Taipa sewerage claim

4 The East Coast Sewerage Scheme

4.1 Design

4. THE EAST COAST SEWERAGE SCHEME

4.1 DESIGN

4.1.1 The East Coast Sewerage Scheme of the Mangonui County Council proposes the piping of sewage from several small communities stretched along the southern shores of Doubtless Bay, to a treatment plant at Taipa, the most westerly of the current settlements. Following treatment, the waste water is disposed of by relatively novel means. It is not piped to the sea or discharged to a river, as is usual, but is pumped overland to percolate through an artificial marsh in the adjoining catchment, some 2.5 kilometres from the Taipa town. The eventual discharge passes through various streams and rivers that find their way to Doubtless Bay at Aurere beach some three kilometres from Taipa.

It became important to the scheme that the discharge should be as far as practicable from Taipa. Taipa is a valuable fishing and recreational area, with potential for major resorts. It is also of immense significance in Maori history, and the foreshore provides a customary supply of food.

4.1.2 The treatment plant at Taipa is to be comprised of an aerated lagoon, which retains the effluent for three days, and a maturation pond, designed for 20 days retention. A mechanical aeration system enables the lagoon to be smaller than usual, with less flat land needed as a result. That is important in this area where flat land is at a premium. The maturation pond however is large. It is possible to have much more mechanised systems that use much less land than this scheme requires.

4.1.3 Sewage treatment may be classified according to three standards: primary, which involves solids' separation, secondary, which requires a biological breakdown, and tertiary, which provides for the removal of nutrients. The Taipa oxidation ponds provide a degree of treatment approaching tertiary. More intensive biological systems are available but do not cope with the varying loadings peculiar to summer resort areas. The main disadvantage with oxidation ponds is the large land requirement, but they appear to be preferred wherever the required land is available. Further nutrient removal is proposed in the use of the marsh.

4.1.4 The Taipa treatment site is 1 kilometre back from the foreshore, and adjoins Ryders Creek, which flows to Doubtless Bay at Taipa via the Taipa river. We will refer to it as 'the Ryders Creek Site'. Its location at that point reflects an original intention to discharge the treated effluent by that water-course. That was unacceptable to Taipa residents and local Maori; and rightly so in our view.

The Taipa river is a significant marine breeding area. J E Morton, Professor of Zoology at Auckland University, stressed the importance of the Taipa river mangroves and swamp marshes in the ecological cycle, and explained the deleterious impact of deoxygenation from treated effluent (documents A10 and A11).

In addition, at the river mouth and extending along the adjoining beach are the major shell fishing beds on the southern shores of the bay. That near the river mouth is said to be unique in New Zealand as three types of pipi are found there, covering an area of over 5 acres. On adjoining rocky areas, huai (cockles), paua and kina are to be found, while the mudflats, some 200 yards upstream, are used for floundering and the harvesting of karahu (periwinkles) (see evidence of Kawiti Tomars, documents A24, A26, A33, A41, A42). Traditionally the Taipa beach and river constitutes a major food gathering area that today is used by large numbers of the general public.

Oxidation ponds reduce but do not eliminate pathogenic bacteria and viruses from waste waters and their concentration in shell fish is such that a bacterially safe effluent would be required for a discharge at Ryders Creek, as was originally proposed.

4.1.5 Accordingly, a sea outfall at Doubtless Bay was subsequently mooted. As much dilution and bacterial die off would occur in the saline waters, and Taipa has a natural offshore current, the proposal may be technically feasible. There was much local opposition nonetheless. Doubtless Bay, though large, is relatively shallow, and being semi-enclosed, is not directly open to ocean influences. At Taipa, the shore shelves very gradually and is still shallow 600 feet offshore. The Bay is more sensitive to environmental changes than an exposed coastline. There is also a growing opinion that bacteria and viruses survive in salt waters to join the food chains (see for example J Brisou: 1976 and the submission of J Griggs, an environmental planner for the Ministry of Works and Development at Whangarei, document A12). In any event, a sea outfall was similarly abandoned.

