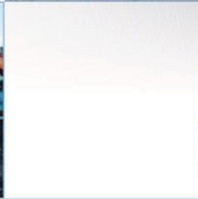
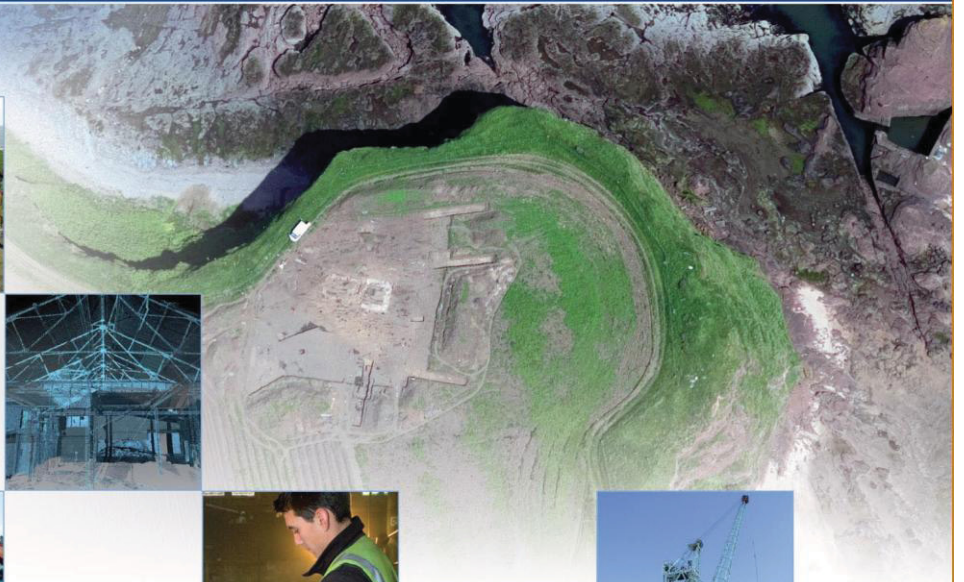


Flimby Windfarm, Cumbria Archaeological Topographic Survey Report

AOC 21676
30th March 2011



ARCHAEOLOGY

HERITAGE

CONSERVATION

Flimby Windfarm, Cumbria

Archaeological Topographic Survey Report

On Behalf of:	Flimby Wind Energy Ltd Mynydd Awel Mold Business Park Maes Gwern Mold Flintshire CH7 1XN
National Grid Reference (NGR):	NY 0371 3310
AOC Project No:	21676
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Date of Survey:	24th-35th March 2011
Date of Report:	30th March 2011

This document has been prepared in accordance with AOC standard operating procedures.

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Approved by: _____ **Date:** _____

