

WATER AND SOIL CONSERVATION ACT 1967:

APPLICATION BY THE QUEEN ELIZABETH THE SECOND NATIONAL TRUST

FOR A NATIONAL WATER CONSERVATION ORDER

IN RESPECT OF THE MOTU RIVER

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A. WATER AND SOIL CONSERVATION ACT 1967: APPLICATION BY
QUEEN ELIZABETH THE SECOND NATIONAL TRUST PURSUANT TO
S.20A FOR A NATIONAL WATER CONSERVATION ORDER

TO: The Minister of Works and Development

1. THE QUEEN ELIZABETH THE SECOND NATIONAL TRUST (hereafter referred to as the Applicant) a statutory body constituted under the Queen Elizabeth the Second National Trust Act 1977 with functions related to and affected by aspects of water conservation HEREBY APPLIES for the making of a NATIONAL WATER CONSERVATION ORDER in respect of the Motu River on the terms specified below.

2. THE APPLICANT FURTHER APPLIES FOR the said Order to be made on the following terms:-

- (a) The Order to be applied to the Motu River and its associated major tributaries:- Waitangirua; Mangaotane; Takaputahi; Te Kahika; and Mangatutara; from the Motu Falls (Map Reference:- NZMSI N88/007887) to the sea (Map Reference:- NZMSI N70/010366) (hereinafter referred to as the Motu River area). The river area is shown on the map at page 3A of this Application.
- (b) The Order to specify, pursuant to section 20D(2), the preservation of the Motu River area in its natural state; and
- (c) The Order to provide, pursuant to s.20D(3)a, for the retention in its natural state of the quantity, rate of flow and level of the natural water in the Motu River area in recognition of the wild, scenic and other natural

characteristics of the waters including their value for recreational, fisheries, wildlife habitat and scientific purposes.

- (d) Pursuant to s.20D(3)c and (4) the Order to provide for a prohibition on the granting of any right under s.21 or s.23 to dam any part of the Motu River area.
- (e) Pursuant to s.20D(4) the Order to be subject to:-
 - (i) a condition prohibiting the grant of any right pursuant to s.22 to dam any part of the Motu River area.
 - (ii) a condition requiring that any future investigations of the hydro potential of the Motu River area be subject to an environmental impact report and audit; and a prohibition on further road or track construction in areas visible from the river.
 - (iii) a condition requiring that any application for revocation or variation of any Order made pursuant to s.20E shall be accompanied by an Environmental Impact Report which shall be audited by the Commission for the Environment prior to any referral of the application by the Minister to the Authority in terms of s.20E.
 - (iv) Such further conditions, restrictions or prohibitions as may be appropriate to ensure the preservation of the natural waters of the Motu River area as far as possible in their natural state.

3. THE APPLICANT undertakes to supplement the information contained in this Application in such manner as may be required by the Minister pursuant to s.20A(2) of the Act.

DATED at Wellington this 29th day of April 1982

THE QUEEN ELIZABETH II NATIONAL TRUST
By its solicitors and duly authorised
agents Russell McVeagh McKenzie
Bartleet & Co.



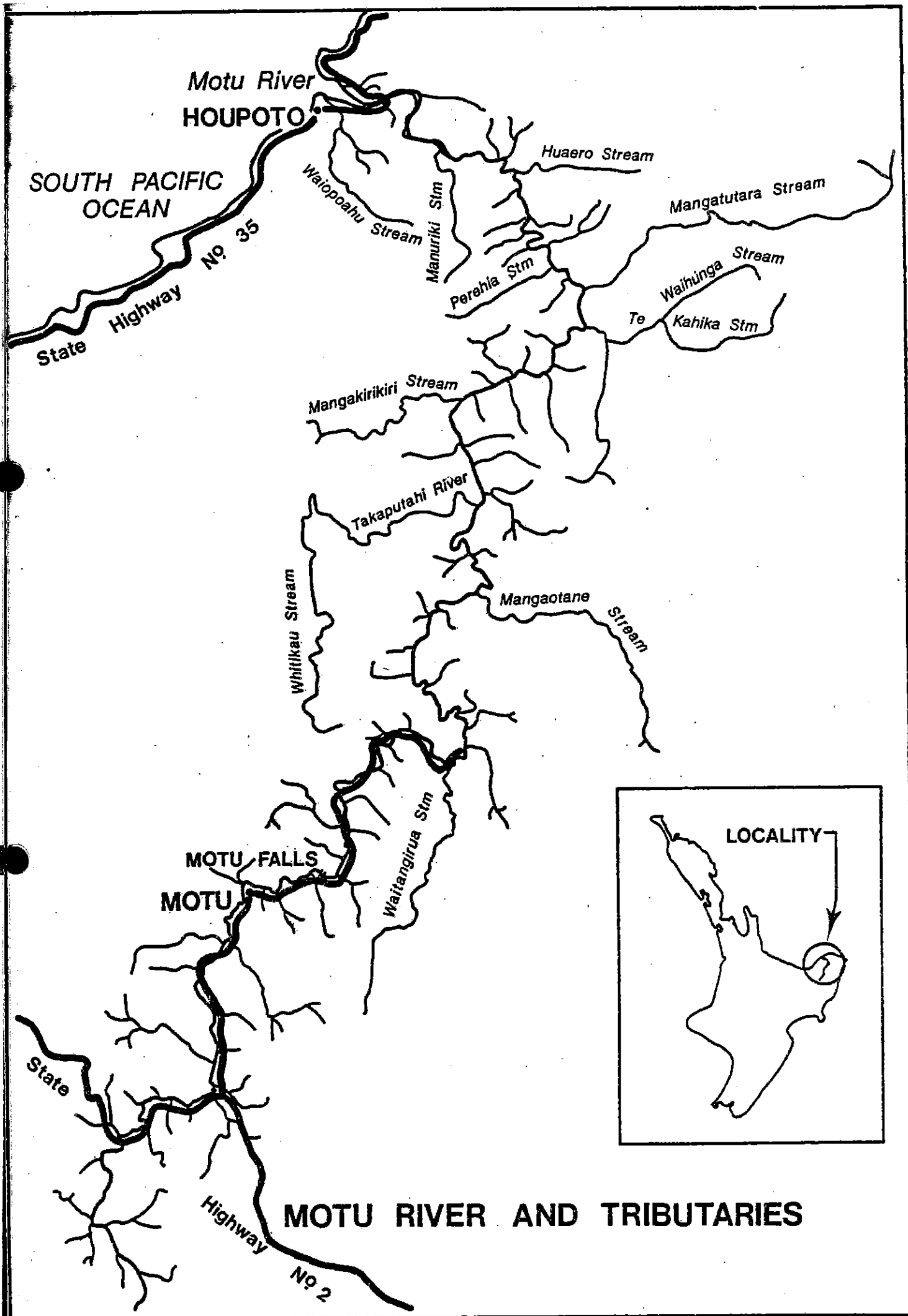
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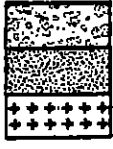
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MAPS AND DIAGRAMS

