

RESEARCH DEPARTMENT

TELEVISION SERVICE FOR WEST WALES

SITE TESTS AT PANT GWYN, BLAEN-PLWY
AND MYNYDD BACH

Report No. K-104

(1955/11)

R.D. Pittilo, B.Sc.
C.J. White
J. Hall
S.J. Ashdown
C.S. Dobson

W. Proctor Wilson
(W. Proctor Wilson)

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SUMMARY

This report shows that of the three sites tested, one at Blaen-plwy 4 miles (6.5 km) south of Aberystwyth will give the best television coverage in West Wales. It is not possible to receive a reliable signal from Wenvoe at this site for direct relay and an intermediate link will be required.

1. INTRODUCTION.

The area around Cardigan Bay, from the Lleyn Promontory in the north to St. David's Head in the south, is outside the reliable range of any existing television service.

A site is required to serve, with an e.r.p. of 1kW, as much of this area as possible, particularly Aberystwyth, the largest town.

It was also desirable that the final site would be suitable as a pick-up point for relaying the programme direct from Wenvoe.

2. GENERAL.

In the television transmitter distribution plan, Channel 3 was allocated to West Wales, using horizontal polarisation and an e.r.p. of 1kW.

Three sites were tested: (a) Pant Gwyn, 4 miles (6.5 km) north of Towyn; (b) Blaen-plwy, 4 miles (6.5 km) south of Aberystwyth; (c) Mynydd Bach, mid-way between Aberystwyth and Tregaron. The relative positions of the sites are shown in Fig. 1 and detailed information is given in the Appendix.

The test transmissions were made on Channel 3 using a 110 ft transmitting aerial at all sites and at Blaen-plwy transmissions were also made from a balloon-borne aerial elevated to heights up to 500 ft. All field strengths in this report are quoted for a receiving aerial 30 ft above ground and a transmitter e.r.p. of 1kW.

3. RESULTS.

Field strength measurements in all the major towns from each of the sites are shown in Table 1.

TABLE 1

Mean field strength in mV/m
30 ft a.g.l. e.r.p. 1kW

Town	Pant Gwyn		Mynydd Bach		Blaen-plwy		
	Aerial height		Aerial height		Aerial height		
	110 ft	110 ft	110 ft	172 ft	420 ft	110 ft	
Aberayron	0.14	0.1	2.2	2.8	3.3		
Aberdovey	0.04	0.8	0.9	1.5	2.2		
Aberystwyth	0.25	0.6	1.5	2.4	7.0		
Barmouth	4.0	0.04	0.1	0.13	0.13		
Cardigan	0.013	< 0.01	0.04	0.05	0.06		
Dolgelley	0.01	< 0.01	0.02	0.04	0.06		
Fishguard	0.04	< 0.01	0.03	0.035	0.035		
Harlech	0.15	0.01	< 0.02	< 0.028	< 0.028		
Lampeter	0.014	0.05	0.03	0.04	0.05		
Machynlleth	0.04	< 0.01	0.02	< 0.028	< 0.033		
New Quay	1.0	0.6	3.4	4.4	5.0		
Newport	0.02	< 0.01	< 0.02	< 0.03	< 0.03		
Portmadoc	0.4	0.02	0.05	0.1	0.13		
Pwllheli	0.45	0.05	0.04	0.08	0.11		
Towyn	12.5	0.3	0.4	0.7	1.1		
Tregaron	0.04	1.4	0.1	0.13	0.14		

Direct comparison between sites can be made by comparing the values for the 110 ft transmitting aerial condition.

The site at Mynydd Bach was tested because only at this site was the reception from Wenvoe suitable for relaying with no intermediate link. Unfortunately, the service area from this site is poor and only Aberystwyth, Aberdovey, New Quay and Tregaron would receive a reasonable field strength.

The site at Pant Gwyn gave a reasonable service in the northern half of the area but Aberystwyth and most towns to the south (except New Quay) would be poorly served.

Only Blaen-plwy gave a really satisfactory service in Aberystwyth and a reasonable coverage to both north and south of the area. It was intended originally to use a low mast for this area but with the population scattered over a large area it was considered advisable to use a higher mast in order to include this rural population.

Fig. 1 shows the improvement which would result from the use of a higher mast at this site. It has been estimated by E.I.D. that the population within the $100 \mu\text{V}/\text{m}$ field strength contour will be increased from 38,100 to 71,300 by increasing the aerial height from 172 ft to 420 ft. This site is also to be used for the Band II FM transmissions and the higher mast will greatly increase the population coverage of this programme.

Fig. 2 shows the complete service area expected from Blaen-plwy using an e.r.p. of 1kW and an aerial height of 420 ft above ground.

Cardigan and towns along the Teifi Valley will still be outside the service area and so will the towns of Harlech, Dolgelley and Machynlleth. This is inevitable if only one low power transmitter is used to serve such a large and mountainous area.

4. RECEPTION TESTS OF WENVOE.

Reception tests of the television programme from Wenvoe were made at all three sites to determine whether the signal was adequate for direct relay.