Draft/Final Report Stage: _____ **Date:** _____

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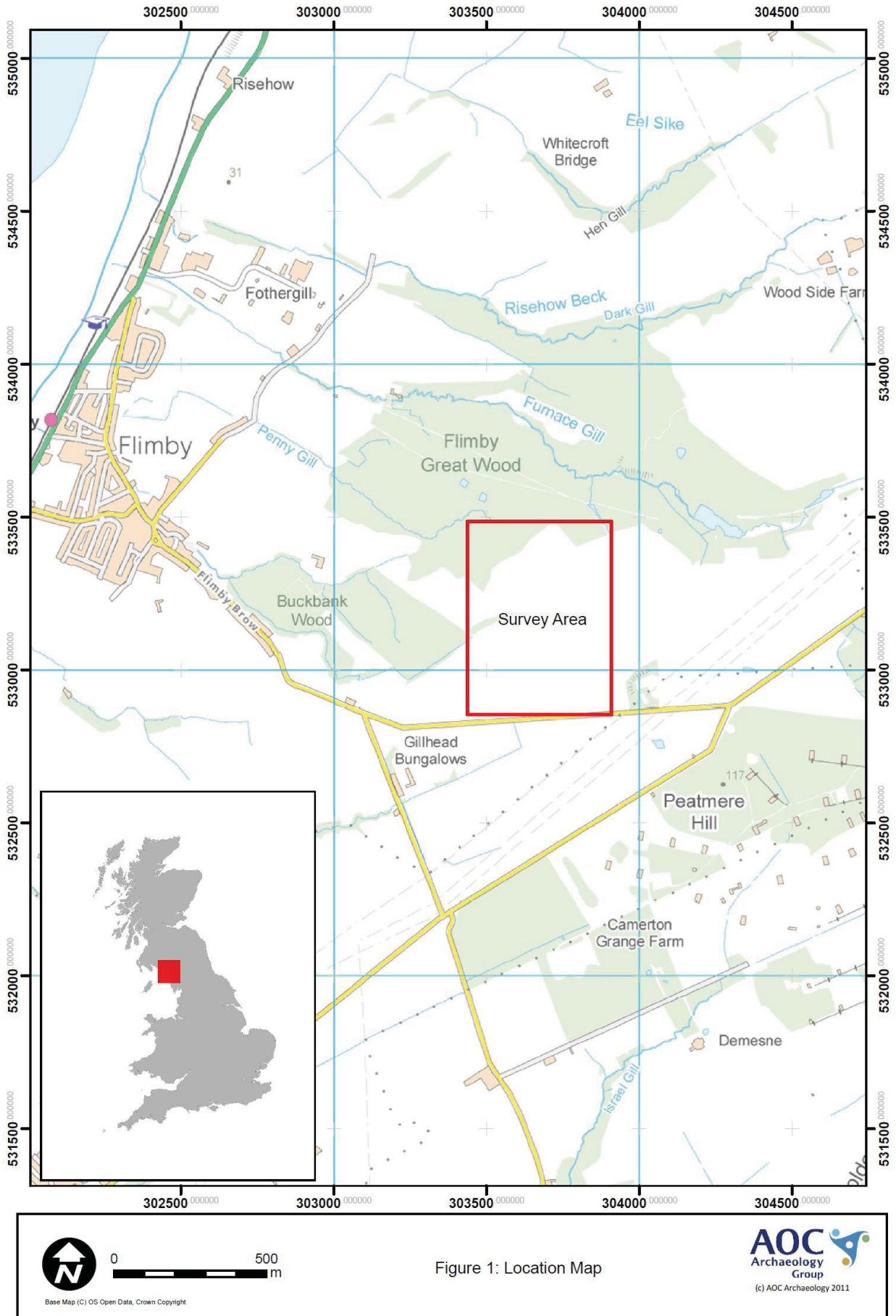
Flimby Windfarm: Archaeological Survey

