Pim de Monchy 7 September 2020

Hi Pim

AFFCO Rangiuru effluent de-nutrification

I recommend kahikatea, flax and raupo planted v-drain wetlands with interconnected drains running north south on AFFCO Rangiuru lowlands between Te Puke Highway and the Kaituna River course that could then best strip nutrient from AFFCO Rangiuru effluent and turn it into oxygen and carbon at minimal ongoing expense so reducing AFFCO Rangiuru's impact on the Kaituna River.

There is an example of a kahikatea forest on Te Ngae Road just past Tikitere intersection and before one reaches Rotorua Airport. It is not hard to imagine how a larger example of that forest could absorb a lot of effluent nutrient and store it as carbon in timber while producing oxygen.

Shaded v-drains created could simultaneously offer extensive freshwater habitat for galaxius (whitebait) and for tuna (eel) that feed on them and so could enhance fisheries production by seeding fresh and saltwater fisheries food chains. Galaxius have been witnessed to prefer that type of habitat: "From the high fecundity (number of eggs) and the large size of fish living in them, lowland bush swamps with brown water appear to be the ideal habitat for Galaxius maculatus" (Marine Department, Fisheries Research Division, Fisheries Research Bulletin entitled 'Galaxius maculatus, the New Zealand Whitebait,' authored by R.M. McDowall.

If we create kahikatea, flax and raupo planted v-drain wetlands with interconnected drains running north south to minimise the impact of the sun as pictured on www.wetlandsnz.com and if we in turn test the v-drains to contain large numbers of galaxius (whitebait) and tuna (eel) and if we simultaneously demonstrate an increase in local freshwater and saltwater fisheries production as a result of those stocks of galaxius (whitebait) and tuna (eel), then we will have created an incentive for central Government to want to fund the creation or extensive lowland v-drain wetlands nationwide in support of fisheries production rebuild.

Imagine what NZ fisheries production potential would have been when all NZ wetlands had been intact and untouched. We can now build better more productive wetlands and so we can in turn I believe significantly increase our fisheries production. Let us now prove it. If all commercial pelagic fish eat pilchards and sprats (yellow-eyed mullet) and pilchards and sprats eat juvenile galaxius (whitebait) and elvers (juvenile eels) then it is a fair assumption that if we increase the number of galaxius (whitebait) and elvers (eels) at the bottom of the food chain then we will increase production and so harvest of our commercial fisheries.

Mr David H. Graham, a Marine Fisheries Investigation and Biological Station Biologist began a life-long study of New Zealand fishes in 1897 which he later recorded in a book titled 'The Treasury of New Zealand Fishes'.

These writings show that there was a correlation in timing between "the decline in whitebait numbers and a similar decline in populations of herrings, horse mackerel, pilchard and sprat." It is worthy of note that by 1930 and in a similar time frame, "there was also a noticeable decline in kahawai numbers even though the species had not before then been over fished."

I suggest therefore that in addition to my previous submissions, the key to the productivity of this country's coastal pelagic fishery is an abundant saline whitebait population. Further supportive of this opinion is the fact that "the grayling, a fine edible and sporting fish which was abundant in Bay of Plenty rivers prior to 1900, did in fact disappear before trout were liberated" and I surmise as galaxius (whitebait) and tuna (eel) numbers declined.

"The inanga is the parent of our whitebait and does live in any fresh water that has an outlet to the sea. Unless steps are taken to preserve its breeding grounds it will, or has become like many more of our fish, a thing of the past."

Graham quotes “sprats as being taken from the stomachs of 17 species of fish which had been feeding on them at varying depths down to 50 fathoms. Sprats were to be found up and down the coast in vast shoals.

Pilchards were found in the stomachs of commercial fish caught down to 80 fathoms. They were also found in the stomachs of some bottom dwelling fish including flat fish. At times large shoals were so abundant one felt it might be possible to walk on them. They were observed in hundreds and perhaps thousands of tons, a sight which could only be described in superlatives. Shoals were seen a mile or more wide and almost continuous in length. So plentiful were they that the water with the sun shining brightly had the appearance as if heavy rain were falling. This was due to these small glistening fish jumping out of the water to escape the fish which were pursuing and devouring them.

There was no more interesting sight than to be in a launch speeding ahead and to see shoals of pilchards as far as the eye could see, swimming closely packed side by side, tier above tier, moving rapidly ahead darting hither and yon as they leapt and turned chasing food. They prey on minute sea forms and are in their turn the prey of every fish and many birds. These small fish play an important part in the food of larger fishes, including all surface and shoal fishes. Twenty-four species of fish were found to have been feeding on pilchards and no doubt many others would qualify as predators.”

Flooded AFFCO Rangiuru’s kahikatia-forested lowlands between Te Puke Highway and the Kaituna River course with AFFCO Rangiuru’s effluent nutrient stripped by a kahikatea forest if formed, could eventually be syphoned or be pumped into Te Tumu drain which could then provide extensive opportunity for habit creation with a potential to create kahikatea, flax and raupo planted v-drain wetlands with interconnected drains running north south on lowlands all the way to Maketu Estuary. These forested v-drains could exist alongside other adjacent land uses without affecting them.

The advantages of v-drain wetlands over ponds is that v-drains could allow the most efficient utilisation of any area of land to be converted back to wetland because there would be no land wasted between ponds. V-drains could create water circulation and so more exposure to nutrient-stripping flax, raupo and kahikatea plants. V-drains could allow for the creation of a kahikatea forest. V-drains could provide varying depths of water and of land habitats for plants, for fish and insects. V-drains could not be affected by flooding which could only increase circulation through v-drains in succession. Sills at the ends of the v-drains could provide connection for galaxius between the v-drains during flooding and could provide shallows or no water at all during droughts while the v-drains could continue to provide fish and insects with deep, shaded ideal wetland habitats.