4.1.6 The marsh disposal system was then settled upon. It was resolved to pump the effluent some 1500 metres from the maturation pond over the adjoining saddle to an artificial marsh of about four hectares to the southwest. Though the cost of pumping to the marsh is high, owing to the height of the lift and the length of the rising main, the marsh alternative is cheaper than a sea outfall.

The marsh would feed into the adjoining catchment. It will discharge to a maintained drain of some 1000 metres before the residue enters Te Moho creek, and thence the Parapara stream which flows to Doubtless Bay at Aurere via the Awapoko river. We refer to the location of the marsh as the 'Parapara marsh site,' as it lies in the Parapara valley. In the planning documents it is called the 'Te Moho site'.

The polishing of treated waste water by marsh systems is new, but, in the opinion of the Water Resources Manager of the Northland Catchment Commission and Regional Water Board, it is well merited (document A18). It has been tried now in four Northland places (three artificial and one natural) though each with low loadings. Basically the treated effluent is exposed to further biological action as it passes through marsh vegetation. In the opinion of Mr Griggs waste-water quality is

improved dramatically through the process of filtration, settlement, soil absorption, microbial action and nutrient uptake by the wetland plant material (document A12).

The system is also said to have received support from Northland Maori communities (see the evidence of R W Cathcart, chief executive officer, Northland Catchment Commission, document A18). There is a Maori view that water should be kept pure and waste should be discharged to land. It was also said, though we were given no direct evidence, that the owner of the proposed marsh site and some Maori of the affected catchment area have also accepted it, on assurances that the marsh was an effluent disposal system and not part of the sewerage treatment process (per Cameron, document B6 page 3).

The matter is not as simple as that however. While it appears to be accepted that the Ryders Creek plant will produce effluent treated to a relatively high standard, the marsh does provide a further polishing and tertiary treatment of its own, with some destruction of pathogens and the lowering of nitrogenous and phosphatic nutrients through evaporation, transpiration and ground soakage (see document B31 pp 4-6, and B6 p6). The marsh is described as a "polishing agent" in a letter of the Council to the Regional Water Board of 1.8.85 (document B48).

Nor is the effluent completely land bound. A series of low dams are contemplated on a downhill slope of a gradient of 1 in 10 at the head but levelling out at the bottom. Planting is proposed around the dam perimeters, with more concentrated planting at the bottom and it appears that with good plant selection much of the treated effluent can be removed by transpiration, but a residual flow to the catchment is contemplated (document B31 p4). That flow will be relatively small, it is said. It has been estimated that it will be about 261m³ per day (document B48), after allowing for evaporation, transpiration and soakage. Infiltration or soakage, it has been thought, will absorb some 240m³ per day, or 0.25mm per hour (document B48). We thought that was a generous assessment for the marsh is constructed upon the impermeable clay that predominates in this district (document B31 p6). In any event, there will be some residual flow and the Regional Water Board has placed water standard conditions on the discharge, to be tested at a sampling point at the end of the marsh before it encounters any waterway (document A38). The Council's description of the marsh as a disposal system was an exaggeration in our view.

Accordingly, although there was indirect evidence that some local Maori had accepted the marsh system, it is clear from the claims to us that others had not. Robert Gabel, for example, who is a member of the Ngati Kahu Trust Board, contended there is a risk to food sources in the middle to lower reaches of the Parapara river at Aurere, and that the proposal was an affront to the hapu of the Parapara area (document A2). In granting a water right in 1986 however, the Regional Water Board considered that "the proposed system of sewage treatment is, with good management, capable of producing an effluent quality superior to the existing water quality of the Parapara stream".

Full land disposal is impracticable in any event. There is very little suitable land available. Most of the hill country is steep and the local heavy clays have very poor soakage properties. The treated effluent would merely run overland, we were informed, with very little takeup in the soils.

