

Technical evidence

The application however seemed to reflect to a considerable extent the previous ambition of the applicant to provide a signal strength in the target area higher than that required to achieve the CCIR standard which has been accepted as the basic standard for New Zealand.

Part of the problem grows from the concerns of the applicant—

1. To get a very high standard of signal into the principal urban area of Whakatane.

2. To provide from Mount Edgecumbe an adequate signal for some of the more difficult locations, notably Ohope Beach, Opotiki and Murupara.

3. To provide a signal that would be adequate for a summertime audience likely to be beach oriented.

4. To provide programmes on one frequency for people moving through the area listening to car radios.

The proposal made by the applicant was amended 3 times as the New Zealand Post Office declined to certify the application. There was also opposition to the engineering proposals from the Broadcasting Corporation of New Zealand.

The applicant called no technical evidence but we did hear evidence from Mr R. B. Vernall, Supervising Engineer, Radio Regulatory Operations, New Zealand Post Office. Mr Vernall who had an extensive career in engineering broadcasting coverage before he joined the Post Office 2 years earlier, considered that the proposal involved establishing a station with an unnecessarily strong signal.

The application originally provided for a maximum effective radiated power (e.r.p.) of 40 kW. Following discussions with the Post Office the applicant filed a *first amendment* which had the effect of proposing that the maximum e.r.p. would be whatever was required to provide a field strength of 66 dB uV/m in key areas of the target coverage area. These were:

Whakatane and Ohope Beach, Opotiki, Murupara, Te Puke and Te Kaha.

It was also proposed that such field strength should be provided as a minimum within an area marked on the plan included in the application.

It was proposed with the first amendment to halve the base power of the transmitter.

As a result of further discussions a *second amendment* was filed to provide for compliance with the requirements set out by the New Zealand Post Office in RB 20 and to change the field strengths mentioned above to read:

Whakatane, excluding Ohope Beach	– 72–81 dB uV/m
Opotiki	– 66
Murupara	– 66
Te Puke	– 66
Te Kaha	– 61

It was then accepted that it may be necessary to provide Ohope Beach with a translator.

Finally, at the hearing Mr Mortlock sought to file a *third amendment* to the application to provide for a mean effective radiated power of 10 kW. The antenna would be directional producing a quasi cardioid horizontal radiation pattern with the major lobe in the general direction of Ohope Beach and Te Kaha with the maximum e.r.p. in that direction not more than 20 kW.

The proposal was that the transmitter would produce such power as was necessary to provide the effective radiated power required to achieve the above objective.

The applicant proposed to conduct tests within 3 months.

Mr Vernall's evidence to us was first that there was no regulatory value in the description of the *mean* effective radiated power which is simply the average power radiated in

all directions. From a regulatory point of view the power to be defined is the *maximum e.r.p.*

Mr Vernall also expressed the view that the following median field strengths were appropriate:

Whakatane	– 66 dB uV/m
Opotiki	– 66
Murupara	– 66
Te Puke	– 66
Te Kaha	– 54

In this respect he differed from the assessment of the BCNZ witness Mr Gracie who would have rated Opotiki for 60 dB and Murupara for 54 dB. He also differed from the applicant in agreeing with Mr Gracie that, having regard to its population density, 54 dB was adequate for Te Kaha. He considered that if that field strength was achieved in Te Kaha the median field strength in Whakatane would be more than 66 dB.

He also said that 54 dB would be achieved at Te Kaha if 66 dB was achieved at Opotiki. He advocated the directional pattern of the antenna be changed to be directed towards Opotiki rather than Ohope Beach.

The field strength target for Opotiki would obviously give a bonus for Whakatane coverage in terms of higher field strengths.

As far as tests were concerned he did not consider it would make any difference what mast was used on Mount Edgecumbe, either the BCNZ or the Electricity Department, as once it was a reasonable height it was not the height above the ground level at the site that was effective but the height above sea level.

He thought that the BCNZ tests which had been taken at thousands of positions could be converted from the TV Band III and scaled to give coverage by reasonable deduction.

The final stages of approval by the Post Office involved the verification of performance and proof of the performance of field strengths and allowed for adjustments to be made to meet the original objectives. These adjustments may be up or down.

He also considered it necessary to see a polar diagram which adequately describes the horizontal radiation pattern from the transmitter.

Mr Vernall said that what was essentially being considered was a variety of proposals. The proposal by the BCNZ was a practical cost effective one in the Corporation's view and involved in simple slant panel array on one corner of the television transmitter tower. The weakness of this signal would be towards Murupara and he could not disagree with the wish of the applicant to improve the signal into Murupara to 66 dB.

The Broadcasting Corporation of New Zealand was concerned that excessive signal did not enter the Tauranga area which was the base for their station 1ZD. This had been referred to by the Tribunal in its earlier decision.

Mr Gracie's calculations showed that a proposal to use a comparatively low power transmitter on the BCNZ tower would have brought an adequate signal to Whakatane but a less than adequate signal to Opotiki, Murupara and Te Kaha.

We accepted that there should be some increase in the effective radiated power which would involve either a different radiation pattern or a higher power to produce a higher e.r.p.

We did not however accept the case for the applicant that it should be granted a maximum effective radiated power towards Opotiki of 20 kW.

The BCNZ's concern partly arises from the fact that it may well be using the same transmission point for later FM services into the area. The FM technical rules require emissions from a common site to provide approximately equal field strengths for similar coverage objectives. The proposal to use a stronger transmitter power than was generally accepted as needed for the area would then force the BCNZ to have similar power for