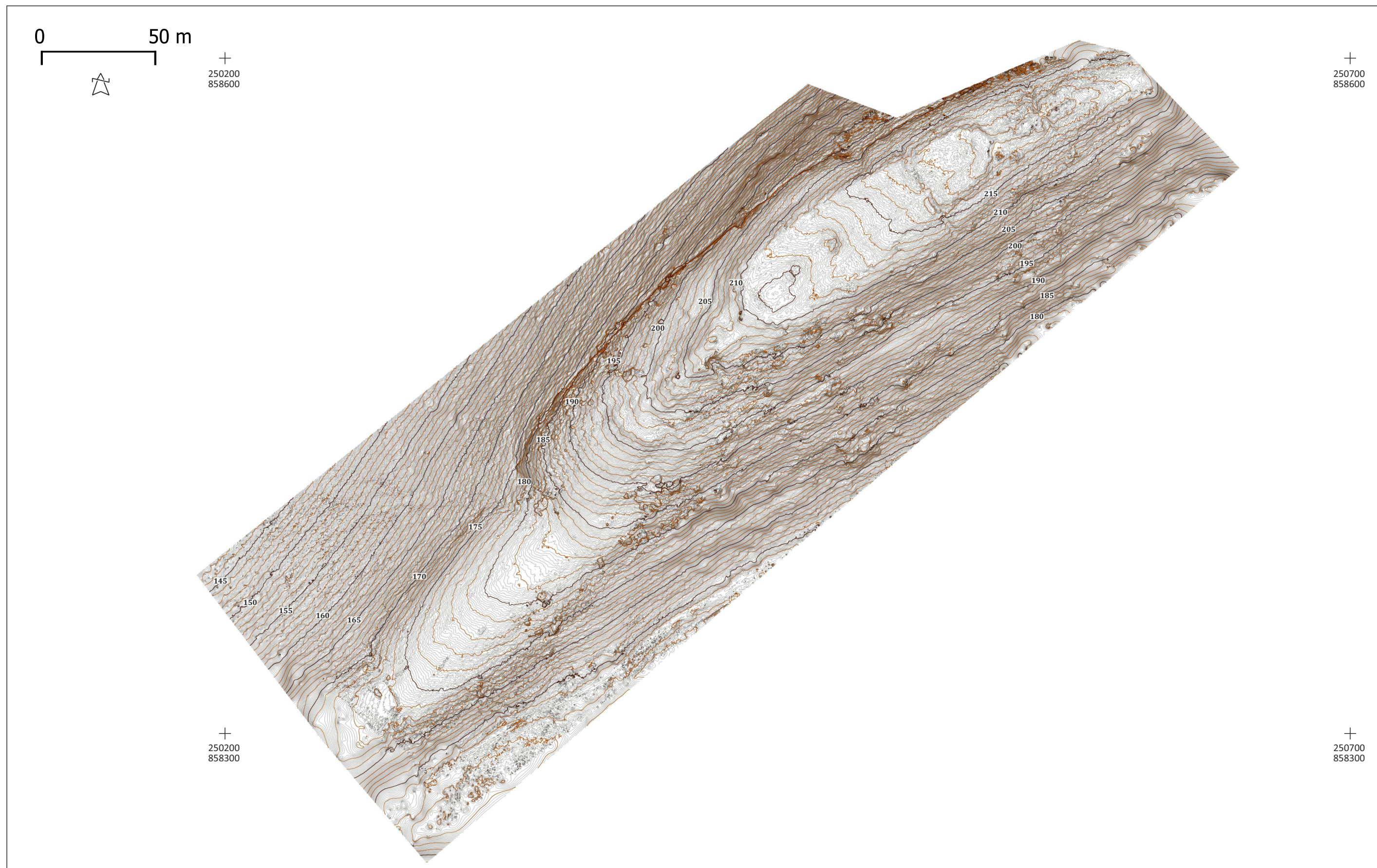
Plate 8: View to south over the main site note the vertical cliff to the north of the site and Loch Ussie in the background..