4.1.7 As has been said the scheme is to provide a comprehensive sewerage system for the many small communities that lie within the enveloping folds of the hilly coast line. Each is an attractive settlement, from Hihi in the East and thence westward through Mangonui, Coopers Beach, Otanenui, Chucks Cove, Cable Bay, Owhetu and Kuihi to Taipa. They are relatively small communities, averaging a few hundred persons each, lying within eight separate catchments. The number of permanent residents in the total area is about 1500.

The main population aggregation is at the eastern end, furthest from the point of discharge. Coopers Beach, with the longest coastline and the largest population adjoins Mangonui, a very old town with the second highest population and the largest proportion of permanent residents. Taipa, at the other end, has a much smaller population, but provides the only sizeable flats in the scheme area, some 120 hectares of sandy flat bounded to the east and south by the Taipa river. This provides Taipa with the greatest potential for future resort development. It also gives one of the few level sites in the area for oxidation ponds. Level sites in the rural areas behind Hihi and Coopers Beach would require much excavation work and would be elevated.

Though the communities are separate at present, the whole of this extensive coastline will soon constitute a continuous subdivision. It has been urged that for the purpose of providing a sanitary service for the area, that is how it should be seen.

The longitudinal development of relatively low density settlement calls for a lengthy pipeline for the population size, with the main trunk for Mangonui to Taipa extending 9.2 kilometres. It is longer with the addition of Hihi, which is likely to become a most popular holiday area. Although a conventional gravity reticulation is mainly proposed, the undulating topography has compelled the positioning of eight main pumping stations of increasing capacity along its length. There is also a harbour and many streams and rivers to cross, including the wide estuary of the Taipa river towards the pipeline's end. A break in the pipeline at that point, or some fault in the pumping station, would result in the most serious pollution of the Taipa river and beach.

4.1.8 The population is far from saturation point. Many sections have yet to be built upon and there is much room for further subdivisions in all areas. Growth rates in the permanent population have been quite high, partially constrained by the lack of a comprehensive sewerage scheme despite evidence of a lessening demand for places remote from large centres in recent years. Nonetheless, any planned sewerage scheme must allow for future growth, and in this district, it is likely to be high.

4.1.9 The main peculiarity of the area is the low proportion of permanent dwellers. There are a number of camping grounds and motels in the area; and in summer the population increases four times. Most of the holiday-makers are campers. As at 1986, the area's winter population was 1,150, but was estimated at 4,720 during the summer. (By the 1996 design year, the winter population is expected to be 1,560, and the summer population 5,476). The summer shock loading poses additional technical problems and places limits upon the effectiveness of alternative treatment schemes.

4.1.10 In all, the undulating topography, the ribbon-like settlement pattern and the variable population give rise to the most taxing difficulties for the County in arranging a sewerage scheme. A major problem as a result is the tax on ratepayers. An

expensive scheme is required but the smallish population is hardly in a position to bear it.

It might seem strange, for example, that the sewage is carried to the west, away from its main source, and towards the inner recesses of a relatively sheltered bay, the more so since a tidal rip sweeps several kilometres into Doubtless Bay at the eastern end much closer to the entrance. With high current velocities and good water depths, a point at the eastern end has been described as undoubtedly the best outfall location; but the cost of an outfall at that place is simply too high.

Similarly, Taipa adjoins more westerly beaches at Otengi and Aurere. Although currently undeveloped, these areas have considerable potential and have also large rural expanses behind them. The lack of flat land in the current scheme area has inhibited the choice of options, and the chosen site will likely restrict residential development at Taipa in the long term. The farm areas inland from Otengi and Aurere have not been explored for this purpose, and nor have Otengi and Aurere been surveyed for their development potential; but again, the additional piping required would involve more costs than the current community can afford. In this case, it would also add more problems. The longer the sewerage line, the greater the risk of sewage arriving at the plant in septic condition, requiring additional plant and equipment to correct it.