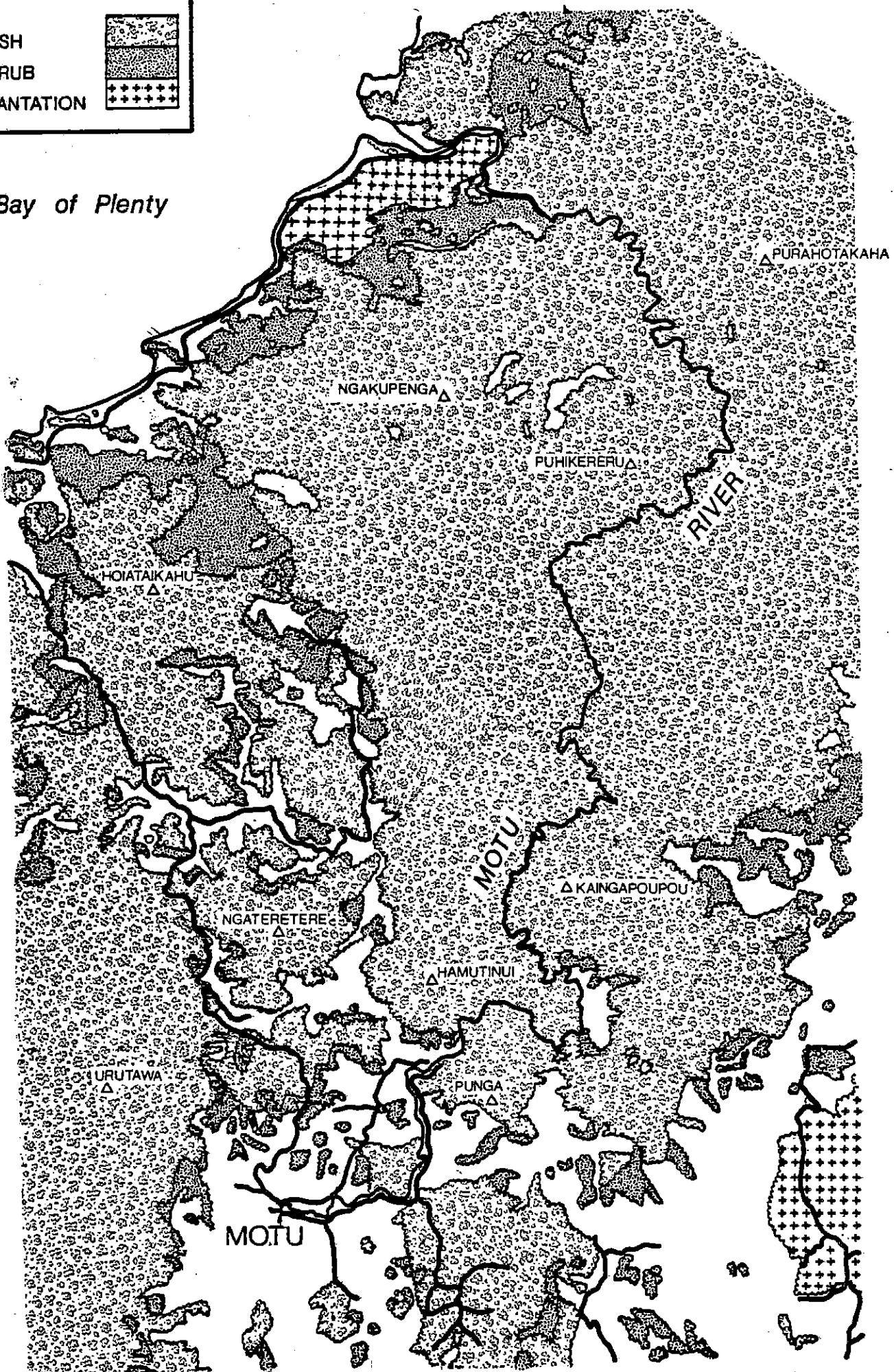


MOTU RIVER AND TRIBUTARIES

BUSH
SCRUB
PLANTATION





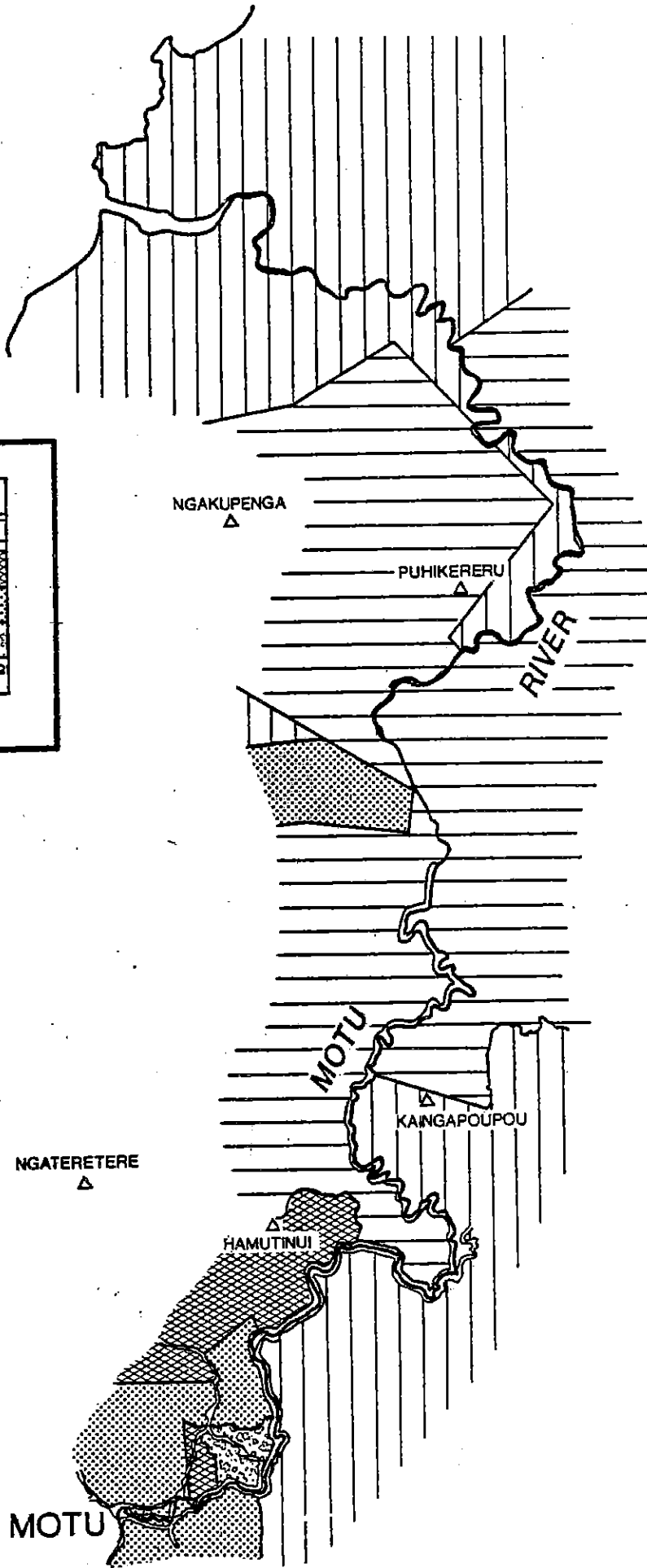
Bay of Plenty



VEGETATION TYPES

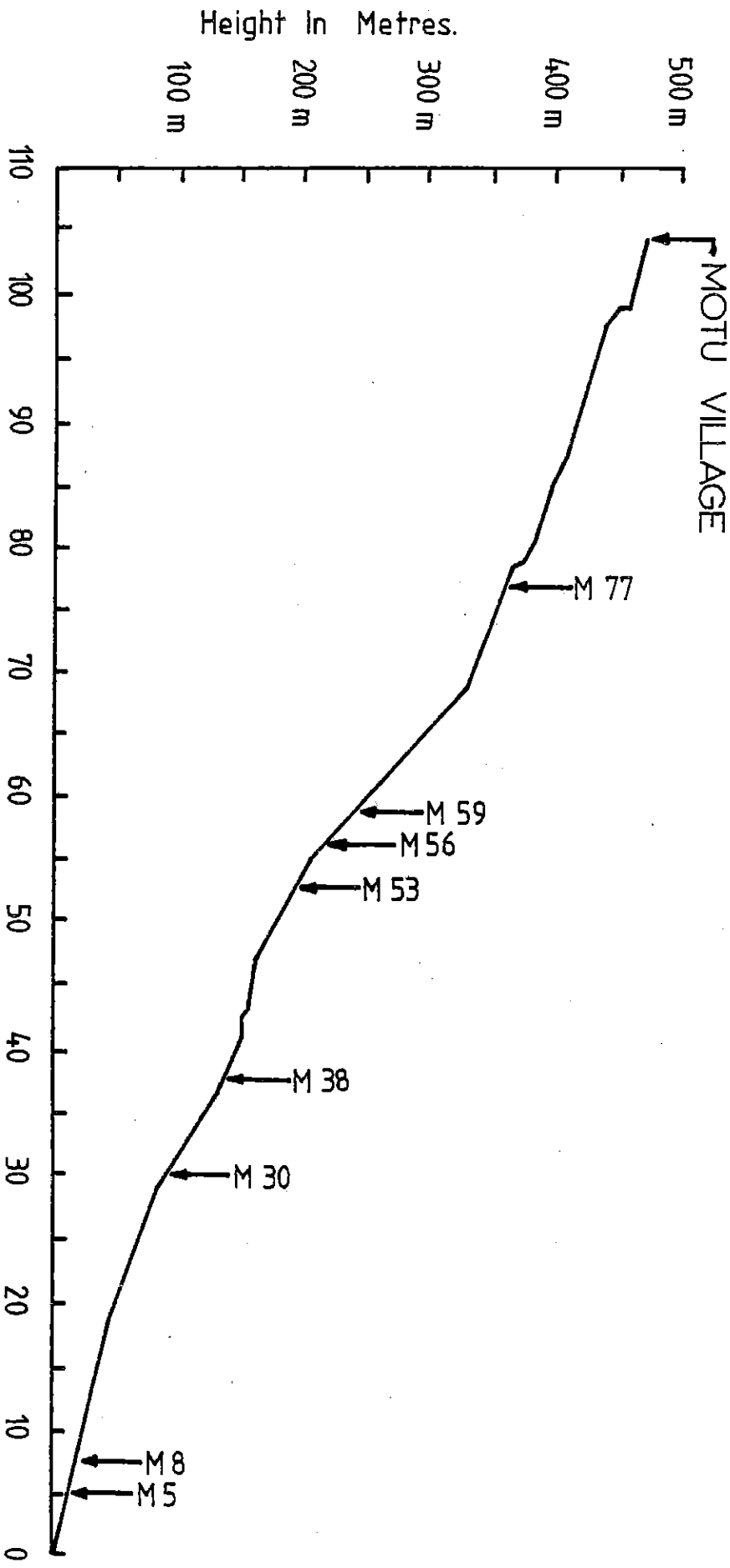
Bay of Plenty

MAORI LAND	
STATE FOREST	
CROWN LEASEHOLD	
FREEHOLD	
RESERVES	
LAND RESERVED FROM SALE	



LAND TENURE

MOTU RIVER POWER INVESTIGATIONS
LONGITUDINAL RIVER PROFILE SHOWING POSSIBLE DAM SITES.



B. INFORMATION AND PARTICULARS IN SUPPORT OF APPLICATION FOR NATIONAL WATER CONSERVATION ORDER

1. Status of the Applicant.

- (a) The Queen Elizabeth the Second National Trust was established by the Queen Elizabeth the Second National Trust Act 1977 (hereinafter referred to as the Act) in December 1977 to encourage and promote the provision, protection and enhancement of open space for the benefit and enjoyment for the people of New Zealand. Open space is defined very widely in the Act as:-

"Any area of land or body of water that serves to preserve or to facilitate the preservation of any landscape of aesthetic, cultural, recreational, scenic, scientific, or social interest or value".

- (b) Apart from its general functions related to open space under section 20 of the Act, section 20(2)(b) specifically provides that the Trust shall:
"formulate...specific proposals for the provision, protection, preservation, restoration, enhancement and use of open space".
- (c) A joint statement of wild and scenic rivers policy was made in October 1979 by the Minister of Works and Development and the Minister of the Environment. This statement particularly recognised the Trust as providing an advisory and advocacy role in relation to interest groups. Since this time the Trust has been closely involved in a range of matters related to wild and scenic rivers including the making of submissions on the Water and Soil Conservation Amendment Act 1981 which introduced the concept of wild and scenic river protection.