At the Mynydd Bach site the signal exceeded about $1\text{mV}/\text{m}$ for 90% of the time and therefore was sufficiently reliable for direct relay from this site or as an intermediate link between Wenvoe and Blaen-plwy. The field strength of Wenvoe at Blaen-plwy received on an aerial elevated up to 500 ft was, however, only $40 \mu\text{V}/\text{m}$ for 90% of the time and direct relay would not be possible.

5. CONCLUSIONS.

Of the three sites tested, Blaen-plwy with an e.r.p. of 1kW and an aerial height of 420 ft, will give the best service in West Wales.

The received signal from Wenvoe will not be satisfactory for direct relay but a microwave link from the Mynydd Bach would be suitable.

APPENDIX

BLAEN-PLWY

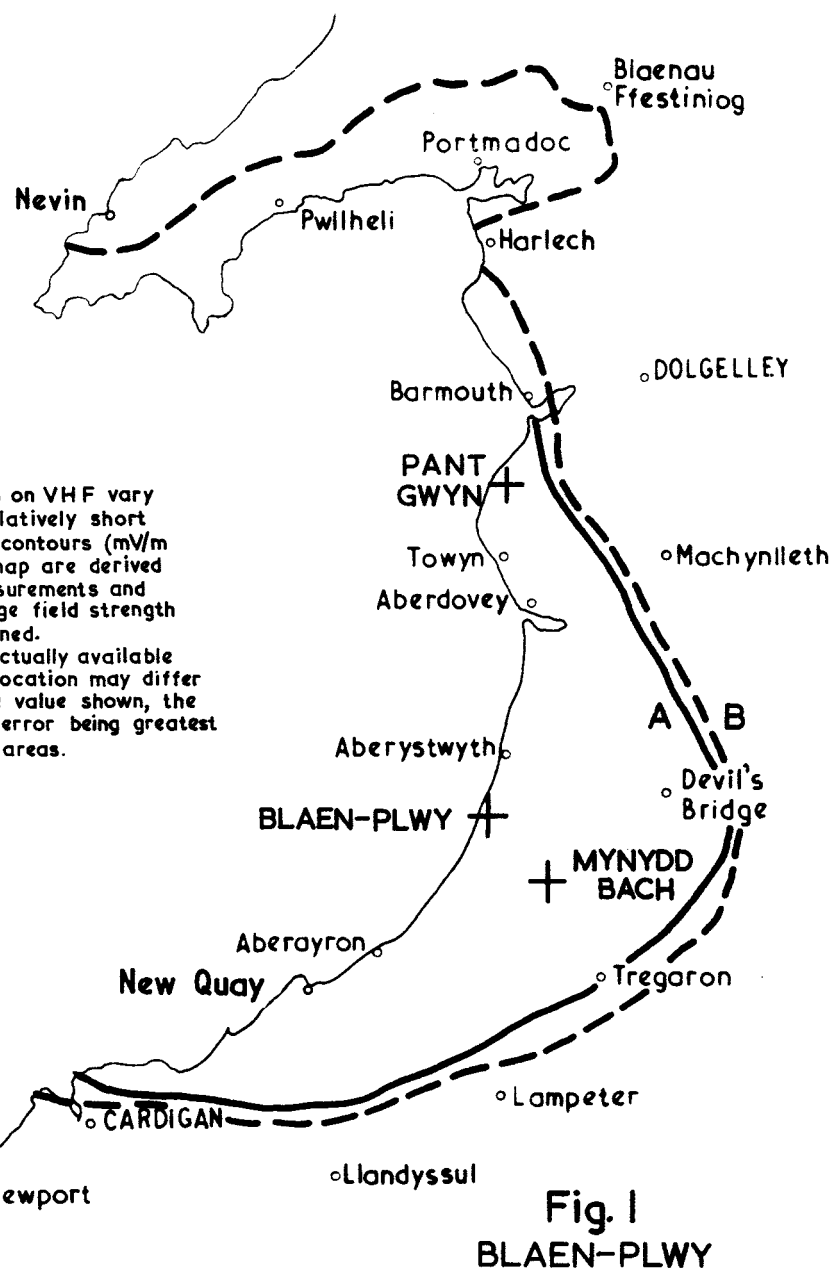
Latitude	52° 21' 36" N
Longitude	04° 06' 00" W
National Grid Reference	22/570757
Site height	565 ft a.m.s.l.

PANT GWYN

Latitude	52° 38' 31" N
Longitude	04° 05' 23" W
National Grid Reference	23/586070
Site height	690 ft a.m.s.l.

MYNYDD BACH

Latitude	52° 18' 03" N
Longitude	04° 00' 59" W
National Grid Reference	22/625689
Site height	1050 ft a.m.s.l.



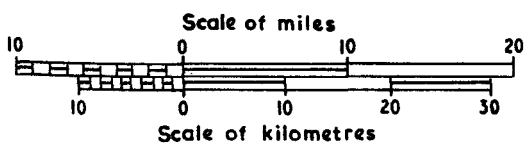
NOTE:-

Field strength values on VHF vary between points a relatively short distance apart. The contours (mV/m 30 ft a.g.l.) on this map are derived from site test measurements and represent the average field strength in the areas concerned. The field strength actually available at any particular location may differ by ± 10 dB from the value shown, the probable degree of error being greatest in hilly or built-up areas.

