Subject: Hartwood Farms Environmental Plan

Date: Monday, 12 August 2019 at 12:37:57 PM New Zealand Standard Time

From: Harry Mowbray

Guys, I am wrestling with how to present what I want to say and make it real and meaningful.
I will try by starting with this statement.

THERE IS ONLY ONE WAY TO PROPERLY, ACCURATELY AND PROGRESSIVELY MANAGE THE TRANSFORMATION OF THE QUALITY OF THE WATER IN OUR WATER WAYS AND THAT IS BY DEVISING SYSTEMS TO EFFICIENTLY MONITOR SUB-CATCHMENTS, MAKE THOSE PEOPLE DIRECTLY ASSOCIATED WITH THE SUB-CATCHMENT RESPONSIBLE FOR THE OUTCOMES AND COLLABORATIVELY WORKING WITH THEM TO SOLVE THE PROBLEMS BY PROVIDING THE NECESSARY RESOURCES.

The fact is there are Farmers in PLUG that do not like my idea of putting cheap conductivity, turbidity and flow measuring devices in streams. These devices would run on solar panels and the data would be wirelessly transmitted back to WRC and to the farmers managing that sub-catchment.

In fact I would like all sub-catchment data collected to be available to everyone so all positive and negative results can be seen by anyone in real time. That sort of transparency will drive positive change. We could even have sub-catchment competitions for the very best water quality. Whatever you do it must be driven by positive actions not negative ones.

You cannot manage anything unless you measure it so we have to have easily managed measuring devices on sub-catchments for the sub catchment model to be practical.

PLUG believes that sub-catchment management run by the people integral with that sub-catchment is absolutely the right way to go.

So why would people within the PLUG group, including myself even though I proposed it, be so worried about giving WRC have this level of information.

It is simply because we don't trust them as they use information to prosecute rather than educate and improve.

If my proposed system was to be put in place I would want strict guidelines on how WRC would be required to act with a focus on working with the sub-catchment group to lift the performance.

Incidentally the devices I am proposing would only detect if there was a problem. In order to fix the problem more detailed water testing may be required to establish the actual source of the transgression. That will be where WRC technical people would be required to assist with positive actions.

I would now like to explain our personal FEP and give you an example of a situation that would not arise if there was monitored sub-catchment management. I believe the example will give you an understanding of

1. The stupidity of blanket rules.
2. The intransigent nature of the enforcement of blanket rules.
3. The threats and bullying associated with the implementation of these rules.
4. The complete disregard for the financial burden placed on the farm to fix what is essentially a non existent problem.
5. How our farm is considered "partially compliant" with regards to environmental discharge and will be presented in the farming statistics as such whereas the truth is we have taken extraordinary measures to be amongst the very best of all known dairy farming practises in the world with an NRP of 19.
6. How our extraordinary actions to have such a low NRP have taken $3,000,000-00 off the capital value of the farm, according our real estate agent and the prospective purchases, as it can no longer be farmed conventionally due to the low NRP.
7. If the point in 6) was valued at recent NRP sales to polluters at $363/NRP (Sale to Rotorua Council & purchased from a local Iwi.) then the loss in capital value associated with our farm is in excess of $5,500,000-00.

Hartwood Farms is operating as a certified NOP organic farming operation, that is the American standard which is the highest standard in the world.

Most people would have no idea how intransigent the rules are surrounding a fully certified organic property.

There is no discretion in applying the rules and this is to ensure if you buy certified organic goods you can guarantee they are what they say they are.

If for arguments sake a road worker spraying the edge of the road was to think he was helping by spraying the weeds that were in the paddock and the cows were grazed in that paddock; all of those cows would lose their organic status for life.

We have had two incidence of similar mistakes happening within our organic farming group, one, where calves were accidentally given non organic milk and another where the product given to Heifers was correct but the product had a name change and recertification of the product had not happened. Both groups of animals lost their organic status for life.

If you recall in my first round presentation I went through 101 of the eco pyramid in the soil from fungi, up through Bacteria, protozoa, nematodes, anthropoids and then to the top of the system worms.

Everything below the worms has to be working for the worms to be abundant.

I have attached two photographs taken on the 12th July 2017 of the type of worm activity that has been generated, incidentally there was virtually no worms on the property before going organic and nurturing the soil biology.

It is also interesting to note the clover that is present in the photo at that time of the year in a frosty Tokoroa environment. Clover is less frost tender with good levels of nitrogen, as it strengthens the cell structure, but we don't put nitrogen on which is how you would achieve this on a conventional system.

I don't know what mechanism is happening here but I am assuming it is due to the plant available, but not water soluble, nitrogen generated by the biology when protozoa eat bacteria and deposit nitrogen in the soil. Essentially I am hypothesising it is the biology driving the resilience in the clover.