The conundrum for the affected ratepayers, is that they are altogether too few and though many more ratepayers are required, more people add to pollution and threaten the existing Shangrila. One thing is certain however - that which has been done cannot be undone, and the need for a sewerage scheme is urgent now, just as it has been for many years.

Waitangi Tribunal, Department of Justice, Wellington.

Taipa sewerage claim

4 The East Coast Sewerage Scheme

4.2 Need

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We need not consider whether a sewerage scheme is needed, for the Planning Tribunal has already determined that a sewerage system of a scale proposed by the Council is reasonably required (see document A35). It is not our function to assess those matters within the particular jurisdiction and expertise of other Tribunals. In addition, the Board of Health requisitioned the Council to provide a sanitary drainage service for the area in 1972, and that requirement has not been removed. In fact, in 1982 the Council sought to have the requisition lifted, but instead it was affirmed. The sewerage plans have been approved by the Board of Health.

It is helpful nonetheless to be reminded of the urgency of a sanitation scheme. Septic tanks do not work well in the eastern area from Mangonui to Cable Bay. Heavy clay soils prevail and the soakage is virtually non-existent. As a result of the housing development, septic tank effluents run across sections in built up areas into roadside stormwater channels or into streams, and discretely or directly discharge to the sea, contaminating recreational waters and shellfish beds. Of 240 septic tanks inspected in 1972, 153 had defective effluent disposal. Sixty dwellings had pan privies in an area without a night soil collection. At Mangonui, effluent is either piped direct to the sea or finds its way there via the nearest stream. Signs warn Hihi residents that local waters may be polluted. The community septic tanks at Coopers Bay could not cope with peak summer conditions and foreshore privies seeped directly to the sea. There have been restrictions from the late 1960s on further subdivisional development at Coopers Bay. Coopers Bay has been recognised as presenting the most serious problems (see documents A3, 23, 28, 30, 36).

The situation is different at Taipa. The residential area is on a sandy foreshore with good soakage, but shallow bores draw water from the same area. Testing by the Department of Health in 1972 showed the ground water to be contaminated by sewage, though it is used for drinking and other domestic purposes. Through seepage, sewage was also finding its way to the estuary and beaches (per P G Brown, Principal Health Protection Officer, Northland, document A3).

There have since been improvements in the area with privately arranged treatment schemes, but public health authorities are agreed that the overall picture continues to give cause for grave concern. There are still many opportunities for serious public health nuisances to occur. The scheme however, will eliminate the discharge of septic tank effluent from approximately 465 properties and the discharges from several small treatment plants. Adding to difficulties, a reticulated water supply is not contemplated in the foreseeable future.

In addition, these problems must be seen in the light of a long and costly saga that led to the current proposed scheme. We do not consider any decisions should be made without an awareness of that background.

Taipa sewerage claim

4 The East Coast Sewerage Scheme

4.3 Background

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4.3.1 From 1954 when the first subdivision was proposed at Coopers Beach, there was trouble over the Council's sanitation plans. Tests showed the ground was unsuitable for septic tanks, and the subdivision was approved on condition that contributions would be made to a sewerage trust fund as sections were sold. The subdivider repudiated the agreement but eventually it was held, on an appeal determined in 1959, that the amount should be paid if a drainage scheme was started within the next decade.

The following ten years were troublesome. A new sewerage scheme was immediately prepared for Coopers Beach and Cable Bay, but it was rejected on a poll of ratepayers in 1961. The same happened again on further schemes promoted in 1965 and 1967. On each occasion residents were deterred by the cost, but to gain the benefit of the appeal decision, sewer pipes were laid in Coopers Bay in 1969. They have yet to be connected to anything.