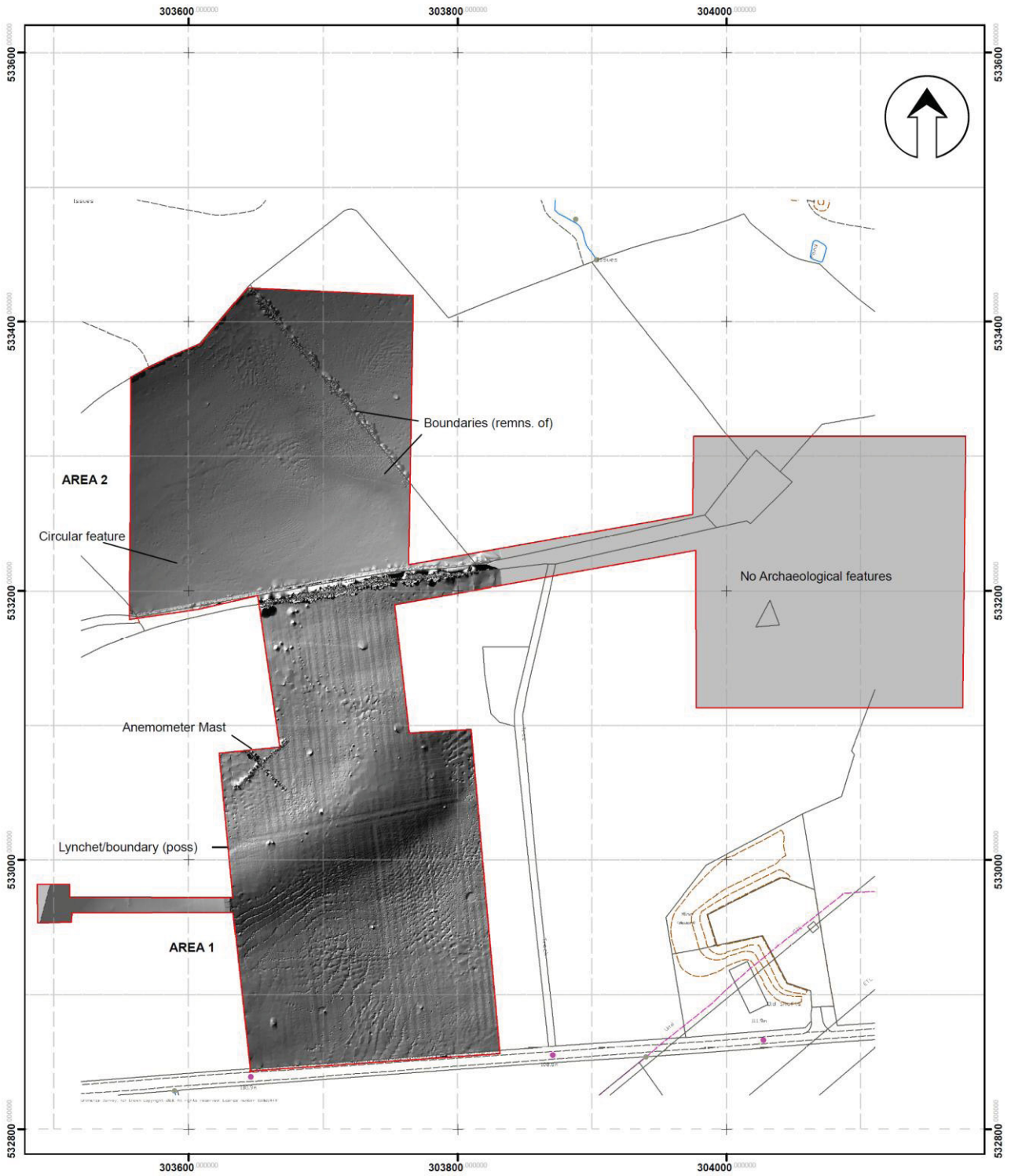
Introduction

1. AOC Archaeology Group was commissioned by West Coast Energy to undertake an archaeological topographic survey of the development area for Flimby windfarm, Cumbria (NGR: NY 0371 3310; see Figure 1). The development area comprises c.14 Ha in area, of which traces of ridge and furrow cultivation are visible in around 10 Ha. The agricultural remains are visible primarily in Area 1 (Figure 2), though faint traces can be observed in Area 2. Several other ephemeral features were noted in the development area, possibly lynchets or old field boundaries associated with the post-medieval field system.

