

Survey of Gisborough Moor

7 October 2014

Graham Jackson and Janet Jackson

1) Introduction

Gisborough Moor (Hill 2832, Section 37, OS 1:50000 Map 94, OS 1:25000 Map 26N, Grid Ref NZ634123) is a Marilyn. A 329m spot height, associated with a tumulus, appears on the 1:50k map (the currently accepted summit at the grid reference given above) and the same position has a 328m spot height on the 1:25k and 1:10k maps, but a large area of the summit is enclosed within a 320m contour. Gisborough Moor was visited by Jim Bloomer on 28th April 2011. Jim confirmed that the summit area was extensive, but using an Abney level recorded an embedded rock about 200m WNW of the tumulus that was as high as the highest point of the tumulus.

The purpose of this survey was, with the aid of a level and staff, to ascertain the exact position of the summit, and then to measure the height difference between it and other features in the summit area.

2) Equipment used and Conditions for Survey

Positions were recorded using a Garmin Oregon 400 hand-held receiver. The instrument was allowed to stabilise for at least ten minutes before any readings were taken.

The surveying was carried out using a Leica Runner level (X20 telescopic system)/tripod system and a "1m" E-staff extendable to 5m.

The day was mostly overcast, but with sunny periods, and mild, 15 degrees Celsius. Visibility was good and the wind was light, albeit sufficient to cause slight vibration of the Leica automatic level.

3) Character of Hill

Gisborough Moor lies above the village of Guisborough on the northern edge of the North Yorkshire Moors. The land drops steeply from the edge of the escarpment to give extensive views over Middlesbrough, but the summit of Gisborough Moor is set back about 2km from the escarpment and therefore the resulting views in this direction are much more restricted. The moorland itself, which includes the summit, is managed grouse moor and is crossed by well-maintained vehicle tracks, although once off the tracks progress through the heather is slow. Fortunately, one of these tracks leads over the top of the moor and therefore provides a good route for access. It leaves a minor road just outside the hamlet of Commondale 3km SE of the summit and is followed to North Ings farm where a diversion takes the walker round to the north of the buildings to where the track is once again joined. From here it is just 2km of walking to the summit.

The main feature that attracts attention over the last few hundred metres of the walk to the top is a large tumulus bearing a windshelter on its NE side.

4) Outline of Survey Method

First of all, the Leica Runner was set up on the tripod on the summit of the tumulus and a 360 degree sweep of the surrounding area was made to scan for higher ground. The trig point 1.8km NW was clearly visible and was about 5 - 6m lower than the level, assuming the trig point was about 1.25m high. Ground to the SE was also a few metres lower, although there was no feature here from which to estimate a figure. Everywhere else was also seen to be lower except for ground to the WNW where it appeared to be at least as high. It should be noted that the tripod height was of the order of 0.7m thus implying that the ground to the WNW was higher than the summit of the tumulus. This was the ground identified by Jim Bloomer. Having located this area we walked over and inspected it. The heather was extensive, but not thick, the ground was undulating in places and we found two flat embedded rocks in the position indicated by Jim Bloomer. The next step was measurement of the candidate features in the summit area.

5) The Survey

With the level set up on its tripod on the summit of the tumulus, staff readings were taken and recorded for the two embedded rocks to the WNW of the tumulus and the highest point of the tumulus itself.

The readings were:

Embedded rock (1) = 0.53m

Embedded rock (2) = 0.40m

Summit of tumulus with windshelter = 0.69m

In addition a reading was taken on a second tumulus about 60m W of the embedded rocks

Tumulus near embedded rocks = 0.75m

Staff readings were then taken at several other positions in the summit area around the embedded rocks and on the far side of the track which passes just to the East of them. All of these readings were higher (showing the positions to be lower) although some were quite close to the readings of the embedded rocks. Since all positions were lower none of these subsequent readings were recorded.

6) Results

Embedded rock (1) is $0.69 - 0.53 = 0.16\text{m}$ higher than main tumulus

Embedded rock (2) is $0.69 - 0.40 = 0.29\text{m}$ higher than main tumulus

Tumulus near embedded rock is $0.69 - 0.75 = 0.06\text{m}$ lower than main tumulus

Ten figure grid references for these positions were taken and are recorded below:

Embedded rock (1)

Garmin Oregon 400 NZ 63240 12404 Accuracy 3m Height = 337m

Embedded rock (2)

Garmin Oregon 400 NZ 63242 12411 Accuracy 4m Height = 338m

Tumulus near embedded rocks

Garmin Oregon 400 NZ 63179 12417 Accuracy 4m Height = 714m

Tumulus with windshelter

Garmin Oregon 400

NZ 63440 12338

Accuracy 3m Height = 714m

7) Discussion of errors

When line surveys are carried out the staff is always set up sufficiently close to the level to enable readings to be taken to the nearest millimetre. In this survey there was insufficient time available to carry out a line survey, so readings had to be taken directly from the set-up position on the tumulus to the staff, a distance of 200m. Over this distance and under the prevailing conditions, accuracy was compromised and readings were reproducible to +/-0.03m.

7) Summary and Conclusions

The summit of Gisborough Moor is at **NZ 63242 12411** and is an embedded rock. This rock is 0.13m higher than an adjacent rock at **NZ 63240 12404**, 0.29m higher than the tumulus with windshelter 200m ESE at **NZ 63440 12338** and 0.35m higher than tumulus 60m W at **NZ 63179 12417**.

* NB average hand-held Garmin/Magellan GPS grid references are quoted in the summary.

John Barnard and Graham Jackson 16 December 2014.