Survey of Horseshoe Hill

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1) Introduction

Horseshoe Hill (Hill Number 3604, Section 35A, OS 1:50000 Map 87, OS 1:25000 Map 307, Grid Ref. NY985448) is listed as a Dewey (a hill in England and Wales at or over 500m but lower than 2000 feet in height with 30m or more of drop) in the Database of British and Irish Hills.

The summit area of this hill is quite extensive and flat. Although a summit position has been identified with an Abney level, it has also been recorded that "ground ESE is almost horizontal for c. 100m". Therefore whilst visiting this hill, the authors took the opportunity to survey the summit area with a Leica NA730 level in order to more accurately locate the summit position.

2) Equipment used and Conditions for Survey

A Leica NA730 Professional Automatic level (X30 telescopic system)/tripod system and a "1m" **E**-staff extendable to 5m were used to determine the position of the summit.

Conditions for the survey, which took place between 14.30hr and 15.30hr GMT, were just satisfactory. The weather was dull, 8 degrees Celsius but with little wind. With a low cloud base and drizzle but light rain later, visibility was limited, but good enough to carry out optical work with level and staff.

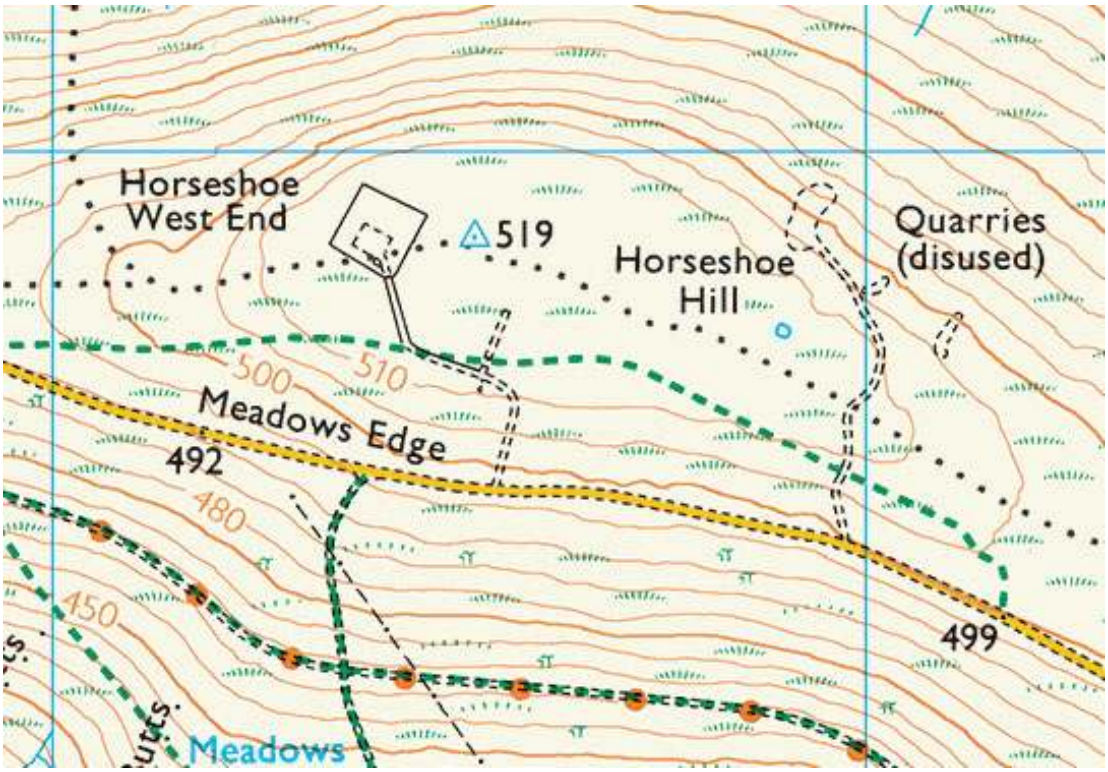
3) The Survey

3.1) Character of Hill

Horseshoe Hill lies in the Eastern Fells of the North Pennines and is about 7km North of the small village of Stanhope. This hill is typical of this part of the North Pennines where the hills are mostly featureless vegetated mounds with significant patches of bog and peat. On a sunny day one might be captured by the desolation, but on a wet and cloudy day one's opinion may be quite different!

One advantage of this hill is that access is incredibly easy. A minor road runs only 300m to the South of the summit giving the walker just 20m of ascent. Parking is possible on the minor road's verge not far from the transmitter's service road which can be used for some of the ascent.

An extract of the OS 1:25000 map showing the summit is presented below. The highest contour shown is 510m covering an "elliptical" area about 800m by 300m. The trig point is marked with a spot height of 519m but the 515m contour ring is missing! Prior to this survey the summit of the hill had been identified, using an Abney level, as featureless ground about 5m West of the trig point at NY 98519 44890.



3.2) The Summit

Visually it was impossible to locate the summit position as the whole area around the trig point is very flat and the picture is confused with large tufts of heather and mounds of tussock grass and mossy vegetation.

The Leica NA730 optical level was set up at a convenient position a few metres away from the trig point so that a staff reading could subsequently be taken from the Flush bracket. Staff readings were then taken around the trig point within 10m distance from it and the current summit position (staff reading = 0.72m) was confirmed to be the highest point in this region.

Next staff readings were taken in a line approximately East from the trig point. For the first 50m the ground was quite flat as staff readings were between 0.8m and 0.9m (that is 0.2m or less in height than the current summit position), but further away the ground descended and at about 100m distance, it was approximately 0.8m lower. No higher ground to the East and to the North of the trig point could be found.

Some points South and West of the trig point were also considered as possible candidates and staff readings were taken from those. The highest point found, with a staff reading of 0.55m, was 25m SSW from the trig point. This point is 0.17m higher than the current summit position identified previously with an Abney level and about 15m SSW of it.

The ten-figure Grid References recorded for the summit are:-

Garmin Montana 600	NY 98510 44874	Height = 518m
Garmin Etrex 20 (JB)	NY 98510 44874	Height = 518m

Garmin Etrex 20 (CC)	NY 98510 44871	Height = 517m
Garmin Oregon 450	NY 98510 44875	Height = 522m

The ten-figure Grid References recorded for the trig point are:-

Garmin Montana 600	NY 98524 44895	Height = 521m
Garmin Etrex 20 (JB)	NY 98522 44896	Height = 519m
Garmin Etrex 20 (CC)	NY 98523 44893	Height = 516m
Garmin Oregon 450	NY 98524 44896	Height = 525m

The height of the hill can be measured from the staff readings taken from the summit and Flush bracket and using the height of the Flush Bracket from the OS Database.

Height of Flush Bracket from OS Database = 519.85m

Staff reading at summit = 0.55m

Staff reading at Flush bracket = 0.48m

Height of Horseshoe Hill = 519.85 + 0.48 – 0.55 = 519.78m

4) Summary and Conclusions

The **summit** of **Horseshoe Hill** is at grid reference * NY 98510 44874 and is unfeatured ground 25m SSW of the trig point. Its height is **519.8m**.

* NB average hand-held Garmin GPS grids are quoted in the summary.

John Barnard and Graham Jackson, 03 December 2015