By then it appeared to the Council that a single scheme for the whole area from Mangonui to Taipa would be cheaper and better in the long term. A commissioned report of 1970 proposed two alternatives to the Council, a single district scheme with treatment and discharge at Taipa, and a dual scheme with separate treatment and disposal facilities at Taipa and Coopers beach (see document A22). The dual scheme required some duplication but was cheaper in the shorter term. The long term economics favoured the single scheme, the more so since the Coopers Beach treatment plant, which had to be limited having regard to the site, would eventually become redundant as the population outgrew it. The Council favoured the single scheme but ratepayers were attracted to neither. Arguments developed over who should bear the bill, the ratepayers as a whole, or those of the affected area. It appears the latter were most likely to bear at least the greater burden, but after several well attended meetings it was resolved, unanimously amongst the ratepayers present, that neither scheme should proceed, or at least not until there were more ratepayers to pay for it.

It was immediately apparent that a stalemate had been reached. A loan was necessary to finance the works, but the Local Authority Loans Act 1956 prevented the raising of a loan without ratepayers' consent. It was obvious that that was not forthcoming. It appeared to the Council however that the impasse could be resolved with the help of the Board of Health.

4.3.2 The Board of Health is constituted under the Health Act 1956. It could in certain circumstances require that a local authority provide certain sanitation works.

The important point for the purpose of this debate, is that where such works were required, and were requisitioned by the Board, the local authority could raise the necessary loans even without the ratepayer's prior approval. In 1972 the Medical Officer of Health, Whangarei, reported that the Council had asked the Board of Health to serve a requisition. It is apparent from a further report of the Principal Environmental Health Engineer that an approach had been made to the local member of Parliament to support that requisition and that he in turn had approached the Minister of Health who directed that a report be provided (see document A3).

From the full sanitary survey that followed, it was obvious that a sewerage scheme was required. In December 1972 the Board issued a requisition for sewerage works to be provided from Mangonui to Taipa and directed that proposals be submitted to it within three months.

An updated report was immediately arranged. The Council's consultants affirmed the Council's choice of a single scheme with the treatment and discharge at Taipa (see document A23).

In all subsequent investigations, inquiries for the best site for a treatment plant have been confined to the Mangonui-Taipa area. No doubt costs have dictated what might be done but in the longer term it is likely that coastal settlements will extend beyond the eastern and western extremities described. Indeed, Hihi has since been added.

4.3.3 It was proposed, when the scheme was first put to the Health Department, that the treatment plant and a single stage pond would be sited on low-lying marshy land next to Ryders Creek, the effluent to be discharged to the creek after treatment. It was no doubt economical to locate the pond at the point of discharge, but the proposed discharge drew immediate fire from local residents. The idea was abandoned even before the Board of Health had considered it. The Council opted for a sea outfall some 600 feet off the western end of Taipa beach, a distance from the river estuary.

That was only one occasion when the Council was forced to more costly improvements. In 1974, when authority was sought to arrange a loan, the Board of Health rejected the single stage treatment pond, and required a two stage primary and polishing pond. Of the original treatment and discharge proposals therefore, only the treatment site has remained the same.

4.3.4 The changes did little to appease the local people. Following the designation of the works in the Council's District Scheme there were 253 objections backed by 406 notices of support. Later 27 persons lodged appeals to the Town and Country Planning Appeal Board, objecting to both the outfall and the pond's location.

The Appeal Board dealt only with the latter. There was insufficient evidence to satisfy it that the site was either proper or the only possible site or that sufficient regard had been given to protecting the natural character of the river and coastal environments from unnecessary development (see document A25).

The Regional Water Board then dealt with the sea outfall, but faced with 80 objectors, and with insufficient evidence that currents would disperse the introduced water to

avoid contamination of the foreshore, the right to discharge to the sea was also declined (see document A27).

4.3.5 Both authorities left openings for the Council to apply again after making more extensive studies. An alternative site inland from Coopers Beach was examined in 1975. Though feasible, it was more costly, and introduced a new risk for the site was astride a stream (document A29).