So how do we nurture the soil biology and why is this important in an FEP.

Putting plant available fertiliser on creates great yields as the plant can focus the sugars generated through photosynthesis into growth rather than exchanging some of these sugars with fungi and bacteria for nutrients.

The fungi and the bacteria need these sugars to be a vibrant part of the soil and without it they whither and stop being the key conduit supplying nutrient to the photosynthesising plant.

This process slowly but surely kills the soil biology off and the soil no longer holds as much moisture, there is reduce carbon sequestration into the soil and the biology is no longer present at the right level to capture the nutrient in deposits such as cows urine.

If nutrient is put on in a non plant available form, this ensures the bacteria and fungi have to be actively dissolving the nutrient from the insoluble nutrient rich compounds and then the photosynthetic plants above the ground have to exchange sugars with the bacteria and fungi in the soil. This ensures the photosynthetic plants nurture the bacteria and fungi because if they don't they don't get the nutrient they need.

In this way the soil biology flourishes.

Further to this our pasture is made up of multiple species of plants all with different rooting depths and all fostering their own specific bacterial and fungal rhizospheres in order for them to ensure they get the nutrients specific to that plant.

I have attached Keith Millar's (MPI) unpublished data on the nutrient levels in different plants so you can see how different plants and a diversity of plants result in a more balanced diet.

What this also means is that the different plants have different biology in their rhizospheres to provide the plant with the different nutrient.

So what does all this mean for water quality?

The diversity of plants and variation in the depth of roots creates diverse and deeply active biology in the soil. This biology actively captures nutrient thus preventing the nutrient getting into the aquifer from urine patches.

Further to this we are planting thousands of trees and flaxes along fence lines and waterways.

Because these trees are all pulling up different nutrients and then depositing them on the land as leaves they are essentially harvesting nutrient from deep in the ground and then fertilising the more shallow rooted plants as plant available but not water soluble.

This is not a rapid process to ultimately reduce the amount of fertiliser required but it is a process we have started. The extra deep rooting of the trees will further increase the depth of the biology thus capturing more of the nutrient and in all likelihood pull nutrient out of the aquifer.

It is interesting to note that Gavin Fisher, an extraordinary organic farmer, points out that trees planted in rows in the paddock should also be considered as riparian planting.

These tree rows and flaxes act as homes for insects with short flight paths thus enabling them to fly to cow manure in the paddock and plant their part in the biological breakdown of the manure.

So this organic farm of ours with all that we are doing is considered "partially compliant" by WRC from an environmental perspective and WRC want us to spend between $2 and $300,000-00 to make it compliant that will be a complete waste of money and do nothing to improve.

Let me explain why.

We recently had a visit from Mr Richard Dongehue a resource officer with WRC and received the attached letter from him telling us our effluent storage system was not sufficient.

I rang Mr Doneghue and discussed the issue and summarised this conversation in an email to farming partner highlighted below in yellow.

I have just spoken with Richard and as per below I told him we were arguably one of the very best operators in the Waikato region.
He had no sensible argument to present other than that is what was required.
When asked what he was going to do about it and was he going to prosecute us he said no all he could do is monitor us.
If we transgress they will prosecute.
He would like us to go through the process of determining the storage size and will be responding to our email.
Regards Harry

I then wrote to Mr Dongehue the following email in turquoise

Hartwood Farms is an organic farm with an NRP of 19.
Hartwood farms is extraordinarily focused on doing the right thing for the environment and as such has 120Ha of pine forest to off set our carbon foot print.
As an organic farm we are also fixing an average of 5tonnes/ha of carbon per year. This is done by fostering a diversity of biology
Hartwood Farms recently received a letter from Waikato Regional Council regarding the cow shed effluent storage capacity.
Hartwood Farms has 4 days of effluent storage with an overflow bund which is capable of handling a further 4

