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Client: Forestry Commission Scotland
Date: March 2014

Archaeological Measured Survey of Torr Dhuin late prehistoric fort, near Fort Augustus.

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Report Status: Final

RUBICON HERITAGE

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EXECUTIVE SUMMARY

This report presents the results of a topographical survey of the surviving vitrified stone walls enclosing the summit of a natural knoll at Torr Dhuin located at NGR NH 3487 0695, to the southwest of Fort Augustus in the Parish of Bolekine and Abertarff, County of Inverness-shire. The site became a scheduled monument (SM794) in 1969. A detailed topographic survey was carried out by Rubicon Heritage Services in February 2014 on behalf of Forestry Commission Scotland. The site, situated in the forestry district of Inverness, Ross & Skye is managed by Forestry Commission Scotland. The purpose of the survey was to provide an enhanced baseline record of the upstanding remains at the site which will inform future conservation and management of the monument. Results from this survey recorded the nature and extent of surviving stonework within their immediate context as specified in the brief prepared by Forestry Commission Scotland.

1 INTRODUCTION

This report presents the results of a detailed topographical survey undertaken at Torr Dhuin located at NGR NH 3487 0695, to the southwest of Fort Augustus in the Parish of Bolekine and Abertarff, County of Inverness-shire. This survey was carried out in February 2014 by Louise Baker and Enda O'Flaherty of Rubicon Heritage Services Ltd on behalf of Forestry Commission Scotland. The primary aim of the survey was to enhance the historic environment record of the site and provide digital terrain models of the site which can be utilised to inform future conservation and management of the monument. It was one of a group of six such surveys carried out on Forestry Commission Scotland sites in February 2014. The other sites were at Castle Greg, Dun Deardail, Round Dounan, Sean Craig and Craig Phadrig.

2 AIMS AND OBJECTIVES

The aim of the topographical survey was to provide an enhanced record of the archaeological remains at Torr Dhuin. The objectives of the survey were:

- to identify any possible archaeological features within the specified survey area
- to accurately record the identified archaeological features and then present the findings using terrain models, contour plans and photography
- to accurately record the surrounding topography to place the monument in its immediate landscape context
- to provide a short illustrated report incorporating the results of the above work

3 SURVEY METHODOLOGY AND EQUIPMENT

Prior to the survey, a desk based study was carried out which assessed all readily available cartographic and documentary sources. These sources include material held by RCAHMS, Historic Scotland, the National Library of Scotland (NLS) and relevant publications. The topographical survey of Torr Dhuin late prehistoric vitrified fort was carried out by a team of two surveyors using RTK GPS equipment, a Leica TCR 705 Total Station, and Penmap software. Initial site control points were established using RTK GPS equipment.

Trimble VRS & Rover: The Trimble VRS system was used in conjunction with a GPS Rover unit, allowing for surveying without the use of a site specific fixed base station. This is achieved a +/- 2cm accuracy, connecting to the Trimble's network of fixed base stations by means of mobile phone communication.

Base & Rover: In the absence of good phone signal, site control was established in the nearest area with good phone signal and a fixed site specific base station was set up. Additional base stations were then set up closer to the site using the GPS Rover and the fixed base station.

Surveying: The GPS Rover has a custom designed feature code library allowing for the organisation and labelling of surveyed features. This system facilitates the creation of labels, strings and enclosed items (polygons) and utilises a layering system that is compatible with AutoCAD. Additional spot levels are taken across the entire survey area in order to obtain enough data to generate contours.

Total Station & Penmap Software: Site Control - The GPS was used to establish an adequate network of site control points around the site. These control points were inputted into a survey file in Penmap. Penmap survey: The Penmap software allows for many of the Total Station's functions to be by-passed and presented in a user friendly way on the Panasonic Toughbook. This includes the station set-up procedure and all subsequent recording. The software is preloaded with a layering system devised by the company to compliment the GPS feature code library and all in-house graphics conventions. This layered system is also fully compatible with AutoCAD. All features are surveyed giving particular attention to defining features as per standard archaeological plans. These would include top of slope, bottom of slope and break of slope. Additional spot levels are taken across the entire survey area in order to obtain enough data to generate contours, a process which is an integral feature of the Penmap software.

Total Station & Penmap Software output: An AutoCAD .dxf/dwg file was exported from Penmap. AutoCAD software was then used to produce accurate plans of each site as required. Accurate, publication-quality, maps contours and digital terrain/ground models were produced using 'Surfer 11'3D visualisation, contouring and surface modelling package. Surfer's interpolation engine transforms the XYZ data into contour, 3D surface, 3D wireframe, watershed, vector, image, shaded relief, and post maps.

Trimble VRS & Rover output: The survey data was exported from the data logger as a comma delimited file (csv) and a Trimble data collector file (dc), then imported to a Trimble GeoSite Communicator (which recognises the feature code library and plots all strings, polygons and labels as intended). The data was then exported as an AutoCAD .dwg file to produce accurate plans of each site as required. Accurate, publication-quality, maps contours and digital terrain/ground models were produced using 'Surfer 11' 3D visualisation, contouring and surface modelling package. Surfer's interpolation engine transforms the XYZ data into contour, 3D surface, 3D wireframe, watershed, vector, image, shaded relief, and post maps.