Plate 9 Spherical Panorama of site. – provide as digital file.



Plate 10 Stitched panorama of site to northeast. – provide as digital file.



LiDAR for Scotland Phase I DTM data used under Open Government Licence v2.0. 2021

Figure 3: Area of survey with derived contours marked with 5m, 1m and 0.20m contours (all heights as maOD)

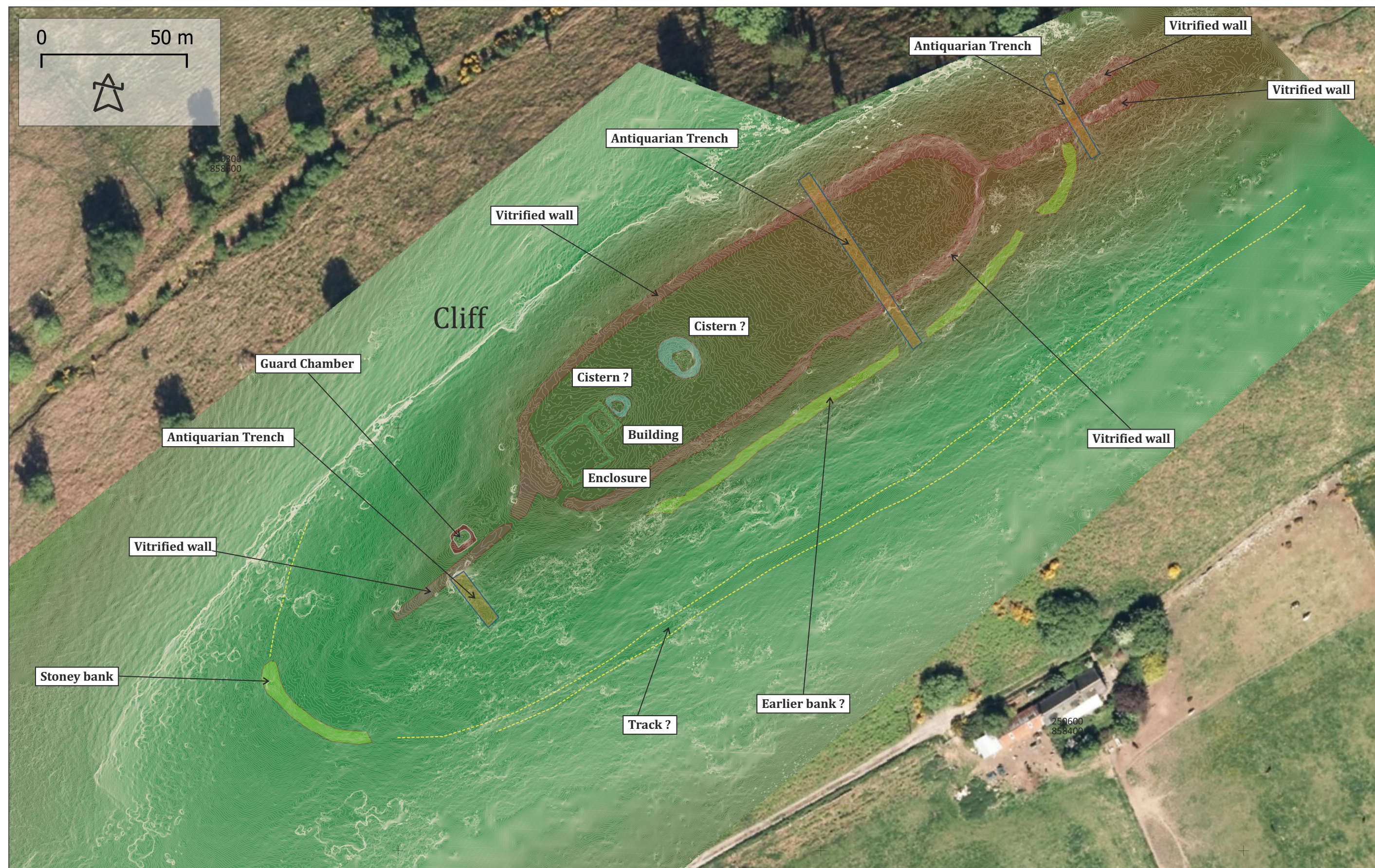


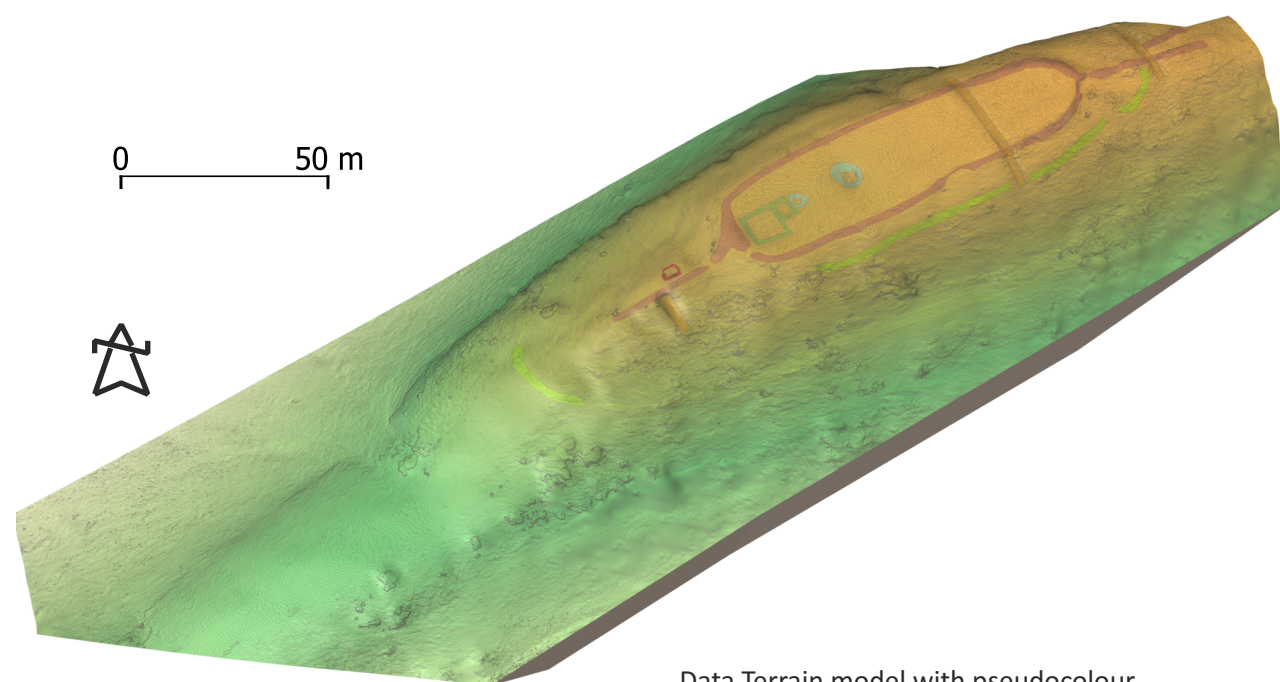
Figure 4: Area of survey annotated features derived from the surface contours