days of effluent from the cow shed.
We have had this system in place for 10 years and we have never had an overflow into the bund area.
We operate the storage system at the minimum on a float system and irrigate daily.
The 8 days of effective storage capacity is designed to cope with any mechanical failures.
We have a manual Storm water diversion pipe system installed.
The storage Tank capacity is 90 cubic metres and we produce around 20 cubic metres of effluent per day.
We have a pipe net work to distribute the effluent to 50Ha of land, 30Ha of which are a mixture of lucerne grass and clover.
The lucerne is on this land as the soil type is early successional pumice based soil. This makes it a nitrogenous based soil rather than a carboniferous based soil.
The reason for planting this type of soil with the varying rooting depth plants is to ensure the nutrients are captured before entering the aquifer. The variable species are planted to ensure multiple rhizospheres of fungi and bacteria are present and the density of the bacteria and fungi are elevated. This is done to capture, retain and recycle the nutrient.
The effluent spreader sprays an area 50metres in diameter which means we apply 10mm of effluent per application which is less than half the maximum allowable application.
This means our free draining high nutrient capture system will result in minimal nutrient transfer into the aquifer which is the only sensible approach to take on such free draining soils.
These soils never get water logged and never get pugged and you can drive your car over the land during a rain storm.
We have farmed this property for over thirty years and we have not seen any obvious run off on any of the irrigated land.
All major waterways have been fenced off and retired for the last 15 years further reducing what run off might be present.
Essentially we have structured our whole farm around managing nutrient loss and spent millions of dollars doing this in the process of going organic.
While we understand the need to control effluent application on non free draining soils it is not necessary in our situation with our soils types, pasture management and low effluent application rate.
In the letter to us there were two points that required action.
Point 1
Ensure that effluent is being irrigated and is suitable for the soil conditions.
We believe that our extensive pro-active actions explained above place our farm at the very pinnacle of all farming practises with regards to managing nutrient loss through run off or as leachate.
We are world best practise.
Point 2
Provide me with an effluent improvement plan
We have been extraordinarily pro-active in our big farming picture and we have what are arguably the very best farming practises. It is not acceptable for WRC to require us to spend between $2 and 300,000 to install effluent storage that has zero benefit to the environment and will not be used.
If you can propose a sensible solution as to how we can improve any nutrient loss from our farm we will be more than happy to take a pro-active stance and make those changes just like we have with everything else.
The blanket requirement for extensive effluent storage is not applicable on our farm with our soil types and our management practises.
Regards Harry Mowbray and Ged Goode
Hartwood Owners.

Subsequent to that I got the following email from Mr Doneghue.

Hi Harry,

Thank you for contacting me on the 30/07/2019, I regarded it as a positive conversation to which there was at least some agreement (I don't recall and Agreement) on the way forward regarding additional effluent storage requirements for the farm. I am willing to work with you to find a practical solution to the requests being made.

As you are aware, in my letter of 10 July 2019 I had requested advice of details regarding an improvement plan for your effluent system, including suitable effluent storage and

details of the associated timeframe(s).

I appreciate the information provided by yourself on the 27July 2019. I have no dought that your actions thus far to manage the property to achieve a high environmental outcome has your full attention. As already referred to however, the lack of storage capacity makes a high risk of non-compliance. (Note we only risk non compliance no mention is made of the environmental risk associated with being on free draining soil so run off is almost unheard of and the 50ha of irrigation pipework to minimise any possible overload in the soil)

There have been no effluent system upgrade plan details provided with your previous communications that relate to the expenditure quoted. I request that you provide further details of an improvement plan that will provide for it, including improvements that will occur this season. (We have an extraordinary system already)

It may be of use to seek further advice regarding appropriate levels of effluent storage for your particular farming system.

As previously advised, it is recommended that you engage the services of an accredited effluent system designer to audit your effluent system and provide advice on developing a system that will ensure compliance with Waikato Regional Council's rules at all times. The Effluent Accreditation website (www.effluentaccreditation.co.nz) provides a register of effluent system designers that have been accredited by Dairy NZ's quality assurance program.

It seems useful to summarise particular concerns with regard to the effluent system:

- The effluent storage is limited to a sump, which I understand has capacity of $90m^3$, with insufficient capacity to enable the irrigation to comply at all times.

- If effluent is irrigated to saturated free draining soils there is a high risk of effluent draining directly to ground water, ponding on the land, or running into surface water. (This is simply incorrect as I have explained in my email)

- It is important to note that Overseer assumes best practice is followed as the model relates to effluent management.

- Without effluent storage to allow for flexible irrigation, there is a high risk that you would breach rule 3.5.5.1 of the Waikato Regional Plan (WRP).

- In order to comply with the regulations you need to construct an effluent storage facility that is sealed and appropriately- -sized to allow you to comply with the WRP rule 3.5.5.1, 365 days-a-year. (In light of our farm and what we are doing I see this as bullying tactics that take no account of the soil type and weather patterns.)

Action Required

- Provide me with details of an effluent improvement plan, including details of measures to be undertaken during the current dairy season. (Bullying with no grounds other than a blanket rule.)

If you continue to operate the current system, there is a high risk of being non-compliant with the rules. Please be aware that further site inspections will be undertaken to check compliance and that systems improvement occur. (Bullying tactic with no basis)

Kind regards

If you bear in mind there is no legal requirement for the above storage and we have spent a huge amount of time and effort to make our farm extraordinary in an environmental sense I personally see this as out of control bureaucracy and this is just one of the reasons I personally mistrust giving WRC power without strict and enforceable guidelines.