A major reappraisal of alternatives in 1977 (document A28), opted once more for the Taipa scheme. Separate discharge and treatment points were considered at Upper Mangonui, Cable Bay, at two separate places near Coopers Beach, and at Ryders Creek, Taipa. Separate reticulation schemes for various of the catchments were also reviewed, but the scheme most favoured remained the same. The original proposal, with its one place of discharge and one treatment plant was considered to give fewer environmental problems and was more economical in construction and maintenance. The only possible advantage of the separate schemes was that they might cope better with peak flow problems. What was not considered however was whether some other site at Taipa should be preferred.

There was then a greater measure of accord. After a series of meetings the two major action groups of local ratepayers reached an agreement with the Council that the Taipa scheme should proceed provided the outfall was shifted to the large headland at the far western end of Taipa beach. It was agreed to, though it added substantially to costs.

It was also accepted by the Regional Water Board, although there were still many objections when the water right was sought (document A34). The Board is concerned only with the maintenance of water qualities, and with new evidence of sea water movements, and the greater distance from the beach, it was satisfied that the recreational and fishing pursuits at Taipa would be largely unaffected.

4.3.6 That left unanswered a complaint from the Maori communities. Otengi point was the headland concerned, and as has been seen, it was the birthplace for the Ngati Kahu tribe. It is thus sacred, in that sense, and the disposal of even treated effluent in the vicinity of such areas is a profanity in their view. The Council protested that it had consulted with the New Zealand Historic Places Trust on the matter, which offered no insurmountable objection, but of course, it is the tribe that is the custodian of its own cultural values. Though the headland had been sold early last century, ancestral associations, like historical connections do not depend upon the vagaries of current ownership; but in this particular case, the land owner, appreciating the significance of the headland, had recently gifted it back to the tribe from whence it came.

That, and other objections were considered by the Planning Tribunal in 1980, in the Council's second attempt to provide for the works in its District Scheme. The Tribunal approved the siting of the oxidation ponds after hearing much debate, but declined to approve the outfall alignment which it deleted from the plan. Noting that as a matter of law the pipeline alignment was not required to be specified in the plan, it nonetheless cautioned against the proposed route, having regard to the evidence of the Maori interest in the headland (document A35).

4.3.7 Costs continued to loom large in ratepayer thinking. With the introduction of private enterprise alternatives, package treatment plants at a Coopers Beach motor camp and a motel, oxidation ponds at two subdivisions in Cable Bay, and a large septic tank and soakage field serving sections elsewhere, the Council was persuaded to review the scheme once more. Further reports were commissioned in 1981 and 1982 to consider the technical feasibility and cost benefits of alternative schemes (document A36). Although some immediate cost savings in reticulation would be made, the problems associated with effluent disposal were not resolved by the alternative solutions proposed, and the Taipa scheme remained the first choice. At the same time the Council had requested the Board of Health to withdraw the 1972 requisition. A second sanitary survey in 1983 found that conditions had not materially improved, and the requisition remained in force (document A3).

Meanwhile, the Government had introduced specific environmental protection and enhancement procedures that the Department of Health was obliged to apply. In response, the Council produced an environmental impact assessment on the trunk main, which had not been reviewed before (document A45).

The special roll for the special rating area was authenticated by the County in September 1984. Loan sanction was granted by the Local Authorities Loan Board in January 1985, a loan of $2,022,100 having been proposed. In September 1984 the Department of Health had approved a subsidy of $1,205,240.

4.3.8 The rest of the saga to date has been adverted to. The cost of a sea outfall is very high, compared with laying a pipeline on land, and when the prospective success of a marsh system at Paihia was made known, the Council sought and found a suitable site for an artificial marsh near Taipa, which it is able to acquire by agreement. An attractive feature of the constructed marsh technology is its relatively low cost in construction, operation and maintenance.

Approvals were then sought to discharge the treated effluent to an artificial marsh. In August 1985, the Department of Health approved of a variation in the subsidy (document A4 p5). Following the hearing of objections, in December 1985, the Regional Water Board determined to approve the broad proposal. There being no appeal, a water right was granted in March 1986, for the comparatively lengthy period of ten years. No planning approval was sought and we presume that none was required.