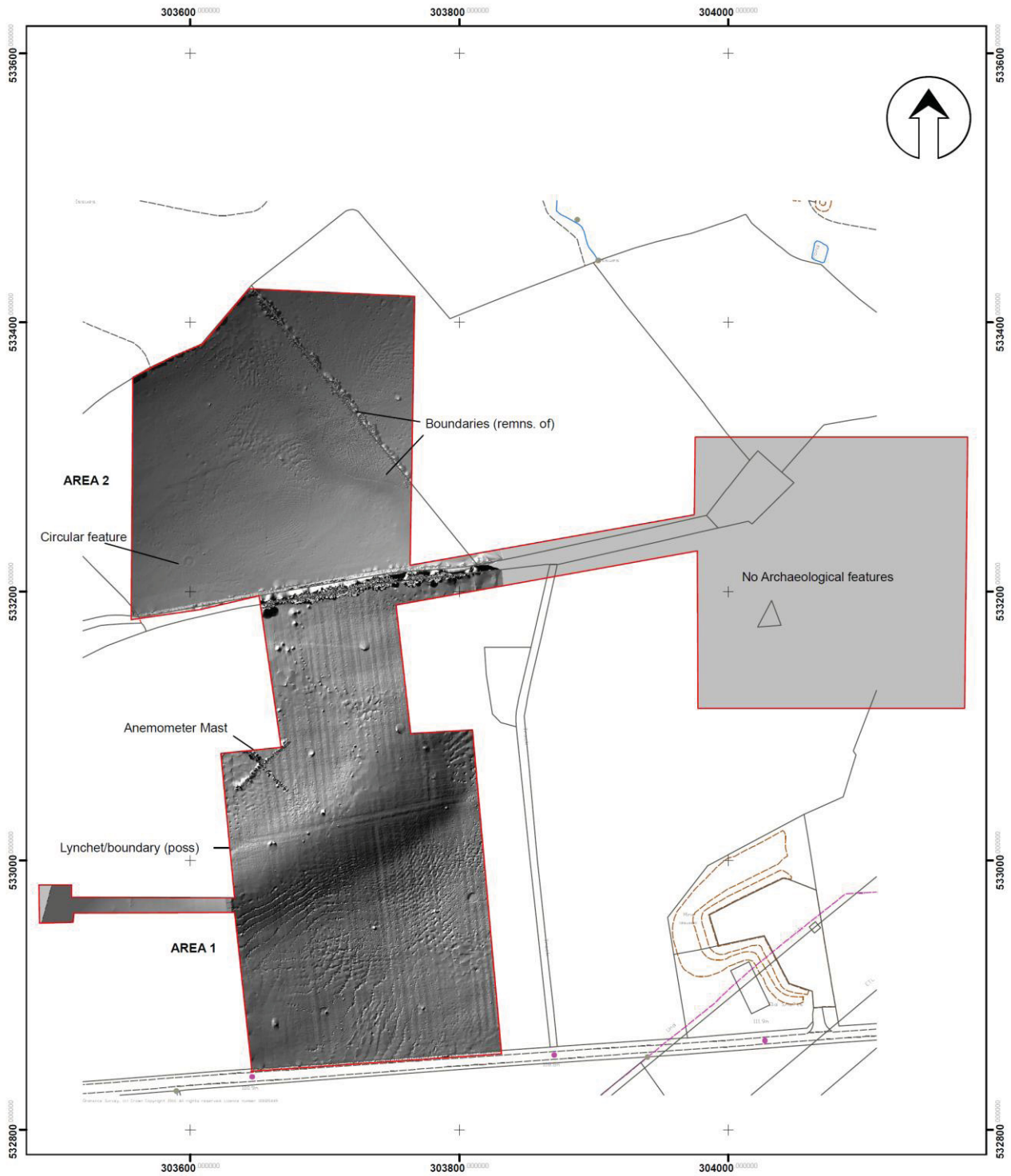
Methodology

2. *Visibility of features*
3. The ridge and furrow cultivation remains present in the development area present a particular challenge for recording, being very denuded by the effects of modern agriculture, and on average each ridge rises only c.0.05m in height. The ridges are very difficult to see when standing on the site, and are most easily detected when viewed obliquely from a distance. This makes them very difficult to record using traditional surveying methods, and even aerial photography/photogrammetry would be unlikely to detect the agricultural remains reliably.
4. For this reason, and with airborne LiDAR prohibitively expensive, terrestrial laser scanning was chosen as a means of recording the ridge and furrow three dimensionally, allowing the production of an elevation model that could be shaded to highlight the course of the ridges. A Trimble GS101 laser scanner was used to scan the development area from 21 positions, controlled by a Trimble S6 robotic total station using flat reflective targets. The data was registered using Realworks version 6.5 and exported to ArcGIS 9.3 for the production of a DEM at 0.1m resolution. A range of filtering methods were applied to the data to remove scanner noise where this was possible without removing traces of ridge and furrow, and a hillshaded model was calculated to highlight the undulations in topography.
5. The ridge and furrow was detected most clearly in Area 1 (see Figure 2), where the rigging can be clearly seen running N/S in alignment with the modern field boundaries. A possible lynchet or track is also visible running transversally across the low hillock in the centre of the field.
6. Although just detectable on the ground in Area 2, the ridge in this area was so denuded- averaging less than 5cm in height- that it cannot be detected clearly on the elevation model derived from the scan data. The course of the ridge is faintly detectable in the raw point cloud data, however, running NW/SE from the modern field boundaries. The course of this ridge and furrow has been transcribed onto the survey as 'Indistinct Features' in Figure 3.
7. A small circular feature was recorded in the W of Area 2; this seems most likely to derive from the placement of a modern animal feeder, which can result in circular depressions due to trampling.

