

# Survey of Moel y Parc

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The Team:

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## **1) Introduction**

Moel y Parc (Hill Number 7519, Section 30C, OS 1:50000 Map 116, Grid Ref. SJ119700) is classed as a sub HuMP with 91m of drop. The OS 1:50,000 and 1:25000 maps give the height of Moel y Parc as 398m and therefore there is a possibility that this hill could exceed 400m and therefore be promoted to the list of “The Pedwarau”, Myrddyn Phillips’s recent list of Welsh Hills between 400 and 500m height with greater or equal to 30m of drop. Visually it is not absolutely clear that the highest point is the trig point or the base of a cairn on a small tumulus about 160m North West of the trig point. A local guide book by Carl Rogers, “Walking in the Clwydian Range”, implies that the summit is by the cairn as the trig point is not even mentioned, probably because it lies on private land and is not very accessible.

Several years ago John Barnard used an Abney level to compare the heights of the ground by the trig point and the ground next to the cairn 160m to the North West. The result was not reported, but his measurements indicated that the ground near the trig point was higher. The same measurement was repeated later by Graham Jackson who drew the same conclusion and the result is reported in the Database of British and Irish Hills.

The purpose of this survey was to confirm accurately the highest point of Moel y Parc and then measure its height relative to the flush bracket on the trig point.

## **2) Equipment used and Conditions for Survey**

Ground surveys to determine the positions of the bwlch and summit were carried out using a Leica NA730 Professional Automatic level (X30 telescopic system) rack and pinion tripod system and a “7m” extendable tape.

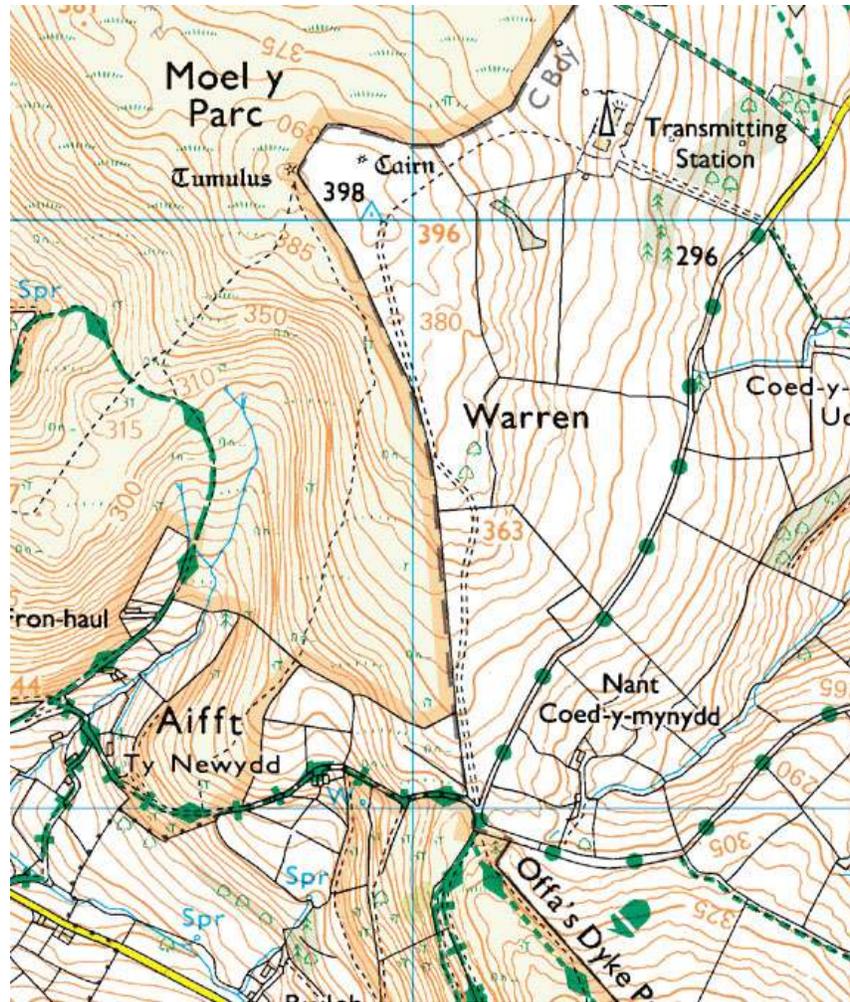
Conditions for the survey, which took place between 15.00hr and 16.00hr GMT were fair. The weather was cold, 3 degrees Celsius, and overcast but visibility was satisfactory. Snow was present on the higher hills above about 450m and towards the end of the survey it started to rain.

