

# Calders and Fell Head (35A)

Report of surveys carried out by Alan Dawson on 9 March 2014

## Background

The main purpose of this survey was to measure the height and drop of Calders, the second-highest summit in the Howgill Fells. Calders is mapped as 674m high, just two metres lower than The Calf, the highest of the Howgills. The drop between Calders and The Calf is mapped at 33m, giving Calders the 30m drop required for its status as a Sim and a Hewitt. Heights were measured using a Leica Geosystems RX 1250 GPS antenna and controller, with subsequent processing using OS Rinex data to obtain precise results. Conditions for the surveys were satisfactory: cold, dull and windy but with tops clear of mist.

## Calders survey

The summit has a low cairn on its summit area. The highest point is a small grass mound at the edge of a well-used path that passes next to the cairn. The tripod was set up over this point, at a low height in order to improve stability in the strong wind. The col is also on this path, at a well-defined dip at the southern base of The Calf's summit slopes, north of the minor summit of Bram Rigg Top. The col survey point was set up at almost the exact point marked with a 641m spot height on the OS 1:10000 map.

Summit feature: Grass mound at edge of path

Summit survey time: 40 minutes

Antenna height at summit: 0.46m

Margin for error: 0.02m

Base station data:

<i>Base station:</i>	BEES	BLAP	CARL	GIGG	LEED	NCAS	RICM	WEAR
<i>Distance away:</i>	71	74	64	35	85	90	51	46
<i>Summit ellip height:</i>	727.47	727.429	727.474	727.396	727.459	727.424	727.403	727.393
<i>Col ellip height:</i>	693.216	693.216	693.235	693.228	693.336	693.235	693.232	693.223

Col survey time: 30 minutes

Antenna height at col: 0.91m

Margin for error: 0.04m

Eight base stations were used for summit and col.

Mean elliptical summit height: 727.43m

Mean elliptical col height: 693.24m

WGS84 to OSGB36 adjustment: 52.236m for summit, 52.251m for col

Adjustment constant: 0.16m

## Result:

Summit: 675.36m

Latitude: 54° 21' 30.537" N

Longitude: 2° 30' 29.52277" W

Summit gridref: SD 67071 96001

Col: 641.15m

Col gridref: SD 66865 96766

Drop: 34.21m

Outcome: No status change, Calders remains a Sim and is 1.3m lower than the trig FB on The Calf



Calders summit survey in progress

## Fell Head survey

Fell Head has a small 640m contour shown on OS maps but no spot height. The purpose of the survey was to get a precise figure for height and drop. The survey point was set up on an area of rough tussock close to the cairn. Owing to the vegetation on the flat summit area, the margin for error judged to be a little higher than usual at 10cm. The col was reasonably well-defined but also had 10cm margin for error.

Summit feature: cairn

Summit survey time: 32 minutes

Antenna height at summit: 0.87m

Margin for error: 0.1m

Base station data:

<i>Base station:</i>	BEES	BLAP	CARL	GIGG	LEED	NCAS	RICM	WEAR
<i>Distance away:</i>	71	74	64	35	85	90	51	46
<i>Summit ellip height:</i>	692.165	692.171	692.004	692.016	692.067	692.073	692.038	691.991
<i>Col ellip height:</i>	606.01	606.158	605.935	605.948	605.98	605.96	606.087	605.921

Col feature: path

Col survey time: 30 minutes

Antenna height at col: 0.87m

Margin for error: 0.1m

Eight base stations were used for summit and col.

Mean elliptical summit height: 692.07m

Mean elliptical col height: 606.00m

WGS84 to OSGB36 adjustment: 52.290m for summit, 52.284m for col

Adjustment constant: 0.16m

### Result:

Summit: 639.94m

Latitude: 54° 22' 40.84910" N

Longitude: 2° 32' 27.23354" W

Summit gridref: SD 64963 98190

Col: 533.88m

Col gridref: SD 6570 9832

Drop: 86.06m

Outcome: No change. Owing to the 0.1m margin for error at summit and col, Fell Head remains 640m high with 86m drop.



Fell Head summit survey in progress