Topographical and archaeological features that were identified were primarily surveyed as line drawings and further supplemented by spot levels in order to generate a contour plan. Profiles were also generated where deemed appropriate. The frequency of spot heights taken for contouring was governed by the archaeological potential of the landscape feature, the nature of the topography, and the size of the survey area. Real-time interface using a Panasonic Toughbook running *Penmap* software enabled the data to be viewed during survey. This ensured a thorough and even survey of the site. Drawings were finalised in AutoCAD. Digital terrain models, contour-based plans and oblique terrain models were generated using Surfer 9.

4 SITE LOCATION AND BACKGROUND INFORMATION

Torr Dhuin fort is situated within the forest district of the Inverness, Ross and Skye at NGR NH 3487 0695, to the southwest of Fort Augustus in the Parish of Bolekine and Abertarff, County of Inverness-shire. It is located at 76 m OD on a natural rocky knoll overlooking the River Oich in the Great Glen to the east (Plate 1). The fort has dense vegetation cover of bracken, heather and blaeberries with forestry commencing close to the base of the knoll on the north, south and west and a precipitous slope on the east. The forestry largely obscures the views from the site of the surrounding landscape to the north, south and west. To the east there are fine views to the Great Glen and the mountain landscape in the distance. The site and surrounding forestry is presently managed by Forestry Commission Scotland.

The upstanding remains of the site comprise a vitrified dun with two outlying concentric un-vitrified stone defences which wrap around the north, south and west sides of the outcrop (Plates 2 & 3). The dun on the summit is irregular/near-oval in plan, and measures *c.*19 m north/south by *c.*10 m east/west internally (Plate 4). The vitrified wall is best preserved on the north and east sides, and is up to 3.5 m thick although it is largely masked by vegetation. A trench, which is likely to be an excavation trench (Ross, A 1906-12), extends over the width of the north side of the interior. The ground slopes down steeply from the dun on the summit of the knoll to a terrace where the middle wall is located (Plate 5). This was noted by the Ordnance Survey during their site visit in 1970 as being largely robbed out with only footings visible for most of its length and some tumble on the slope below. On the southwest side of the knoll a gulley leads from this terrace towards the dun on the summit (Plate 6). This is flanked on the east by a rock outcrop and on the west by a stone wall.

There is a near vertical slope on the exterior side of the stone defence of the terrace which slopes down to the outer wall (Plates 7 & 8) near the base of the knoll. This wall is more intact than the middle defence and survives to a maximum height of 1.3m with a thickness of around 1.7 m which increases to *c.*3.0m on the south side where there is an entrance (Plates 9 & 10). The entrance in the outer wall is located to the east of the gulley leading up from the middle defence and there is a flat area between the entrance in the outer defence and the base of the gulley.

A north/south aligned earthen bank which may be associated with the site is located to the south of the knoll. This is 3m wide, up to 0.5m high and 10m long and may extend into the forestry to the south of the site.

5 SURVEY RESULTS

The topographical survey covered an approximate area of 11,750 m^2, centred on the visible upstanding remains of the monument and including an immediate zone around the site as determined by local topography. Access to the site was gained via the modern B7008 road followed by a short walk over moorland.

A series of measured plans were produced from a detailed topographical survey of the archaeological remains at Torr Dhuin (Figures 3-8). Figures 3, 4, 5 and 6 show digital terrain models of the late prehistoric fort and the surrounding topography in both perspective and orthographic projections with contour details also marked. Perspective projections preserve slightly differing viewpoints that correspond to the left and the right eye. The picture plane is placed between the observer and the object: and parallel lines in space project to lines which converge to vanishing points on the picture plane. Orthographic projections are also used because parallel lines represented in the digital terrain model correspond to real-world parallel lines, and thus zonally relationships are preserved visually.

Figures 7 and 8 show a topographic shaded-relief plan and a contour-based plan respectively, with the locations of stone walls also marked.

6 DISCUSSION

The upstanding remains of the late prehistoric fort at Torr Dhuin are a good example of this type of site in an impressive location. The condition of the monument is stable and the morphology remains as described during previous site visits by RCAHMS and Ordnance Survey. The digital terrain models created as a result of the recent survey work enhance the existing Historic Environment Record and demonstrate the strong defensive location of the monument.

ACKNOWLEDGEMENTS

The surveyors and authors would like to thank the staff of Forestry Commission Scotland for commissioning the work and their co-operation during fieldwork.

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Cartographic references

Ordnance Survey 6 inch to the mile Inverness-shire (Mainland) Sheet LXXXIII, Surveyed 1871, Published 1873

Ordnance Survey 6 inch to the mile Inverness-shire (Mainland) Sheet LXXXIII, Surveyed 1899, Published 1904

Ordnance Survey 25 inch to the mile Inverness-shire Mainland Sheet LXXXIII.1, Surveyed 1871, Published 1873

Ordnance Survey 25 inch to the mile Inverness-shire Mainland Sheet 83.1, Surveyed 1899, Published 1900