Interpretation notes

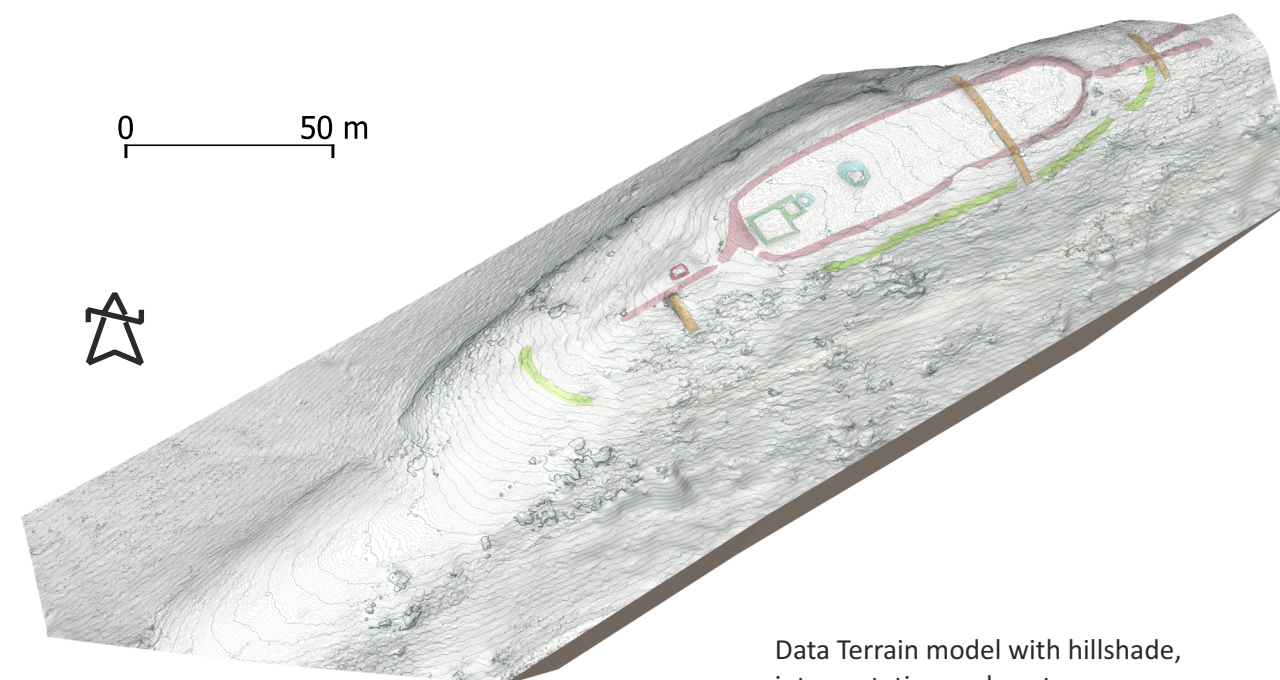
Although the intention of the project was not to re-interpret the site in any great detail, the following points are worth noting after the site was examined on the ground as part of the survey