Regards Harry Mowbray

	mg / kg					µg/Kg		g / kg						
	Cu	Zn	Mn	Mo	Fe	Co	Se	S	P	Ca	Mg	Na	K	P
asture	2·4	28	345	0·4	56	93	99	2·1	1·4	3·3	2·2	0·6	9	10
racken	2·2	10	133	0·2	27	102	24	0·8	1·3	2·3	3·1	2·1	9	7
astal bush daisy (O albida)	6·0	18	38	0·1	37	62	56	0·7	0·9	6·5	1·6	3·6	18	5
astal tree daisy (O solandri)	10·1	24	58	0·1	35	87	74	2·1	1·3	6·3	1·5	2·4	13	8
ern (hard)	2·4	12	78	0·1	35	37	11	2·2	1·0	3·2	5·3	1·6	4	8
ern (spleen warts sp.)	3·4	8	39	0·3	42	22	19	1·4	1·1	7·1	7·2	1·5	12	9
orse (bark)	4·1	8	19	0·1	60	66	50	0·7	0·4	1·3	0·6	2·6	3	8
orse (flowers)	2·7	23	27	0·1	26	59	45	1·2	1·5	1·7	2·3	5·1	10	12
orse (old)	3·3	19	89	0·1	61	34	80	1·6	1·1	1·7	1·6	3·0	8	12
orse (young)	3·7	30	81	0·1	59	39	65	1·7	1·3	2·0	2·0	2·5	9	14
riselinia littoralis (broad leaf)	3·3	45	71	0·9	26	17	7	3·6	1·1	9·3	5·2	4·4	9	7
lebe parviflora	10·1	28	121	0·1	37	25	52	3·1	2·1	5·0	3·3	5·3	13	11
look grass	1·7	6	177	1·6	47	30	43	1·5	1·6	2·5	1·7	3·0	15	6
ycopodium (Waewae-Koukou)	4·0	17	227	0·2	29	15	81	1·0	0·9	0·6	1·1	1·9	8	6
Mahoe	4·6	18	31	0·3	41	23	38	3·2	1·5	1·5	5·6	3·8	19	13
Manuka	3·5	9	61	0·1	38	59	69	1·2	0·7	6·4	2·1	4·1	4	6
Oregon grape (barberrie)	7·3	16	31	0·1	31	36	55	1·0	1·1	5·7	1·4	1·0	7	8
Purple top	19·2	68	145	0·2	59	28	36	4·0	1·9	2·3	3·8	10·0	18	11
Putaputaweta	3·7	14	131	0·1	43	19	30	2·3	1·1	1·2	3·8	3·1	10	9
Rangiora	5·8	28	63	0·2	35	80	55	3·1	1·3	1·7	3·5	3·5	17	7
Rangiora (top shoots)	12·6	34	46	0·2	45	22	34	3·4	1·8	3·6	4·2	4·0	18	8
Rushes	4·7	41	293	2·3	44	20	7	1·9	1·7	1·8	1·9	4·4	9	11
Tauhinu (cotton wood)	11·5	32	106	0·2	40	20	55	2·1	1·5	5·1	1·5	4·5	13	8
Tree nettle (urtica ferox)	2·6	27	157	0·6	67	12	74	3·4	4·5	6·8	3·6	8·7	21	27
Tussock	1·4	7	50	0·1	47	36	91	1·5	0·7	1·2	0·9	0·8	7	5

ROSS - WHITEMANS VALLEY DEVELOPED BLOCK

sture	4·9	30	175	0·2	80	65	99	2·3	2·5	5·3	2·2	2·0	22	17
Barberry	11·7	32	172	0·2	57	96	88	2·2	2·9	12·4	4·0	3·4	5	13
Bracken	1·9	8	141	0·1	36	132	19	1·1	1·0	3·9	3·0	1·0	9	7
ern (Paesia scaberula)	2·8	13	106	0·1	38	24	129	1·7	1·6	2·9	3·4	2·0	7	8
Foxglove	10·0	80	253	0·4	68	92	58	1·8	3·1	12·0	2·7	3·1	21	15
Gorse (young)	3·0	21	42	0·1	36	32	24	1·0	0·7	2·7	1·2	1·4	7	10
Gorse (old	2·9	19	47	0·1	42	36	170	0·9	0·6	2·3	1·1	1·2	7	9
Manuka	4·9	13	52	0·1	50	55	72	1·1	0·6	5·6	1·9	3·6	4	5
Reeds	2·7	28	177	0·4	187	22	148	3·2	1·7	4·1	3·3	6·0	17	11
Rushes	3·0	51	564	0·5	83	44	178	1·9	1·5	2·1	1·1	2·3	10	7
Putaputaweta	5·4	20	137	0·2	44	38	49	2·3	1·7	2·4	2·5	2·5	12	8
Tauhinu	20·6	29	182	0·4	144	20	113	2·8	1·4	10·8	1·3	5·6	13	8
Thistle (nodding)	8·5	14	97	0·2	81	51	78	1·5	2·2	2·0	2·5	2·0	44	13