Te Puke Borough

Te Puke Borough effluent could be stripped of nutrient through kahikatea, flax and raupo planted v-drain wetlands with interconnected drains running north south on the western side of the Kaituna River. All kahikatea, flax and raupo planted v-drain wetlands with interconnected drains running north south could significantly enhance fisheries production with food chains created from beneath a kahikatea forest. All floodable lowlands that had once been part the Kaituna River delta could now be created into a nutrient-stripping, freshwater fisheries habitat-providing kahikatea forest that could also be stripping nutrient from Te Maunga Waste Water Treatment Plant before it reached the ocean. All kahikatea, flax and raupo planted v-drain wetlands with interconnected drains running north south could be earning significant carbon credits while significantly increasing commercial fisheries production.

Whakapoukorero Wetland

I believe that Te Arawa wetland adjacent to Maketu Road (Whakapoukorero Wetland), as well as lowlands that had been gifted to BOPRC below the Tauranga Eastern Link and that have not yet been developed into kahikatea, flax and raupo planted v-drain wetlands with interconnected drains running north south as I had recommended to Council, could now be seen to be wasted opportunities that could instead be transformed into examples of kahikatea, flax and raupo planted v-drain wetlands with interconnected drains running north south and so could be providing proof of potential fisheries

production increase so that central Government could want to fund the creation or extensive lowland wetlands nationwide in support of fisheries production rebuild.

Kaituna River diversion through Maketu Estuary

I believe that an overtopping weir over Ford Road as was previously described by myself to an Appeal Court Judge and also to Council for over 30 years, could allow Kaituna River floods to introduce spawning galaxius to Maketu Estuary maritime marsh and to also flush sand back out to sea from Maketu Estuary without flooding Maketu Village while maintaining Te Tumu exit as it is. This could have been done at far less cost than the current financial blowout that has not resulted in significant change to the amount of sand that has infilled Maketu Estuary and that is still infilling Maketu Estuary, including the grossly enlarged toe of the spit that had been witnessed to have resulted from Council's previous failed attempt to introduce Kaituna River flow to Maketu Estuary through Fords Twin Cuts and as soon as blocking rocks had been removed from Fords Twin Cuts. Erosion of the back of the Maketu Estuary spit had occurred then as a result and as it had following the construction of Fords Twin Cuts and it has now been accelerated again. I believe that work done to create another river course has been a waste of considerable public funds because it has been an unnecessary spend in support of Council's initial Ford's Twin Cuts mistake.

Council has done a lot of good to date under your supervision thank you; like for example removal of the Papahikahawai Island stop-bank; removal of a dam blocking Papahikahawai Channel; planting the upper Maketu Estuary and formerly Brain owned land with marsh as I had previously recommended and recorded in Background copy letters posted on www.wetlandsnz.com. But Council has not returned the Kaituna River floods and food chains to Maketu Estuary.

I believe that occasional Kaituna River floods reintroduced back through Maketu Estuary over a Ford Road overtopping weir could significantly compliment work already done without any risk of flooding Maketu. Maketu Road would need to be raised as I have previously recommended to Council.

If and when you have put the occasional Kaituna River floods back through Maketu Estuary you will have done what I had discussed with Bill Bayfield when he was CEO of BOPRC, which had led to the Kaituna River and Maketu Estuary Management Strategy, which had gauged a public desire for Council to return the Kaituna River to Maketu Estuary. Until that occurs Council will not have done what the public has democratically requested of Council.

The ocean has the capacity to absorb any sized Kaituna River flood without ocean height being affected by it. If Maketu Village or Maketu Road did flood due to sea level rise it would be independent of any effect from the Kaituna River. Maketu Road is currently critically low in height and it has been overtopped by sea level rise during storm surge as a result. It now urgently needs to be raised in height by Council I believe. I cannot imagine another Council in New Zealand leaving a roadway able to be overtopped by tidal movement and storm surge.

The ocean will always be lower than Kaituna River floods and so the ocean will easily be able to absorb those floods on top of itself before they could ever rise above the ocean to flood Maketu Village from Maketu Estuary. Water flows down the path of least resistance. Kaituna River floods could travel through Maketu Estuary flushing sand down onto the ocean at Maketu Entrance without flooding Maketu Village because the ocean would always be lower than the Kaituna River and Maketu Estuary during floods. Problem solved without the need for outrageous professional expense that has occurred to date with little or no improvement to the Kaituna River catchment's and Maketu Estuary's interconnected ecosystem that had once filled the adjacent ocean with fish and that had flushed sediment out of Maketu Estuary on every falling tide.

The views that I have expressed here and to Council for 30 years are supported by 30 token petition pages of Te Arawa signatures that I have presented to BOPRC. All Te Arawa do want the Kaituna River floods and food chains back through Maketu Estuary and all Te Arawa do want fisheries production enhanced and increased back to what it had been before wetlands were drained for pasture. Council has spent the best part of $20 million of rate payer's money on works that were in addition to staff salaries

and Council has not yet returned the Kaituna River to Maketu Estuary as had been requested by ratepayers.

I request on behalf of petition signatories that BOPRC now returns Kaituna River floods back through Maketu Estuary by lowering Ford Road and raising Maketu Road.

I request on behalf of petition signatories that Council creates kahikatea forested v-drain wetlands to build food chains to rebuild fisheries production and to lower effluent nutrient levels before they are pumped into the ocean.

Kindest regards

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