See Figures 3 and 4 for visual clarification for each point

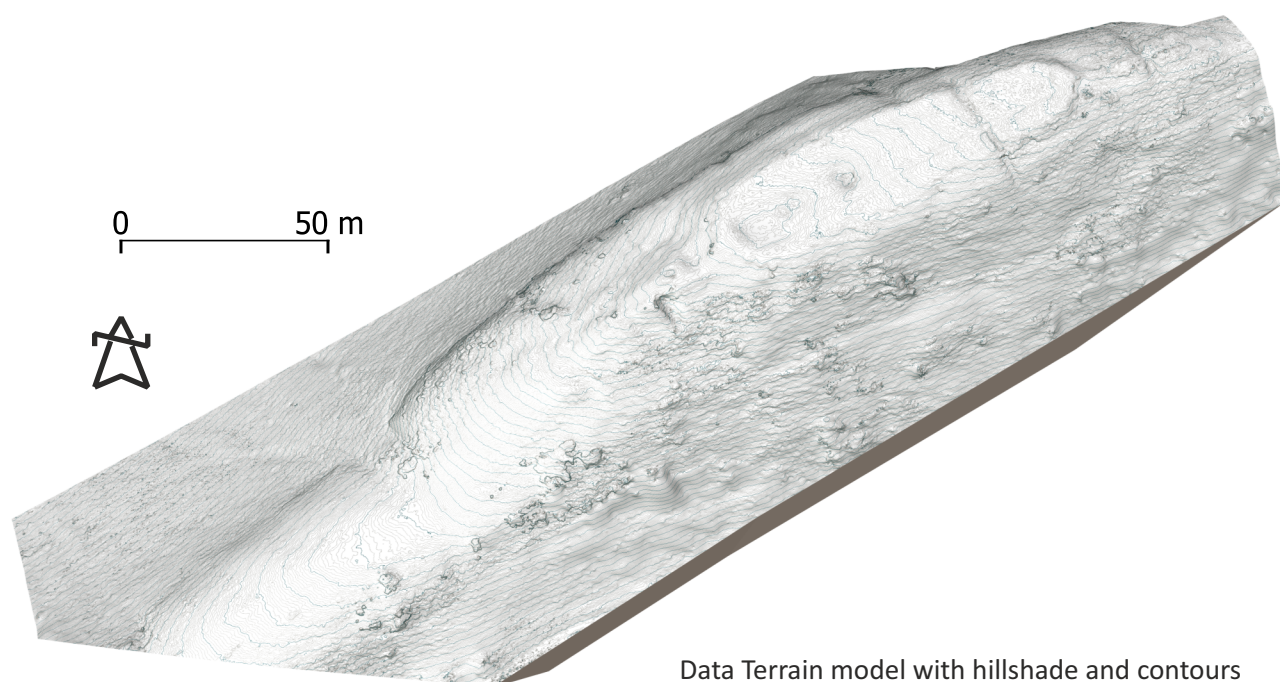
1. A detailed topographic model at 20cm interval resolution shows the layout of the site in unparalleled precision
2. The concept of an earlier bank to the south of the main vitrified enclosure is borne out by the topographic survey.
3. The spine walls extending west and east are clearly visible, as is the second parallel wall to the east.
4. The curving stoney bank that cuts off the southwest approach seems to continue to the north east and the southeast.
5. To the north east – towards the vertical cliff there is the trace of a faint bank/ break of slope.
6. The south east seems to be represented by a track or terrace that extends along the 193m contour line. To the northeast out of the survey zone.