## **3) The Survey**

### **3.1) Character of Hill**

Moel y Parc is situated on the Clwydian Hills and is the most northerly hill before dropping to the A541 Mold to Denbigh road. An important landmark on this hill is the BBC television transmitter that is below the hill’s summit on the East flank. The easiest approach is from Afon Wen to the North where a minor service road to the transmitter begins at the A541. Just before the transmitter, the road changes to a drivable unsurfaced track which continues to the bwlch between Moel y Parc and Penycloddiau where there is ample parking. A footpath on the West side of the fence gives easy access to the hill’s summit 1km to the North.

An extract from the 1:25000 OS map is shown below. The trig point is marked with a spot height of 398m and the tumulus to the North West is enclosed by a 395m contour ring.



### 3.2) The Survey

The Leica NA730 level was set up on the tripod adjacent to the tumulus and its height was adjusted on the rack and pinion until it was set to the level of the highest point around the base of the cairn. The ground surrounding the trig point was then observed through the level. It was immediately clear that the ground surrounding the base of the trig point was significantly higher than the base of the cairn at the tumulus in agreement with the previous Abney level observations.

The next stage of the survey was to measure this height difference. Unfortunately from the set up position of the tripod it was not possible to raise the level on the rack and pinion high enough to observe the highest ground next to the trig point. To achieve this, the tripod had to be set up on the cairn itself and once the Leica NA730 had been levelled to the summit, its height above the ground measured with a tape showed the summit to be 1.45m higher than the base of the cairn.

Next the level and tripod were moved to a point a few metres East of the trig point. The highest ground in this region was confirmed as being about 2m South West of the trig point. Measurements taken from the tripod rack showed the highest ground to be 0.37m lower than the Flush Bracket on the trig point.

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

Garmin Map60CSx	SJ 11936 70009	Height = 392m
Garmin Montana 600	SJ 11939 70006	Height = 393m

Garmin Etrex 20	SJ 11936 70003	Height = 394m
Magellan Explorist 100	SJ 11937 70007	Height = 404m

The ten-figure Grid References recorded for cairn were:-

Garmin Montana 600	SJ 11793 70079	Height = 395m
Garmin Etrex 20	SJ 11792 70079	Height = 389m

The Ordnance Survey Database gives a height of 398.02m for the Flush Bracket. Therefore, the summit of Moel y Parc is  $398.02 - 0.37 = 397.7\text{m}$  and the highest ground around the cairn on the tumulus 160m North West is 396.2m.

#### 4) Discussion of Results

The largest error was associated with the tape measurement which gives an estimated uncertainty of  $\pm 0.10\text{m}$  in the height of the hill. The measurement is based on the assumption that the OS database Flush bracket height is correct. The OS database quotes the “Order” for this trig point as 2. “Order” ranges from 1 to 4 with 1 being the most precise. In our experience with GNSS measurements, Flush Brackets of “Order” 1 or 2 are within 0.1m of measured heights. However, it is extremely unlikely that a Flush bracket will be as much as 2m in error in height and therefore we can confidently say that Moel y Parc will not exceed 400m in height.

#### 5) Summary and Conclusions

The **summit** of **Moel y Parc** is at grid reference \* **SJ 11937 70006** and is grass about 2m South West of the trig point. Its height based on the OS Flush bracket height is **397.7 $\pm$ 0.1m**.

The base of the cairn 160m to the North West at Grid Reference **SJ 11793 70079** is lower and its height is **396.2 $\pm$ 0.10m**.

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

John Barnard and Graham Jackson, 14 January 2014.