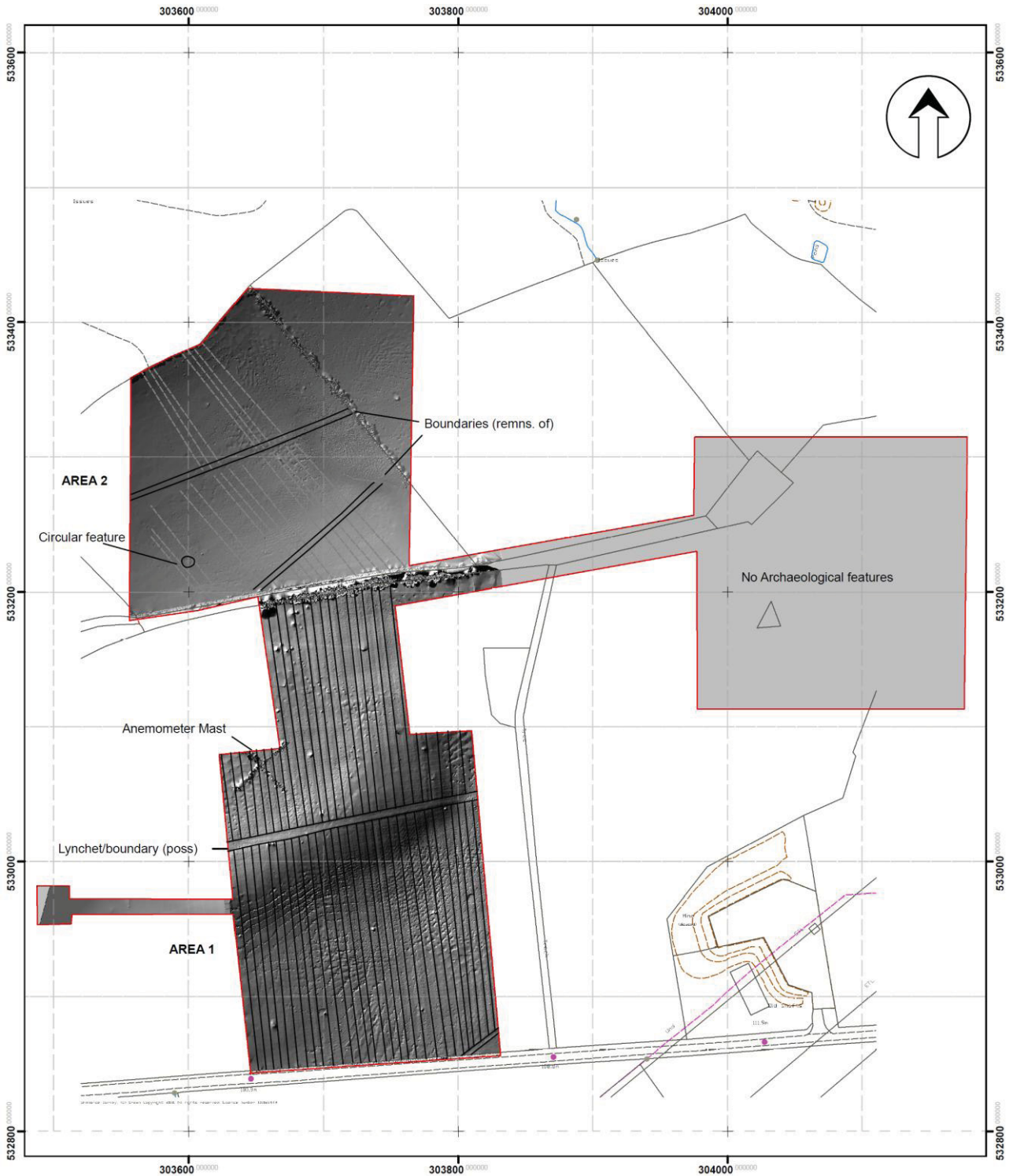





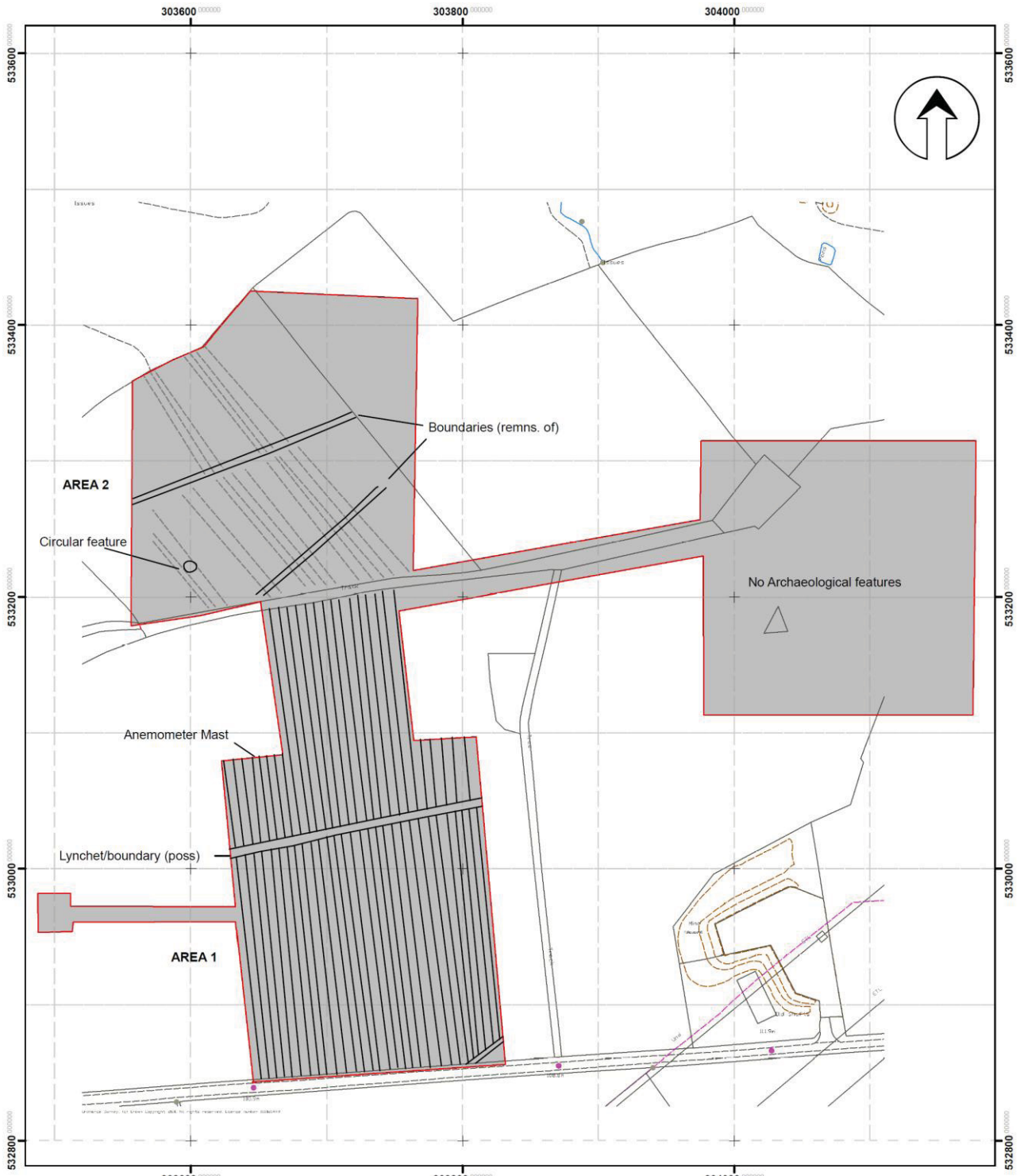
Legend Development boundary	Project: Flimby Windfarm, Cumbria	<p>(C) AOC Archaeology Group 2011</p>
	AOC Project Number: 21676	
	Figure Number: 2, Elevation Model	



Legend Development boundary	Project: Flimby Windfarm, Cumbria	 (C) AOC Archaeology Group 2011
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	Figure Number: 2, Elevation Model	



Legend		Project: Flimby Windfarm, Cumbria	 <p>(C) AOC Archaeology Group 2011</p>
—	Features interpreted	AOC Project Number: 21676	
- - -	Indistinct Features	Figure Number: 3, Interpreted topographic survey	
□	Development boundary		



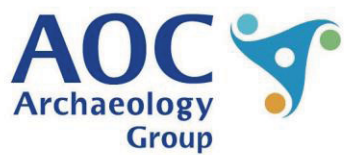
Legend

- Features interpreted
- - - Indistinct Features
- ▭ Development boundary

Project: Flimby Windfarm, Cumbria
AOC Project Number: 21676
Figure Number: 4, Interpreted features



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