Moodie - SOUTH KARORI

Pasture	3·4	27	280	0·1	95	114	23	1·5	1·9	3·6	2·1	0·8	13	—
Gorse (mixed age)	8·4	17	70	2·1	88	322	11	1·3	1·1	2·2	2·2	4·2	10	—
Bracken	4·3	15	96	0·1	56	229	1·7	1·0	1·3	1·8	2·1	0·5	13	

		Whitemans Valley	
Cobalt ($\mu g\ kg^{-1}$)	South Karori	Developed	Undeveloped
Pasture	93	65	61
Foxglove	–	792	441
Rangiora	880	–	753
Rangiora shoots	2210	–	–
Gorse – old	394	369	101
Gorse – new	539	328	150
Purple top	283	–	–
Copper ($mg\ kg^{-1}$)			
Pasture	2.4	4.9	6.0
Foxglove	–	10.0	8.9
Tauhinu	11.6	20.6	14.5
Barberry	–	11.7	6.8
Purple top	19.2	–	–
Selenium ($\mu g\ kg^{-1}$)			
Pasture	99	99	
Gorse – old	80	170	
Rushes	177	178	
Reeds	–	148	
Mohoe	138	–	
Zinc ($mg\ kg^{-1}$)			
Pasture	28	30	
Foxglove	–	80	
Purple top	68	–	

ANALYSIS

COMPARISON POWER ORGANICS VERMICAST TO TYPICAL NEW ZEALAND SOIL

Media Analysis
(Plant Available Nutrients – ppm in Soil Water)

	Typical NZ Soil	[redacted] Vermicast	Vermicast % Increase
PH	6.2	6.8	10
Soluble Salts	216	1293	499
Nitrate	13	138	962
Ammonium N	3	1.3	-57
Total N	16	139	769
Phosphorus	2	0.32	-84
Calcium	22	252	1045
Magnesium	4	14	250
Potassium	51	92	80
Sodium	9	70	678
Sulphate	22	122	455
Boron	0.1	0.02	-80
Iron	0.5	0.25	-50
Manganese	0.05	0.05	0
Copper	0.05	0.02	-60
Zinc	0.02	0.02	0
Aluminium	0.8	0.68	-15
Molybdenum	0.01	0.02	100

ANALYSIS BY BROOKSIDE LABO[redacted]ATORIES

VERMICAST ANALYSIS

TYPICAL VERMICAST ANALYSIS		
PH	6.6	Trace Elements
N	2.3%	Zinc 132 ppm
P	3.0%	Copper 50 ppm
K	0.6%	Manganese 120 ppm
Mg	0.65%	Sodium 250 ppm
Ca	8.6%	Boron 110 ppm
		Iron <200 ppm

All nutrients in Vermicast are 100% plant available while also being slow release.

Vermicast also contains billions of beneficial soil microbes per kilogram.

CAU[redacted]ARTHWORMS AT WORK

POTENTIAL OF EARTHWORM ACTIVITY
Top Soil (16cm) of One Hectare

No. Worms /20x20cm Spade	No. Worms /ha	Weight Worms /ha (Kg)	Weight Casts/ha /Day (Kg)	Weight Casts/Yr (Tonnes/ha)	N/Day /ha (Kg)	N/Year /ha (Tonnes)	N/equiv. Urea/Year (Tonnes)
1	250000	165	165	60	2	1	1
2	500000	330	330	120	3	1	2
3	750000	495	495	181	5	2	4
4	1000000	660	660	241	7	2	5
5	1250000	825	825	301	8	3	6
6	1500000	990	990	361	10	4	7
7	1750000	1155	1155	422	12	4	8
8	2000000	1320	1320	482	13	5	10
9	2250000	1485	1485	542	15	5	11
10	2500000	1650	1650	602	17	6	12
11	2750000	1815	1815	662	18	7	13
12	3000000	1980	1980	723	20	7	14
13	3250000	2145	2145	783	21	8	16
14	3500000	2310	2310	843	23	8	17
15	3750000	2475	2475	903	25	9	18
16	4000000	2640	2640	964	26	10	19
17	4250000	2805	2805	1024	28	10	20
18	4500000	2970	2970	1084	30	11	22
19	4750000	3135	3135	1144	31	11	23
20	5000000	3300	3300	1205	33	12	24