- (d) In October 1980 the Trust made an application to the National Water and Soil Conservation Authority seeking

the establishment of a minimum flow (based on the river's natural level) for the Manganui-A-Te-Ao River. The prime purpose of this application was to seek to have this river, the last unmodified river rising from the central volcanic mountains of the North Island, left undisturbed so that its wildlife and recreational values were not jeopardised.

- (e) The Trust is represented on the Motu River Working Party on Recreation and Scenic Values which has been set up by the Ministry of Works and Development to study the effect proposed power development options would have on these aspects of the Motu river.

- (e) The Trust resolved at its meeting of 22nd February 1982 to seek a national water conservation order on the Motu River acting on behalf of a variety of other organisations concerned for wild and scenic river preservation.

- (f) In view of the specific statutory provisions referred to above and its general involvement in issues related to wild and scenic river protection the Trust qualifies as a body entitled to apply for a Water Conservation Order pursuant to section 20A of the Water and Soil Conservation Act 1967.

2. General Description of the Motu River area

- (a) The Motu River rises on the south west side of the Raukumara Range, its catchment forming a high country basin between the Raukumara and Huiarau Ranges. The upper Motu meanders across the flat open farmland of the Matawai district (altitude 500 metres) to the picturesque Motu Falls (8 metres high), which are some 50km from the source. The river then descends another 115km to reach the sea 41km north of Opotiki. Below the falls the river tumbles through a series of steep walled and steeply