APPENDIX 1 – Photographic Register

Shot Number	Direction Facing	Description	Taken by	Date
CGRF14_Torr_Dhuin_001	N	Working shot	LB	8/2/14
CGRF14_Torr_Dhuin_002	N	Working shot	EOF	8/2/14
CGRF14_Torr_Dhuin_003	W	Excavation trench	LB	8/2/14
CGRF14_Torr_Dhuin_004	N	North bank on summit	LB	8/2/14
CGRF14_Torr_Dhuin_005	SW	Gully forming entrance	LB	8/2/14
CGRF14_Torr_Dhuin_006_ to_008	SW	View from summit of area with entrance gully	LB	8/2/14
CGRF14_Torr_Dhuin_009	NE	Gully forming entrance	LB	8/2/14
CGRF14_Torr_Dhuin_010	NE	Gully forming entrance	LB	8/2/14
CGRF14_Torr_Dhuin_011	NE	Gully forming entrance	LB	8/2/14
CGRF14_Torr_Dhuin_012	N	Outer wall on SW side and adjacent dip	LB	8/2/14
CGRF14_Torr_Dhuin_013_ to_15	N	Slope to west of summit showing outer wall	LB	8/2/14
CGRF14_Torr_Dhuin_016_ to_018	NW	Entrance area taken from entrance in outer wall	LB	8/2/14
CGRF14_Torr_Dhuin_019	N	Entrance in outer wall	LB	8/2/14
CGRF14_Torr_Dhuin_020_ to_022	N	Montage of entrance in outer wall	LB	8/2/14
CGRF14_Torr_Dhuin_023	N	View of site	LB	8/2/14
CGRF14_Torr_Dhuin_024	N	View of site from modern path to south	LB	8/2/14
CGRF14_Torr_Dhuin_025	S	View of site from modern path to north	LB	8/2/14
CGRF14_Torr_Dhuin_026_ to_027	S	View of site from modern path to north	LB	8/2/14
CGRF14_Torr_Dhuin_028	N	View of site from knoll to south	LB	8/2/14
CGRF14_Torr_Dhuin_029_ to_030	NE	View of crag to east of site and landscape from knoll to south of site	LB	8/2/14
CGRF14_Torr_Dhuin_031	N	Surveyor working with entrance gully in foreground	LB	8/2/14
CGRF14_Torr_Dhuin_032	N	Surveyor working with entrance gully in foreground	LB	8/2/14
CGRF14_Torr_Dhuin_033	N	Surveyor working with entrance gully in foreground	LB	8/2/14
CGRF14_Torr_Dhuin_034	N	Outer wall to the north of entrance	LB	8/2/14
CGRF14_Torr_Dhuin_035	NE	North side of fort showing natural slope and outer wall	LB	8/2/14
CGRF14_Torr_Dhuin_036	NNW	Stone in outer wall on west side of fort	LB	8/2/14
CGRF14_Torr_Dhuin_037	NNW	Stone in outer wall on west side of fort	LB	8/2/14
CGRF14_Torr_Dhuin_038	N	View along central defence on west side of fort	LB	8/2/14
CGRF14_Torr_Dhuin_039_ to_040	S	View of site	LB	8/2/14

Figure 1 - Torr Dhuin: Site location and OS 6 inch first edition map extract.