MINERAL NUTRITION
Soil vs Earthworm Castings

Nutrient Element	SOIL (0-16cm)	WORM CASTS (Surface)	CASTS Nutrients % Increase
TEC m.e	22	26	19
PH	6.5	7.0	8?>
Humus %	14	25	77
NO3 ppm	4	77	2103
NH3 ppm	13	66	408
Total N ppm	17	143	768
Sulphur ppm	25	29	16
P (eas.Extr) ppm	39	155	297
P (Bray) ppm	162	253	56
Calcium ppm	3320	4150	25
Magnesium ppm	250	420	68
Potassium ppm	170	253	49
Sodium ppm	38	39	3
Boron ppm	1	2	52
Iron ppm	49	64	31
Manganese ppm	35	66	89
Copper ppm	7	30	355
Zinc ppm	9	33	266
Mean % Increase			306

ANALYSIS BY BROOKSIDE LABORATORIES

Subject: Farm Effluent Storage Capacity Hartwood Farms

Date: Thursday, 1 August 2019 at 2:37:14 AM New Zealand Standard Time

From: Richard Doneghue

To: 'Harry Mowbray'

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It may be of use to seek further advice regarding appropriate levels of effluent storage for your particular farming system.

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- If effluent is irrigated to saturated free draining soils there is a high risk of effluent draining directly to ground water, ponding on the land, or running into surface water.

- It is important to note that Overseer assumes best practice is followed as the model relates to effluent management.

- Without effluent storage to allow for flexible irrigation, there is a high risk that you would breach rule 3.5.5.1 of the Waikato Regional Plan (WRP).

- In order to comply with the regulations you need to construct an effluent storage facility that is sealed and appropriately- -sized to allow you to comply with the WRP rule 3.5.5.1, 365 days-a-year.

Action Required

- Provide me with details of an effluent improvement plan, including details of measures to be undertaken during the current dairy season.

If you continue to operate the current system, there is a high risk of being non-compliant with the rules. Please be aware that further site inspections will be undertaken to check compliance and that systems improvement occur.

Kind regards

Richard Doneghue | RESOURCE OFFICER - FARMING SERVICES | Farming Services - RUD, Resource Use
WAIKATO REGIONAL COUNCIL | Te Kaunihera ā Rohe o Waikato
Take a look at the work we do
P: +6478592700
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F: facebook.com/waikatoregion
Private Bag 3038, Waikato Mail Centre, Hamilton, 3240

Subject: FW: Farm Effluent Storage Capacity.
Date: Tuesday, 30 July 2019 at 1:01:22 PM New Zealand Standard Time
From: Harry Mowbray
To: ggoode508@gmail.com, Leigh

I have just spoken with Richard and as per below I told him we were arguably one of the very best operators in the Waikato region.
He had no sensible argument to present other than that is what was required.
When asked what he was going to do about it and was he going to prosecute us he said no all he could do is monitor us.
If we transgress they will prosecute.
He would like us to go through the process of determining the storage size and will be responding to our email.
Regards Harry

From: Harry Mowbray <paperlines@gmail.com>
Date: Thursday, 25 July 2019 at 10:18 AM
To: <richard.doneghue@waikatoregion.govt.nz>
Cc: "ggoode508@gmail.com" <ggoode508@gmail.com>
Subject: Farm Effluent Storage Capacity.

Hartwood Farms is an organic farm with an NRP of 19.
Hartwood farms is extraordinarily focused on doing the right thing for the environment and as such has 120Ha of pine forest to off set our carbon foot print.
As an organic farm we are also fixing an average of 5tonnes/ha of carbon per year. This is done by fostering a diversity of biology
Hartwood Farms recently received a letter from Waikato Regional Council regarding the cow shed effluent storage capacity.
Hartwood Farms has 4 days of effluent storage with an overflow bund which is capable of handling a further 4 days of effluent from the cow shed.
We have had this system in place for 10 years and we have never had an overflow into the bund area.
We operate the storage system at the minimum on a float system and irrigate daily.
The 8 days of effective storage capacity is designed to cope with any mechanical failures.
We have a manual Storm water diversion pipe system installed.
The storage Tank capacity is 90 cubic metres and we produce around 20 cubic metres of effluent per day.
We have a pipe net work to distribute the effluent to 50Ha of land, 30Ha of which are a mixture of lucerne grass and clover.
The lucerne is on this land as the soil type is early successional pumice based soil. This makes it a nitrogenous based soil rather than a carboniferous based soil.
The reason for planting this type of soil with the varying rooting depth plants is to ensure the nutrients are captured before entering the aquifer. The variable species are planted to ensure multiple rhizospheres of fungi and bacteria are present and the density of the bacteria and fungi are elevated. This is done to capture, retain and recycle the nutrient.
The effluent spreader sprays an area 50metres in diameter which means we apply 10mm of effluent per application which is less than half the maximum allowable application.
This means our free draining high nutrient capture system will result in minimal nutrient transfer into the aquifer which is the only sensible approach to take on such free draining soils.
These soils never get water logged and never get pugged and you can drive your car over the land during a rain storm.
We have farmed this property for over thirty years and we have not seen any obvious run off on any of the irrigated land.
All major waterways have been fenced off and retired for the last 15 years further reducing what run off might be present.
Essentially we have structured our whole farm around managing nutrient loss and spent millions of dollars doing this in the process of going organic.
While we understand the need to control effluent application on non free draining soils it is not necessary in our situation with our soils types, pasture management and low effluent application rate.