graded gorges clothed in dense native bush. After the Mangatutura confluence is reached the valley opens out, rocky banks give way to shingle beaches and near the coast the native bush is replaced by kanuka and young pine.

- (b) Several tributaries join the Motu between the falls and the sea, the most important being the Waitangirua flowing in from the true right at 78km from the mouth; the Mangaotane from the right at 59km; the Takaputahi from the left at 50km; the Te Kahika from the right at 33km and the Mangatutara from the right at 30km from the river mouth. The Motu River and its tributaries are shown on the map at page .
- (c) The Motu is one of the largest rivers in the Bay of Plenty region but it is not a major river by New Zealand standards (MWD Report, 1979). The mean annual rainfall in the Motu Catchment varies from about 4,000mm along the Raukumara Range in the north east to less than 2,000mm in the north and south of the Catchment and 1,400mm at the coast. Mean flow recorded at 3 sites on the Motu River between 1957-79 and annual rainfall and run-off calculated by Riddell for the Catchment above each of these three sites are given in table 1 below (Riddell 1980).

Table 1

<u>Site</u>	<u>Rainfall in</u> <u>Catchment</u> (mm/yr)	<u>Runoff from</u> <u>Catchment</u> (mm/yr)	<u>Mean annual flow</u> <u>in river</u> (m ³ /s)
Waitangirua	1960	1435	13.6
Mangaotane	2360	1770	36.3
Houpoto	2690	2040	89.3

- (d) The River is noted for its flash flooding - this is one of the great hazards faced by river users. The magnitude of floods as estimated at Waitangirua and Houpoto is shown in Table 2.