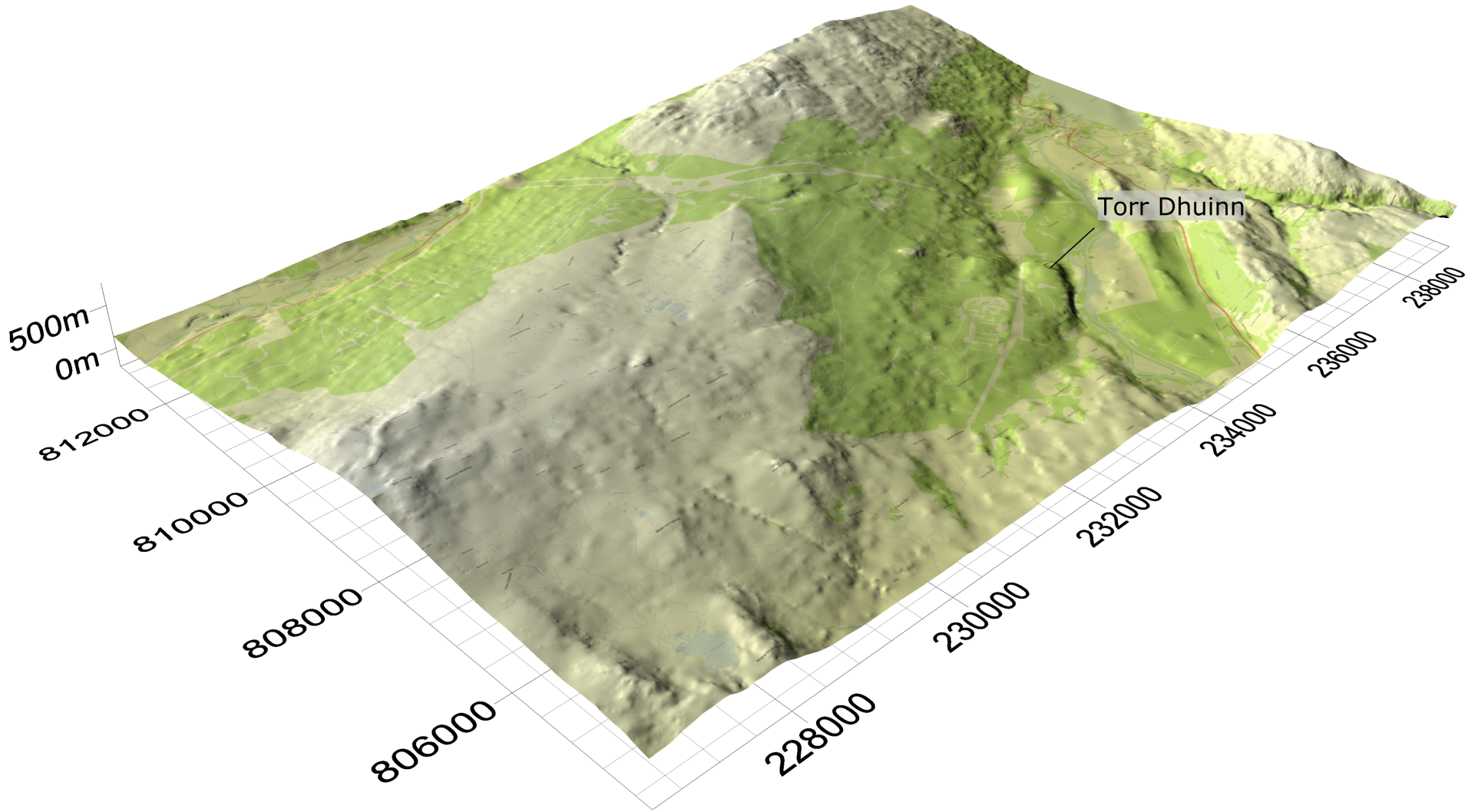

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Figure 2 - Digital terrain model
Landscape context of
Torr Dhuinn

Drawn by: Enda O'Flaherty	1st edit by:
2nd edit by:	Signed off:

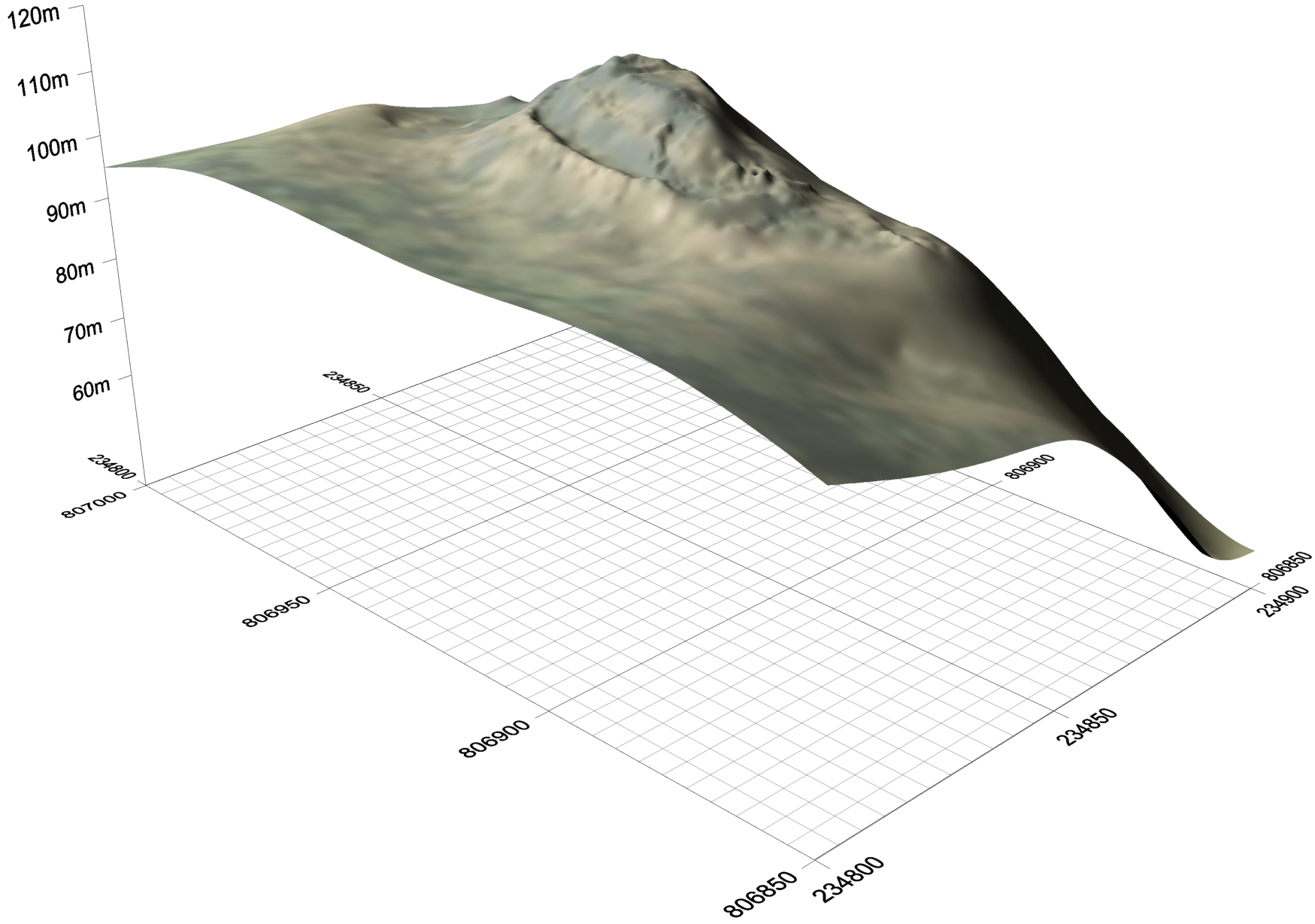

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Figure 3 - Digital terrain model - Perspective Projection - Torr Dhuin