In the letter to us there were two points that required action.

Point 1

Ensure that effluent is being irrigated and is suitable for the soil conditions.

We believe that our extensive pro-active actions explained above place our farm at the very pinnacle of all farming practises with regards to managing nutrient loss through run off or as leachate.

We are world best practise.

Point 2

Provide me with an effluent improvement plan

We have been extraordinarily pro-active in our big farming picture and we have what are arguably the very best farming practises. It is not acceptable for WRC to require us to spend between $2 and 300,000 to install effluent storage that has zero benefit to the environment and will not be used.

If you can propose a sensible solution as to how we can improve any nutrient loss from our farm we will be more than happy to take a pro-active stance and make those changes just like we have with everything else.

The blanket requirement for extensive effluent storage is not applicable on our farm with our soil types and our management practises.

Regards Harry Mowbray and Ged Goode

Hartwood Owners.

In reply please quote: REG606313
IRIS Document No: 54949
File No: 60 63 13A

Waikato REGIONAL COUNCIL
Te Kaunihera ā Rohe o Waikato

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Waikato Mail Centre
Hamilton 3240, NZ

waikatoregion.govt.nz
0800 800 401

10 July 2019

Hartwood Farms Partnership
5490 State Highway 1 South
RD 1
Tokoroa 3491

Dear Ged,

Site Inspection: Dairy Farm: SH1, Tokoroa (Organic Dairy Hub 1102)

On 23 May 2019 the above site was visited for a compliance inspection of the farm effluent system. The reason for this inspection and the Waikato Regional Plan permitted activity rules for farm dairy effluent are explained in the appendix of this letter. I appreciated the time taken to talk with me regarding your effluent system.
The compliance has been assessed as:

Type	Compliance Status
Farm Effluent System	Partial compliance

Farm Effluent System Assessment

Effluent storage capacity

The assessment indicates that the effluent storage facility is inadequately sized for the farm effluent system. During periods of wet weather you will have no option but to irrigate effluent when soil conditions are unsuitable or let the effluent storage overflow, which is a breach of the regional plan rule.

The basis of a sustainable land based effluent system is highly dependent on the ability to differ the application of dairy effluent in order minimise the loss of effluent direct drainage or to runoff. This forms the basis of the Permitted Activity Rules and the Dairy Effluent Code of Practice. THIS NOT CORRECT

You have previously been requested to provide written details of an improvement plan for the effluent system. That request was made in a letter to you dated 23 April 2018; however no written details were received, and no change to the effluent system infrastructure had occurred by the time of the 23 May 2019 visit. I will reiterate the previous request for details of an improvement plan, and further request that such details be provided with high priority, including what improvements will occur this season.

In response to this determination you are requested to improve the farm effluent system so it can comply with the rules at all times. I recommend you engage the services of an accredited effluent system designer to audit the effluent system and provide advice on developing a system that will ensure compliance at all times.

Effluent Improvement Plan
Overall improvements to the effluent system are necessary so that it is fully compliant with regional council regulations at all times. Please submit an Effluent Improvement Plan to me.

The plan should include a list of actions to improve the system in regards to the concerns raised by showing

- Calculations that demonstrate appropriate storage size;
- the proposed installation of an appropriately sized, sited, sealed and designed effluent storage facility;
- any additional infrastructure improvements on farm in regards to the effluent management; and
- The timeframe for the proposed improvements.

If you continue to operate the current system, there is a high risk of being non-compliant with the rules. Please be aware that further site inspections will be undertaken to check compliance and that systems improvement occur. You may need to install short term measures to mitigate the risk of non-compliance until suitable storage has been installed.

Effluent Irrigation
The inspection did not include an assessment of irrigation. Please be aware that under the rule there must be no ponding of effluent, or run off to surface water, and the maximum you can irrigate is 25mm of effluent per application.

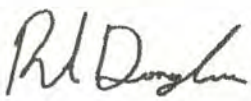
DairyNZ produces useful information and guidance on effluent irrigation systems, including irrigator set-up and maintenance. This can be found on the DairyNZ website.

Action Required

- Ensure that effluent is being irrigated within the limits and is suitable for the soil conditions.
- Provide me with an effluent improvement plan

Please do not hesitate to contact me if you have any questions regarding this letter. You can contact me at Waikato Regional Council's Hamilton office on 078592700, or alternatively you can email richard.doneghue@waikatoregion.govt.nz.