7. The excavated cistern clear, as is a second circular cistern feature in the south west of the enclosed site.
8. There is confirmation of the square structure in the south west end of the enclosed site
9. There is a further enclosed area, again square between the smaller structure and the south west vitrified wall. It is possible this is part of an agricultural sequence from much later - perhaps a livestock related enclosure and attached
10. The dating, phasing and nature of the site is impossible to describe without intrusive investigation and dating.



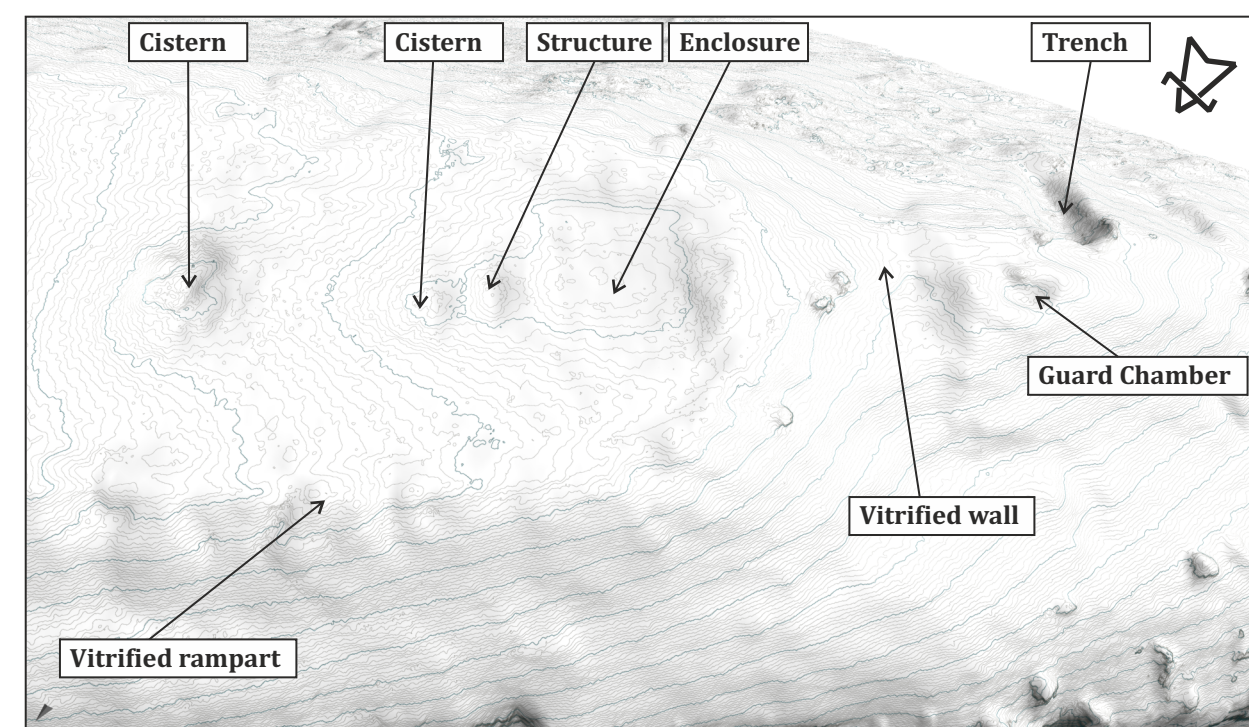
Data Terrain model with pseudocolour, interpretation and contours