Drawn by: Enda O'Flaherty	1st edit by:
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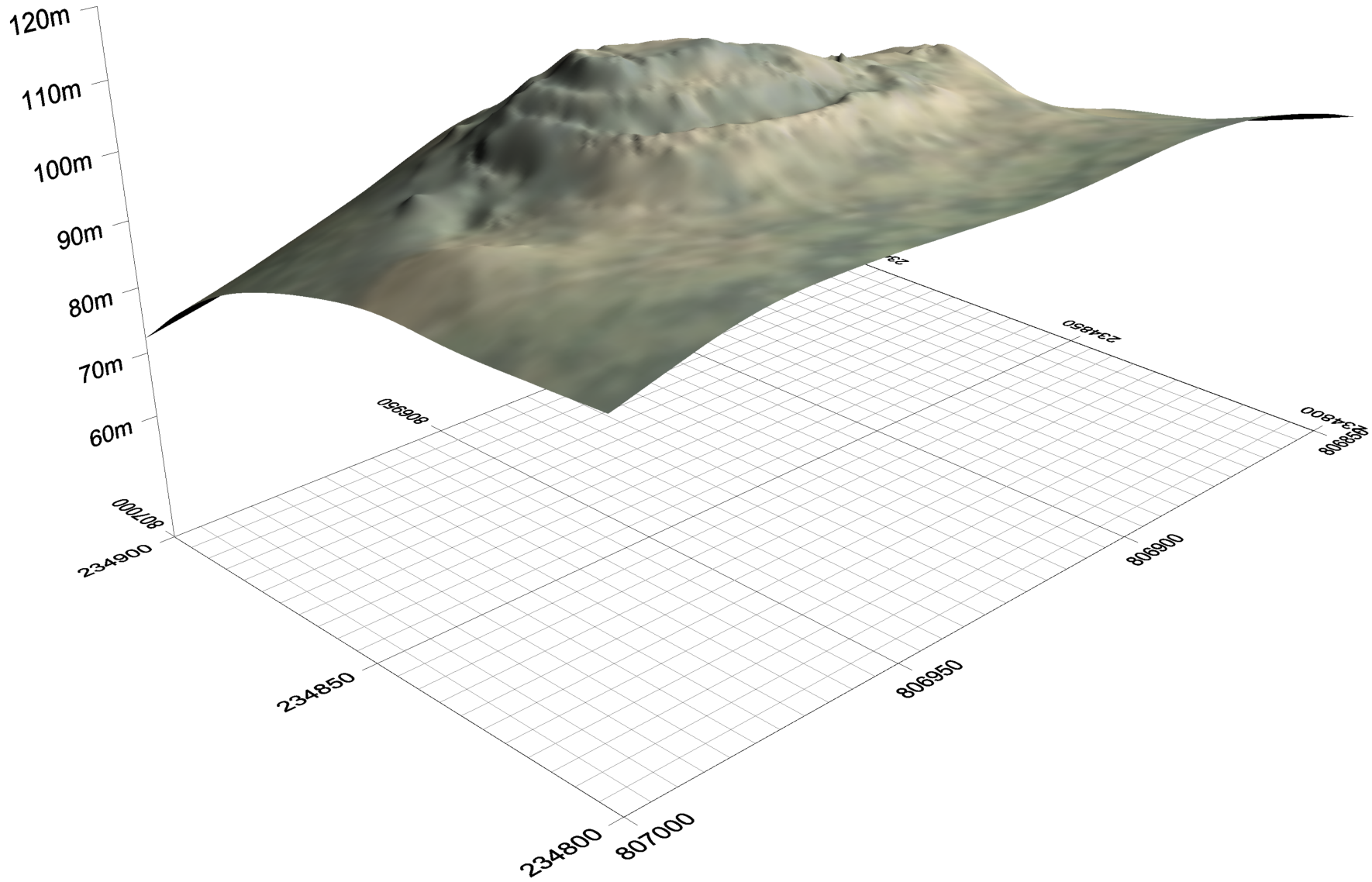

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Figure 4 - Digital terrain model - Perspective Projection - Torr Dhuin