Table 2

<u>Site</u>	<u>Mean annual flow</u> (m ³ /s)	<u>Flood return period</u> (yrs)	<u>Estimated peak flood flow</u> (m ³ /s)
Waitangirua	13.6	2	210 - 270
		15	380 - 460
		500	650 - 740
		1,000	700 - 800
Houpoto	89.3	2	1730 - 1980
		15	2860 - 3280
		500	3980 - 5070
		1,000	4700 - 5390

Several climatic and geographic factors contribute to the flood hydrology of the river. The majority of storms are less than 48hrs in duration and half are less than 36hrs in duration. In general greatest runoff occurs during storms of 24 to 48 hrs duration. Ground water storage in the catchment is small so most precipitation runs off directly into streams. Storm intensities have been found to influence the size of peak flows, but total runoff amounts depend more on total volumes of rainfall. The relatively steep gradient and absence of lake storage in the river mean that floods occur quickly following heavy rain and have large instantaneous peak flows compared with floods in lake controlled systems.

- (e) The rivers of the East Cape regions are noted for the very large sediment loads carried (Mandeno et al 1979, Tonkin and Taylor, 1978). Adams (1979) estimated annual suspended sediment yields of 1500 t/km²/yr at Waitangairua and 3000 t/km²/yr at Houpoto. These figures are much higher than those obtained for other North Island rivers developed for hydro, e.g. Tongariro: 110-430 t/km²/yr and Waikato: 80 t/km²/yr.

3. General Introduction to Application

- (a) As a national organisation with a major role in wild and scenic rivers protection it is the Trust's hope that a wide variety of water bodies throughout New Zealand will receive the protection of Water Conservation Orders pursuant to the Water and Soil Conservation Amendment Act 1981. While this present Application seeks to preserve a large section of the Motu River area primarily on the basis of its wild and scenic values other water bodies with equally important values or characteristics will clearly require varying degrees of preservation and/or protection in order to ensure that the policy embodied in the new legislation will be successfully implemented.
- (b) As the Water and Soil Conservation Amendment Act 1981 did not come into force until April 1st it was not possible to lodge this Application prior to the grant of hydro investigation water rights for the Motu River to the Ministry of Works and Development. While the applicant is not necessarily opposed to the investigation of the hydro potential of the Motu River the grant of water rights for such investigations would appear premature²¹ and potentially restrictive of the National Water and Soil Conservation Authority's ability to give a full and proper consideration to this Application.
- (c) In lodging this Application the Trust is aware that the Ministry of Works and Development, as part of its general hydro investigations, is sponsoring detailed studies of the natural resources of the Motu River. As noted above the Trust is represented on the working party on recreation and scenic values. It is also understood that the final results of many of these studies will not be known until 1985. Despite these ongoing studies the basis of this Application is that sufficient information is currently available to make the basic decision to preserve the wild and scenic character and values of the

Motu River area. The overall rationale for the preservation order sought in this Application is not dependent upon detailed scientific information on the needs of wildlife or fisheries or cost-benefit studies comparing the value of electricity to wilderness. The Application seeks an Order which preserves the wild and scenic character of the river, despite its potential for hydro development, in a manner which fulfills the broad legislative goal of the Water and Soil Conservation Amendment Act 1981 (Section 2):- "to recognise and sustain the amenity afforded by waters in their natural state".

- (d) The particulars and information provided in support of this Application are intended to provide the Minister with sufficient information to enable referral, pursuant to section 20A(3) of the Water and Soil Conservation Act 1967, to the National Water and Soil Conservation Authority. The Applicant reserves the right to present further detailed information or evidence in support of this application at hearings conducted by the Authority pursuant to section 20B(3).

4. Overall Justification for National Water Conservation Order

Introduction.

- (a) The overall justification for the making of a National Water Conservation Order in respect of waters of the Motu River area is based upon the national importance of the wild, scenic and other natural characteristics of the waters in their natural state.

The river and its tributaries flow through one of the last remaining extensive wilderness areas of the North Island of New Zealand. The waters of the Motu River area form an integral part of an extensive, isolated,

uninhabited tract of forested land largely unmodified by human activities. The land and water of the Motu Catchment represent one of the few remaining substantial vestiges of primeval New Zealand where the major influences on the landscape are natural forces rather than the impact of man.

Preservation of the Motu River area waters in their natural state will not only ensure the protection of the natural characteristics and values directly associated with the river waters but also assist in the protection and enhancement of the wilderness qualities of the associated catchment a large part of which was proclaimed State Forest Park on 26 April 1979.

- (b) It is recognised that the making of a National Water Conservation Order in the terms sought by this Application would preclude any development of the Motu river area for hydro electricity generation. Thus the national, regional, and local economic benefits arising from the construction and operation of a hydro electricity scheme would clearly not be obtained. The significance of this loss is difficult to measure. From a national viewpoint the existence of other potential sources of electricity suggest that the loss of the power generation potential of the Motu River would not be of critical concern over the short to medium term. The Motu River is not listed on the current power generation plan as having any priority for development during the next 15 years. At the local level the activities associated with the construction phase of hydro dams would clearly provide important short term employment opportunities and associated economic benefits. A local source of electricity would also contribute to both the local and regional economies of the area. However, in the light of the current low priority for the hydro development of the Motu any such benefits would not accrue for some time in the future.

- (c) While a decision to preserve the Motu River would preclude any form of hydro development this application does not attempt to make any direct economic comparisons between the value of wilderness and the value of electricity. While it may well be possible to calculate with reasonable accuracy the dollar value of electricity generation foregone it is considered unrealistic to attempt to place notional dollar values on the essentially subjective and intangible benefits derived from preserving the Motu in its natural state.