Fig. 1
BLAEN-PLWY
 E.R.P = 1kW

Comparison of 0.1 mV/m field strength contours for two aerial heights.

	Aerial height, a.g.l.	Nominal mast height, a.g.l.
A ———	172 ft	250 ft
B - - -	420 ft	500 ft





NOTE:-

Field strength values on VHF vary between points a relatively short distance apart. The contours (mV/m 30 ft a.g.l.) on this map are derived from site test measurements and represent the average field strength in the areas concerned. The field strength actually available at any particular location may differ by ± 10 dB from the value shown, the probable degree of error being greatest in hilly or built-up areas.

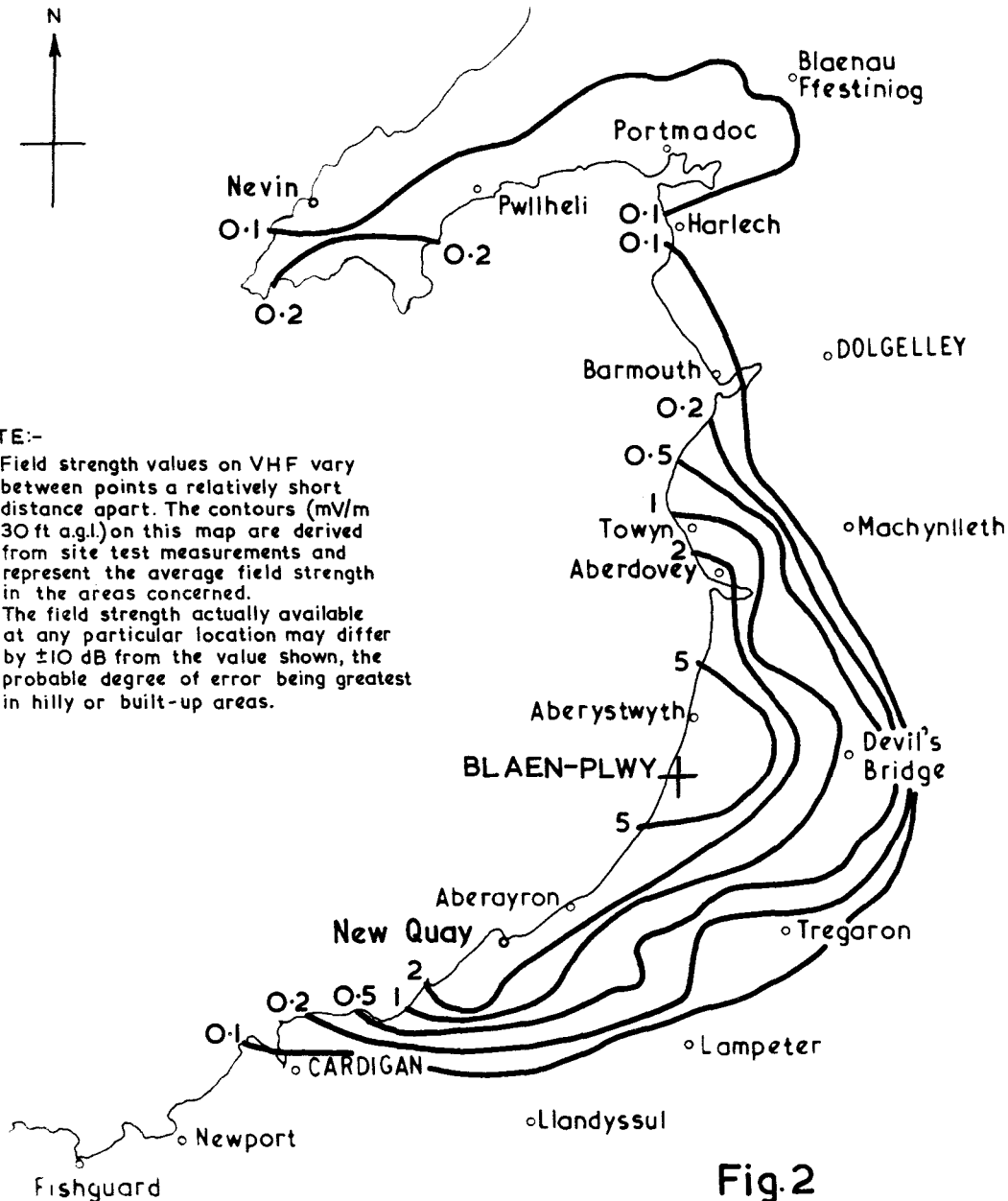


Fig.2

BLAEN-PLWY

Channel 3 (56.75 Mc/s)

Site height = 565 ft a.m.s.l.

Aerial height = 420 ft a.g.l.

E.R.P. = 1kW

Polarisation - horizontal