Drawn by: Enda O'Flaherty	1st edit by:
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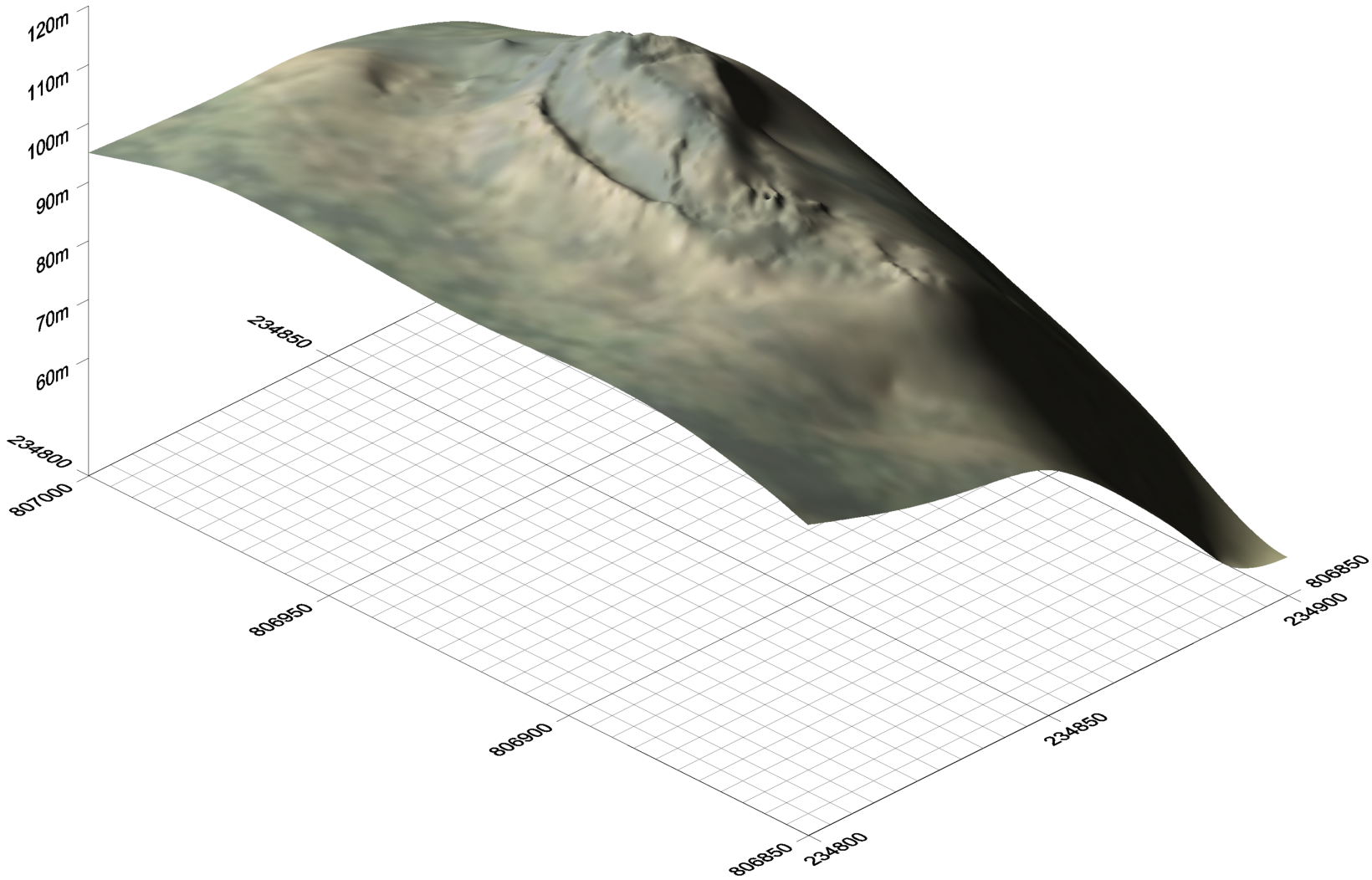

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Figure 5 - Digital terrain model - Orthographic Projection - Torr Dhuin

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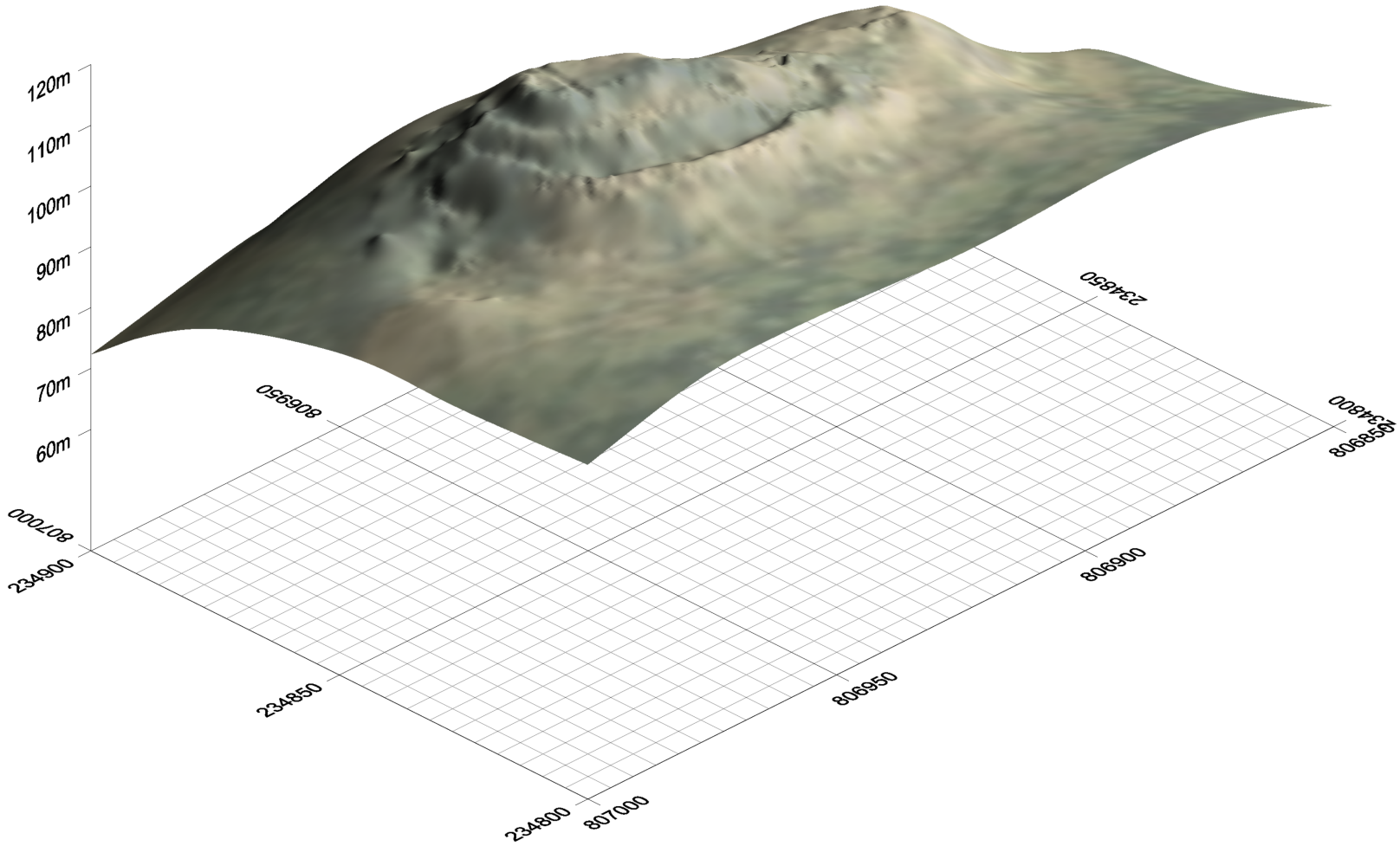