In the applicant's view the electricity potential foregone by preserving the Motu River must simply be seen as a cost of preserving the rapidly diminishing wilderness resources of the nation. It may well be that at some future date the national interest will require that consideration be given to harnessing the hydro potential of the Motu River. For this reason the applicant is not opposed to carefully controlled hydro investigations which do not involve the need for further road or track construction in areas visible from the river or any other activities detrimentally affecting the wild and scenic qualities of the area.

- (d) Should future national electricity needs become sufficiently critical to override environmental considerations the revocation provisions of the Water and Soil Conservation Act 1967 provide a procedure which can be followed to uplift the protection which the applicant now seeks to impose. Thus this application is not an attempt to "lock up" the resources of the Motu River. An Order in the terms sought would have the effect of not only preserving the river in its natural state but also retaining future water resource utilisation options.

At this stage any major modification of the Motu River area by man, particularly in the form of hydro dams, would mean the irretrievable loss of the amenity afforded by the waters in their natural state.

5. Specific Legal Considerations Justifying a National Water Conservation Order.

The Water and Soil Conservation Act (section 20B(6)) provides that in considering an application for a National Water Conservation Order the Authority shall take into account:-

- "(a) All forms of water based recreation, fisheries and wildlife habitats;
- (b) The wild, scenic, or other natural characteristics of the river stream or lake;
- (c) The needs of primary and secondary industry and of the community; and
- (d) The provisions of any relevant regional planning scheme and district scheme."

The following outlines the characteristics and values of the Motu River area in terms of this above section:-

5.1 "All forms of water based recreation, fisheries and wildlife habitats."

(a) Water based recreation.

The Motu River area has a number of general attributes which make it particularly valuable as a wilderness resource for water based recreation. In particular these include:-

- Road access to either end of the wilderness corridor formed by the river and its adjoining shorelines.
- Sufficient water flow for canoeists or rafters to generally rely upon year round use of the river.
- Location in the North Island relatively close to major population and tourist centres.

- (i) Rafting and Canoeing. The Motu River is rated as one of the best white water rivers in the North Island by both rafters and canoeists. Its recreational value is rated as exceptional in a survey undertaken on behalf of the New Zealand Canoeing Association (New Zealand Recreational River Survey - G.D. & J.H. Egarr).

There are undoubtedly a number of reasons for the rivers recreational popularity but from the point of view of canoeists and rafters the value of the recreational experience provided by the waters is closely linked to the wild nature of both the waters and the adjoining land.

The Motu constitutes one of the best water-based recreational resources for experienced canoeists or rafters available in New Zealand. The main reasons for this are linked to the river's wilderness qualities as well as the challenge of the waters themselves. The river provides approximately 100 kilometres of gorge through the last extensive area of untracked bush in the North Island, which is readily accessible from either end. On no other river used for canoeing or rafting is it possible to be so remote from civilisation and so dependent on canoeing or rafting skills. The rapids of the river encompass a range of types: rock chutes, boulder chutes, and shingle rapids many of which cannot be portaged. In contrast to the frequent and varied rapids there are areas within the gorges of slower moving waters offering tranquility and respite from the rapids.

- (ii) Jet Boating - The first 30 kms above the river mouth are suitable for jet boating and as one of the few white water rivers north of Manawatu it has been rated as excellent recreational water for jet boating activities. (Egarr & Egarr, 1981)

- (iii) Commercial Rafting. At the present time there are 4 separate commercial rafting operations taking trips down the Motu. These have become increasingly popular with both New Zealanders and overseas visitors and there is clearly potential for the controlled expansion of commercial rafting operations on the river. In view of the extensive rapids, and the isolated, rugged terrain, water based recreation on the river has inevitable hazards which must be recognised as an inherent part of the wilderness experience provided by the river.

(b) Fisheries

- (i) The fisheries of the Motu have been described in the following terms (Rowe 1981):-

'the occurrence and morphology of the four native species reflects well the environmental conditions found within the Motu and demonstrates the intrinsic value of the Motu as a typical, wild, relatively unmodified New Zealand river.'

- (ii) The Motu supports fisheries for whitebait and eels. Kahawai are caught in the mouth of the river. Following the reopening of hydro investigations in 1977 an electric fishing survey of 61 sites on the Motu river above M.77 (i.e. 77km upstream from mouth of Motu River) and on the tributaries was carried out by the Fisheries Research Division and the Department of Internal Affairs.

(iii) The river is characterised by four indigenous species: the long finned eel, the koaro (a whitebait species), the blue gilled bully, and the torrent fish. Five other indigenous species plus brown trout were also found but rainbow trout were not found despite having been liberated extensively (Ewing 1978).

(c) Wildlife habitats

- (i) The waters of the Motu catchment provide a haven for many species of terrestrial vertebrates but there is as yet no comprehensive data on their distribution and densities. Despite this current lack of detailed information the waters of the area clearly support a variety of indigenous species some of which are considered endangered. This is particularly so in relation to the Blue Duck.
- (ii) The ecology of the Blue Duck within the Motu system is not well understood but it appears that the Motu and tributaries provide high quality habitat. Up to eighty birds have been noted on the Motu in summer but they are noticeably absent at other times. It is thought that the main population live on some of the tributaries and that the Motu is used after the breeding season for a brief period by displaced juveniles and adults.

5.2 The Wild Scenic or other Natural Characteristics of the River

(a) Wilderness Characteristics.

- (i) The Water and Soil Amendment Act 1981 provides no definition of "wild" characteristics however some guidance as to the scope of the term can be found in the Concise Oxford Dictionary which defines "wild" as (inter alia):-

"not civilised, unrestrained, uncultivated desolate appearance, unfrequented; and

"Wilderness" as:- "uncultivated" and "uninhabited tract".