Data Terrain model with hillshade, interpretation and contours



Data Terrain model with hillshade and contours



Detail of contour model showing Cisterns and Enclosures within the vitrified rampart
Contours at 1m with 0.20m internals between.

Figure 5: Various data models of Knock Farril and detail of interior

General Statements

Skyscape Survey will retain full copyright of any commissioned reports, tender documents or other project documents under the Copyright, Designs and Patents Act 1988 with all rights reserved; excepting that it will provide an exclusive license to the Client in all matters directly relating to the project as described in the tender.

Skyscape Survey assign copyright to the client upon written request but retains the right to be identified as the author of all project documentation and reports as defined in the Copyright, Designs and Patents Act 1988.

Skyscape Survey will advise the Client of any such materials supplied in the course of projects, which are not **Skyscape Survey** copyright.

Skyscape Survey undertake to respect all requirements for confidentiality about the Client's proposals provided that these are clearly stated. In addition **Skyscape Survey** further undertakes to keep confidential any conclusions about the likely implications of such proposals for the historic environment. It is expected that Clients respect **Skyscape Survey** and the Chartered Institute for Archaeologists' general ethical obligations not to suppress significant archaeological data for an unreasonable period.

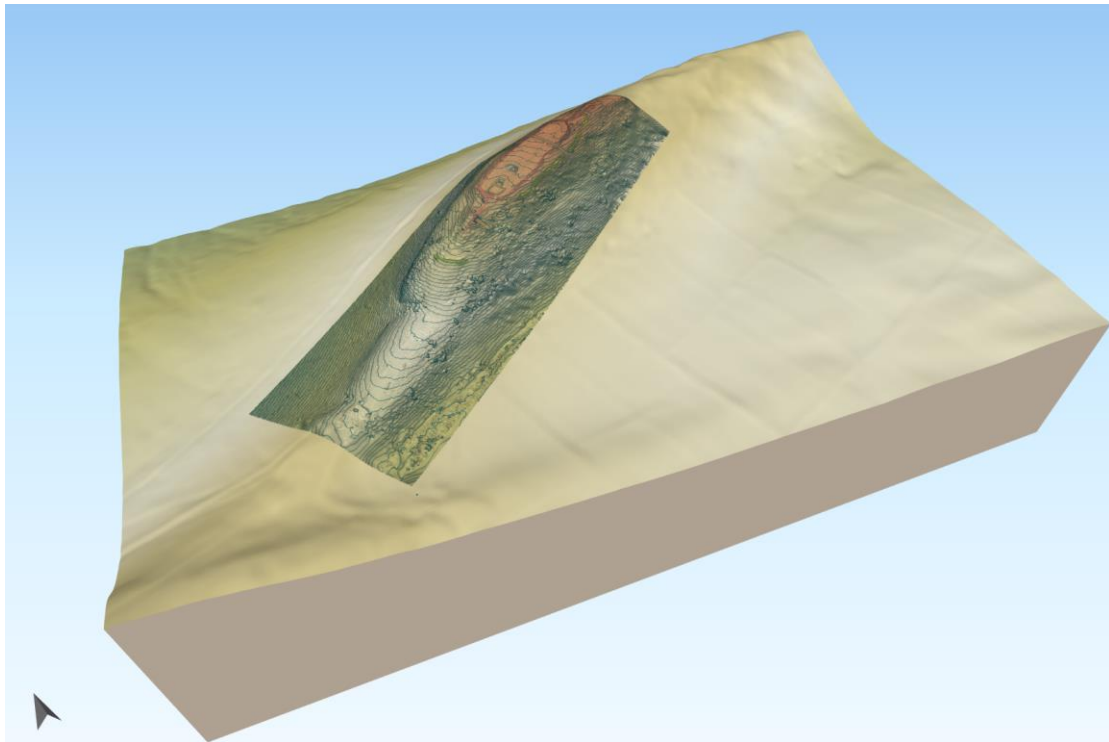


Plate 11: View to northeast across 3D contour model draped over LIDAR data terrain model.

DES Entry

LOCAL AUTHORITY:	Highland
PROJECT TITLE/SITE NAME:	Knock Farril
PROJECT CODE:	Sk-018
PARISH:	Kirkmichael
NAME OF CONTRIBUTOR:	David Connolly
NAME OF ORGANISATION:	Skyscape Survey
TYPE(S) OF PROJECT:	Aerial Survey
NMRS NO(S):	NH55NW 10
SITE/MONUMENT TYPE(S):	Fort, Vitrified Stone
SIGNIFICANT FINDS:	Potential new linear bank and track
NGR	NH 5045 5850
START DATE (THIS SEASON)	16 th April 2021
END DATE (THIS SEASON)	18 th April 2021
PREVIOUS WORK	Visual land surveys and topographic survey
MAIN (NARRATIVE) DESCRIPTION:	Aerial survey of the site was carried out using a camera mounted on a SUA (drone) in order to capture images for processing into a detailed contour plan of the site at 20cm interval, allowing for 3D modelling and survey interpretation. In addition, images were taken of the site from a variety of angles, placing it into the landscape. A new enclosure was located within the main site bounds, attached to the later rectangular structure, while a possible track was observed on the south side of the ridge rising up to the bank located at the southwest end of the site. The possible earlier bank wall was also traced along the south side, beneath the vitrified rampart.
FUTURE WORK?:	-
FUNDING BODY:	Forestry and Land Scotland
ADDRESS OF MAIN CONTRIBUTOR:	Skyscape Survey Thornton Mill Cottage near Innerwick Dunbar EH42 1QT
EMAIL ADDRESS:	info@bajr.org

References

Feachem, R. (1963b) *A guide to prehistoric Scotland*. 1st. London

Fraser, J. (1910b) 'Vitrified fort of Knockfarrel', *Trans Inverness Sci Soc Fld Club*, vol. 6, 1899-1906. Page(s): 288-91

Wessel, J. (2011) 'Knock Farril and Ord Hill, Highland (Fodderty and Knockbain parishes), survey', *Discovery Excav Scot, New*, vol. 12, 2011. Cathedral Communications Limited, Wiltshire, England. Page(s): 104-105

Williams, J. (1777) *An account of some remarkable ancient ruins, lately discovered in the highlands and northern parts of Scotland: in a series of letters to G.C.M. Esq..* Edinburgh.

Cartographic references:

Ordnance Survey, 1968, *NH6640 4910 Fort (NR) – Description and Plan*.