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Figure 6 - Digital terrain model - Orthographic Projection - Torr Dhuin

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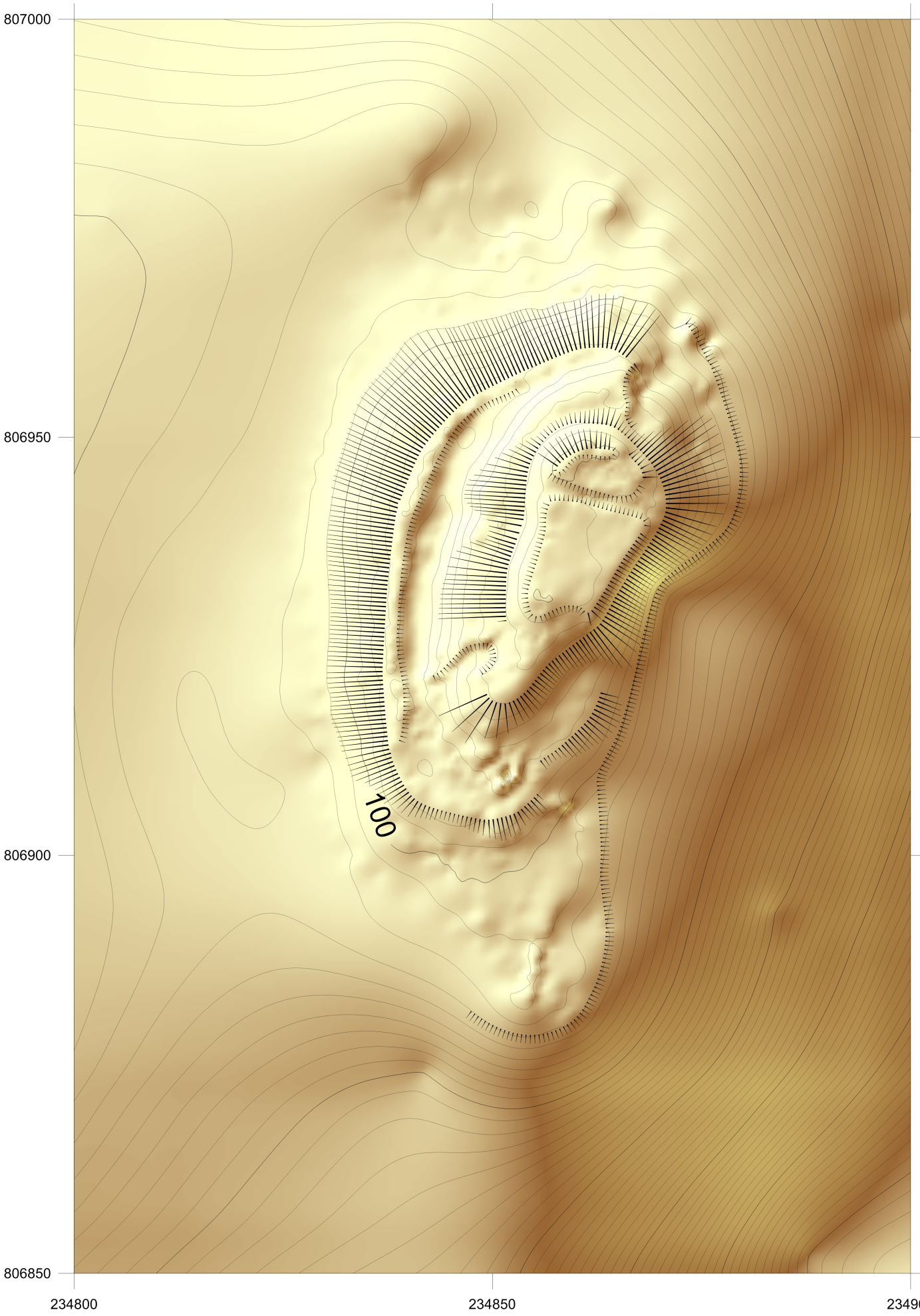