- (ii) The National Parks and Reserves Authority of New Zealand has adopted the following definition for land based wilderness:-

"An area whose predominant character is the interplay of purely natural processes, large enough and so situated as to be unaffected, except in minor ways, by what takes place in the wilderness around it."

- (iii) Guidelines promulgated pursuant to the United States Wild and Scenic Rivers Act (Public Law 90-542) defines "wild river areas" as:-

"Rivers or sections of river that are free of empoundments and generally inaccessible except by trail with water sheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America."

- (iv) The guidelines further define "generally inaccessible" to mean: "no roads or other provisions for overland motorised transport... The presence of one or two inconspicuous roads leading to the river area will not necessarily bar wild river classification."

"Essentially primitive" is defined to mean that the shoreline is free of habitation and other substantial evidence of mans intrusion".

"Unpolluted" is defined to mean water quality that at least meets standards for contact recreation except where exceeded by natural background conditions.

(v) Some 50% of the Motu Catchment is within the Raukumara State Forest Park. This Park covers a major portion of the Raukumara Range, which is well known for its wild and remote character. The major goal for management of this Park by the New Zealand Forest Service seems likely to be the maintenance and enhancement of the secluded and untamed character of the area. Apart from the protection of native forest in "steep-land protection" zones it seems likely that substantial areas of forest within the park will be managed as "wilderness" i.e., as areas of primeval character protected and managed so as to perpetuate natural conditions. The final definition of such areas and the management prescriptions which will eventually be applied by the New Zealand Forest Service will be resolved following publication of the Draft Management Plan for the Park. Regardless of the final detail for such plans it seems clear that any hydro development of the Motu River area within the Park would seriously compromise proposals for such wilderness management.

(vi) In response to concern at the rapidly diminishing areas of wilderness in New Zealand the Federated Mountain Clubs of New Zealand have published a proposal for the protection of ten wilderness areas throughout New Zealand which meet the criteria of:-

- "natural" landscape
- remoteness
- sufficient size (greater than 20,000 hectares and requiring a minimum of 2 days travel on foot to cross)

- adequate buffer zone (approximately one days travel)

Of the ten areas proposed only two are in the North Island and one of these is the Raukumara (Motu) wilderness. The area is described as the "wildest remaining area of the North Island". (Federated Mountain Clubs of New Zealand, 50th Jubilee Conference August 22-24 1981,)

- (vii) By any standards of comparison the waters of the Motu River area represent a nationally significant wilderness resource. The waters are free-flowing and unaffected by any man-made impoundments, diversions or pollution. Both the waters and associated shoreline are free from modification by man, are uninhabited, and isolated and could readily be described as a last vestige of primitive New Zealand.

(b) Scenic Characteristics.

- (i) In the New Zealand Recreational River Survey, Egarr & Egarr (1981) described the Motu as one of the country's most beautiful rivers. They emphasize its rugged isolation, its numerous rapids and cascades and the beauty of the virgin bush flanking the river. From the falls to the Mangatutara confluence they rate the scenery as "exceptional" and from Mangatutara to the sea as "impressive". The scenic values of the Mangaotane and Takaputahi tributaries are rated similarly to the Motu.

*Note: Scenic Value of the rivers survey was assessed on a six part scale - dull, uninspiring, moderate, picturesque, impressive and exceptional.

(ii) These assessments are derived from the systematic survey of 64 New Zealand rivers (Egarr *et al* 1979) in which the Motu scored higher than any other North Island river and was equalled only by the three South Island rivers, the upper Buller, Middle Grey and Hollyford rivers. The method of assessment and scores for six North Island rivers are shown in Table 3.

Table 3

	Vegetation	Banks and river bed	Landscape	Wilderness quality	Water quality	Water movement	Other qualities	TOTAL
Kaituna R. Gorge (L. Rotoiti- Paengaroa)	3	4	1	4	1	4	0	17
Motu R. Gorge (Motu Falls - Mangatutara Stm)	3	4	2	4	2	3	0	18
Rangitikei R. Kamanawa Ranges	2	4	3	3	2	3	0	17
Moawhanga R. Moawhanga - Rangitikei R.	2	4	0	3	2	4	0	18
Wanganui R. Retaruke - Phipiriki	4	3	3	4	0	1	2	17
Tongariro R. to Poutu intake	3	3	3	3	2	3	0	17

Note: The first six parameters are scored out of 4, the seventh out of 2.

(iii) Any evaluation of the scenic values of the Motu River area waters must inevitably involve subjective responses and judgments. However,

the very nature of the Raukumara Ranges places the river waters in an area of high quality landscape deriving from a variety of factors including the juxtaposition of diverse textures and patterns of landform, vegetation and moving waters. The scenic qualities of the river can be experienced in varying ways by the water-based recreationist or the land-based tramper or hunter.

5.3 Needs of Primary and Secondary Industry, and the Community.

(a) Hydro-Electric Potential of River

- (i) Hydro development of the Motu River forms part of the long term energy plan for New Zealand although it is not within the current 15 year program outlined in the 1980 Energy Plan published by the Ministry of Energy.
- (ii) Current assessments indicate that at least 1600 GWh/y of electrical energy could be obtained by full development of the river below Motu village. ("Motu River Power Investigations - Scope of Investigations," MWD, December 1979)
- (iii) Current proposals for full development of the river would involve building a cascade of at least four dams down the river, each dam to be approximately 100 metres high. Power houses would be built adjacent to the dams or connected by a short tunnel. Storage lakes would extend from the top of one dam to the foot of the next dam upstream, would flood heavily vegetated land and would have an operating water level range of approximately 4 metres. Investigations have been directed toward determining the best dam sites and the most

attractive combinations of dams and have centred around nine sites. These are shown at page 3D. Partial development, using only one or two sites to produce less energy has also been considered.