Yours faithfully



Rick Doneghue
Resource Officer | Resource Use Directorate

Background

Most Waikato dairy farmers operate their dairy effluent irrigation systems under our council's permitted activity rules for managing farm dairy effluent (Waikato Regional Plan rules 3.5.5.1, 3.5.5.2 and 6.1.8).

These rules make it possible for farmers to apply effluent to land without a resource consent. However, they must meet all of the conditions of the permitted activity rules.

Waikato Regional Council monitors compliance with these rules.

In the past, we carried out both aerial and ground-based monitoring on a random basis across the region. This has now been replaced with a more thorough and targeted approach.

We assess a system with a view to compliance 365 days a year, not just on the day of inspection.

Often farmers are looking for advice on how to make their system compliant year-round. While our monitoring team cannot provide this specialist information, they can recommend where farmers will be able to find the help and advice they need.

How does the council carry out site visits?

Site visits are carried out by either one or two Waikato Regional Council staff. When we are unsure of farmer availability we will use two staff. This is to meet our health and safety obligations to our staff.

While we prefer to meet the owner or staff on site, this is not essential for the visit.

During our visit we try to cover the important aspects of the effluent system, potential issues going forward and other related issues such as water take consents.

What is the council looking for?

Appropriately sized and sealed storage

Effluent storage is essential to be able to defer and manage farm dairy effluent over the wet spring period. This storage needs to be sealed to a high standard to prevent contamination of water.

There are a number of tools and resources available to help farmers and their system designer/installer work out what is needed. Farm owners should check that their designer is using:

- the Dairy Effluent Storage Calculator
- IPENZ Practice Note 21: Farm Dairy Effluent Pond Design and Construction (Version 2, March 2013)
- IPENZ Practice Note 27: Dairy Farm Infrastructure (Version 1, September 2013).

Effluent irrigation

Irrigation of effluent on to land is a Permitted Activity, providing that it meets specific conditions, including that it must not cause ponding, or runoff to water, and must not exceed an application depth of 25mm.

Use of a storage facility when soil conditions are wet can assist with that, by enabling irrigation to be deferred until the soil water deficit is appropriate.

Nozzles influence the ability of an irrigator to spread effluent evenly, and therefore should be maintained free of blockages, and also for wear-and-tear. In addition, the layout of the drag hose has potential to increase strain on a travelling irrigator and can influence over-application of effluent.

Good quality infrastructure

Industry has agreed on what constitutes a good effluent system and has set out the required level of design in the following documents:

- Farm Dairy Effluent (FDE) Design Standards
- Farm Dairy Effluent (FDE) Design Code of Practice.

These documents, as well as a farmer's guide to the standards, can be viewed and downloaded at www.dairynz.co.nz.

Professionals involved in dairy effluent systems should adhere to these and any technical documents released. We therefore recommend using only experienced and qualified professionals for the design and construction process.

For a register of accredited designers, visit www.effluentaccreditation.co.nz.

The industry has also developed a Dairy Effluent Warrant of Fitness programme. The certified WOF assessors check the effluent system against the design code of practice and regulatory requirements. Refer to www.effluentwof.co.nz.

Evidence of good management

Many farmers have invested both time and money on effluent infrastructure. This then needs to be well managed in order to both avoid issues and best utilise the value of the effluent to pasture.

Ability to comply 365 days a year

Critical to a good effluent system is the ability to comply with regional council rules 365 days a year. To help achieve this, farmers need appropriately sized effluent storage.

Long term solutions

A well designed and constructed system should last a long time. That means ensuring the system will be able to absorb future farm changes with a minimum of disruption and additional expense.

Records

When a farmer has an effluent pond constructed on their property they need to get construction records and sign-off from an engineer or installer. These records are used to demonstrate how the pond meets the sealing requirement.

Records also help demonstrate good management of the effluent system.

What happens if the effluent system doesn't meet requirements?

After a site visit is carried out we send the farm owner a letter explaining the outcome of the visit and any issues identified.

Non-compliance doesn't always mean enforcement action will be taken. For example, if there obviously isn't sufficient effluent storage we will request that the farmer provide us with an improvement plan outlining what measures they will take to address the issue, and the timeframe for undertaking the actions.

We understand that some major improvements cannot be carried out immediately. However, we do expect a commitment that the required works will be carried out in a reasonable timeframe. It's also expected that other mitigation measures will be undertaken in the meantime.

If an issue is ongoing, or a serious risk is present, then action must be taken as soon as possible.

More information

Contact

- Waikato Regional Council Resource use freephone 0800 800 402
  dairycontacts@waikatoregion.govt.nz

Web

- www.waikatoregion.govt.nz/regionalplan
- www.waikatoregion.govt.nz/forfarmers
- www.dairynz.co.nz
- www.effluentaccreditation.co.nz