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Figure 7- Shaded-relief model with contour overlay- Torr Dhuin

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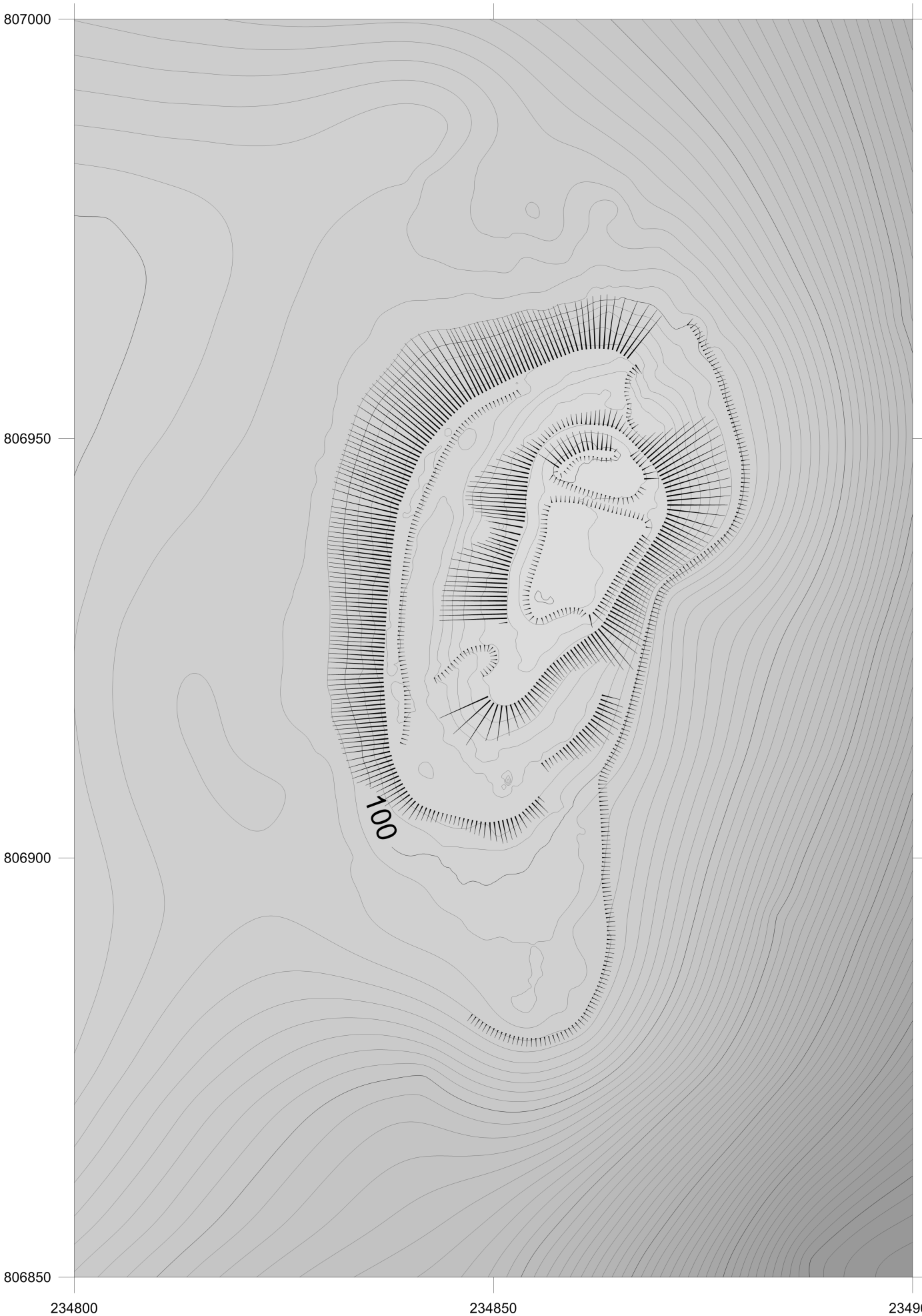

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Figure 8 - Contour Survey – Torr Dhuin

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Plate 1 - View of River Oich and Loch Ness to east of site from area to south of natural rocky knoll.

Plate 2 - View of site facing south.

Plate 3 - View of site facing north.

Plate 4 - Interior of dun facing north.

Plate 5 - View along terrace of middle defence on west side facing north.

Plate 6 - Gully leading from middle defence to summit facing northeast.

Plate 7 - View along outer wall taken from base of gully facing north.

Plate 8 - Detail of outer stone wall at northwest facing WNW.

Plate 9 - Area between base of gully and entrance in outer wall facing WNW.

Plate 10 - Entrance in outer wall facing north.