- (iv) A dam near Houpoto either at M5 (ie. 5km upstream from the mouth of the Motu River) or M8 where the flow of the river is greatest is a basic feature of all development proposals. So far surveying, bore holes, shafts, drives, aggregate tests, seismic surveys and geological studies have been carried out here.

The next step of the cascade would be at either M30 or M38 (Mangatutara - Puketoetoe) depending on the height of dam selected at Houpoto. There is no road access but some work at M30 has been carried out by helicopter. There are 3 possible dam sites in the Mangaotane locality at M53, M56 and M59. A 20 kilometre 4-wheel drive track has been constructed to M56, the most promising site surveyed so far. There appear to be several possible dams in the vicinity of Waitangirua - Motu confluence. A power house would be located at M77 downstream.

- (v) The possibility of diverting water from the largest tributary, the Takaputahi Stream is also being investigated. A 5 kilometre tunnel bringing water from a diversion dam at T17 (ie. 17km upstream from the confluence of the Takaputahi Stream with the Motu River) or T23 into the Motu above the Mangaotane confluence would increase the flow through the downstream stations by 20%.
- (vi) In the event that proposals for a national hydro scheme were abandoned for technical or economic reasons there would remain the possibility that

part of the Motu river or its tributaries would be developed by the Poverty Bay or Bay of Plenty Electric Power Boards.

Mandeno, Chitty & Bell (1979) were commissioned by New Zealand Energy Research and Development Committee (NZERDC) to report on the small hydro potential of the West Poverty Bay region. They confined their appraisal of Motu to the upper reaches and tributaries because of NZED's interest in the river. Three possible schemes on the Motu were investigated but none were considered satisfactory. Two alternative schemes on the Mangaotane stream and Mangatutara and Te Kahika streams were also considered.

- (vii) One possible small hydro option is the Takaputahi-Torere diversion scheme whereby $17.7\text{m}^3/\text{s}$ of water would be diverted from the Takaputahi Stream through a tunnel to a power house on the Torere River (Mandeno, Chitty and Bell, 1979).

- (viii) The economic cost of preserving the Motu River area from hydro development has been referred to above at page 10. Assuming the national need for the electricity potential of the Motu will not, on 1980 projections, arise until 1995 it is extremely difficult to calculate the real cost of the electricity foregone by a decision to preserve the river in its natural state. The marginal cost of generating electricity from alternative sources of hydro or from alternatives such as coal and/or gas in the 1990's is also difficult to predict. The implementation of the overall objective of the Water and Soil Conservation Act to "recognise and sustain the amenity of waters in their natural state" indicates that the loss of development

potential of certain high quality rivers was contemplated. Whatever the dollar value of electricity foregone it can only be regarded as the cost to the nation of preserving part of its wild and scenic heritage.

The above comments assume that it is in fact technically and economically feasible to construct hydro dams on the Motu.

(b) Water Supply

In recent years the water supply projects involving the Motu have been investigated for the purpose of supplying Gisborne City. One of these involved the Motu Falls but this alternative was considered uneconomic and not feasible in the short term. Should a Motu Falls water supply project be reconsidered the order sought in this application may well pose restrictions.

(c) Other Water Uses

(i) Usage of water from the Motu by the farming community above Motu Falls is not known. However, at this stage it is not envisaged that there will be any appreciable increase in demand for uses of the Motu River water by this community which would be incompatible with the Order sought by this Application. It is noted that section 20 D(7) preserves existing water rights or authorisations and the applicant would not seek any terms in an Order which would restrict the ability of the existing farming community to make reasonable use of the water resources of the Motu.

(ii) The development of land near the mouth of the Motu for forestry may lead to future demands for use of

the water resource but at this stage the nature of this demand is unknown.

5.4 "The provisions of any relevant regional planning scheme and district scheme."

- (a) There is no regional planning scheme for the area and the relevant district scheme is the Opotiki County Scheme.

The zoning of private and Maori owned land in the Motu Catchment allows for forestry as a predominant use. As the Water Conservation Order cannot impose conditions or restrictions on use of adjoining land it is possible that further land adjoining the Motu, particularly in the lower reaches, will be used to undertake forestry operations. Depending on the logging methods and safeguards adopted this might have adverse water quality effects on the river and detrimentally affect the scenic qualities of the lower part of the river. Should a water conservation order be made in regard to the Motu River area it may well be necessary to consider some form of appropriate zoning or other district scheme controls to ensure that the landscape visible from the river is not detrimentally modified by forestry operations.

- (b) A large part of the middle and upper reaches of the Motu Catchment is State Forest Park. The use and management of this land is thus not primarily controlled by the district scheme but by the provisions of the Forests Act.

The Draft Management Plan shortly to be published for the Raukumara State Forest Park will indicate the nature and extent of proposed wilderness areas in the vicinity of the Motu River area.

- (c) Any assessment of the importance of the Motu River to the Maori people and the likely impact of any conservation order, appears best left to the local Maori community should they consider it appropriate to make submissions in response to this application.

The Order as sought would place no restrictions on existing uses of the river for fishing and would serve to protect the existing fisheries habitat in its natural state.

C. Summary

On any comparison of New Zealand's remaining unmodified rivers the wild and scenic characteristics of the waters of the Motu River area clearly represent a nationally important wilderness resource of the highest quality. These characteristics while important in their own right also have high value for water-based recreation, wildlife and fisheries. In addition, the river waters form an integral part of one of the nations most important remaining land wilderness areas. Any major development of the river particularly for hydro dams will mean the irretrievable loss of an irreplaceable wilderness asset. The above factors clearly qualify the Motu River area as a prime candidate for preservation in terms of the Water and Soil Conservation Amendment Act 1981.

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