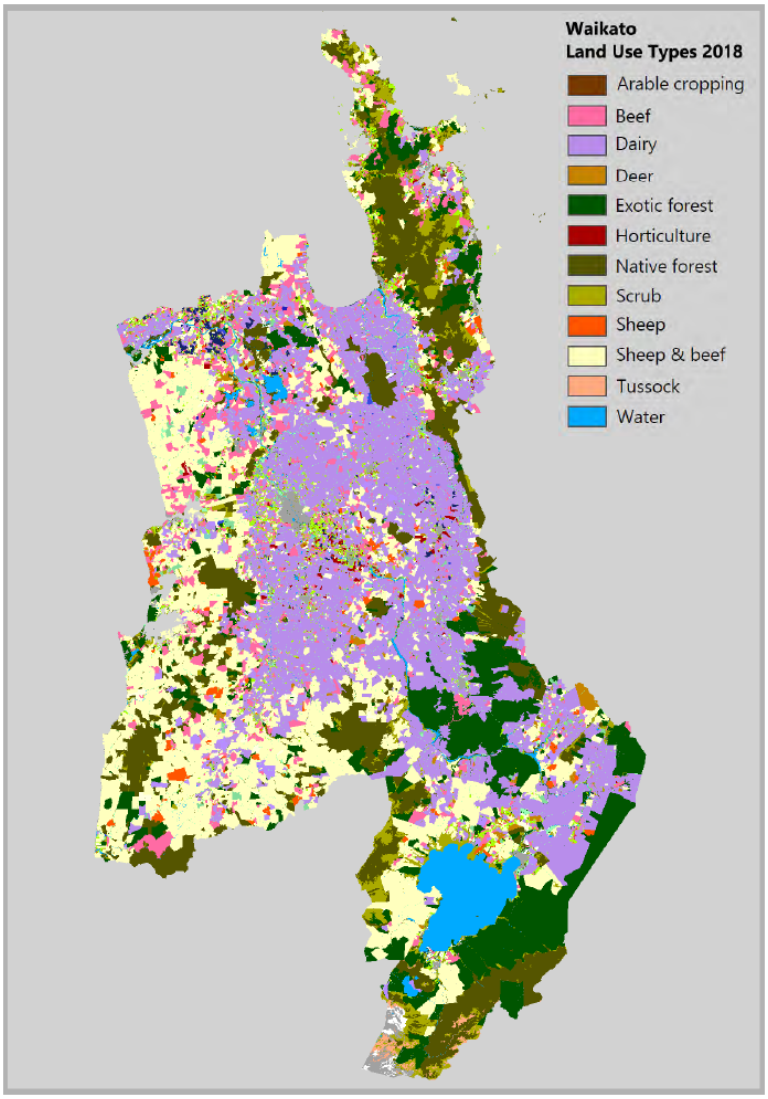
Graeme B Gleeson S&B farmer Block 2

1. **I am here today as a farmer and as a representative of my own farm business**
   I am here today as the representative of my own farm business as we examine the proposed Plan Change 1 and the requirement to give effect to the Vision and Strategy. In this capacity I am focusing primarily upon pastoral land use that is low – medium intensity underpinned by a farm system closely linked to the natural grass growth curve.
2. I am not a policy writer or other notable expert, consequently the input I provide to this process is knowledgeable experience and insight gleaned as a farmer, I believe I have a clear sense of what is right and wrong, I am not fixated upon here and now because everything must adapt and evolve to change, I am known to be blunt and will call a spade for what it is. This background provides I hope good purposeful ability to assist influence direction in problem solving beginning by establishing principles and supportive practical examples with narrative and pictures that is assistive towards providing the policy writers their drafting instructions.
3. I believe in the importance and value we all place in New Zealand of fair and equitable outcomes as an egalitarian democratic and free society. It is from this belief that I am very mindful of the need to carefully watch my back ensuring other land users and their activities are not given advantageous favour when none should be provided, that the advocacy bias and protective self-interests of other industry sectors are not pushing forward a process that will blatantly impinge and / or confiscate my property rights and my rightful opportunity so they may generate headroom to buffer their continued high contaminant loss.
4. If some land users require headroom to offset their high contaminant loss, then the headroom cannot be transferred by theft or forceful subsidisation from other non-associated or third-party landowners without consideration. The polluter pays principle must be upheld and all farm systems must evolve to become right sized with respect to their environmental footprint.

5. It is hopeful that at the end of this journey Te Mana o te Wai is well embedded as a strong robust framework to support a good state of well-being for all New Zealanders, enabling the mana and mauri of the wai to be restored, and our productive usage of natural resources i.e. Farming Fits the Land affords us prosperous resilience and opportunity
6. The insights that I present are known to be not too dissimilar from many other submitters who are in the same position as myself. These include…(verbal recognition)
7. From this introduction I will for Block 2 bring to attention several different topics that can be discussed as single items but also need to be discussed as being interlinked and merged as one
    a. An introduction to myself (see above)
    b. A reclarification of land use and associated impacts this has in the Waikato - Waipa River catchments
    c. Introducing low – medium intensity pastoral land use
    d. The problem set and issues
    e. Solutions – pragmatic, reasonable and doable; embraced by all
    f. A request that we need more insight about what we all want to achieve – Articulate a Vision of Success
    g. An affirmation of principles that need to be embedded into process that will seamlessly endure beyond Plan Change 1 to provide direction and pace of travel certainty

Land use in the Waikato – Waipa River catchments



Ref - Land Use 2018 – from B+LNZ Block 2 Dr Tim Cox

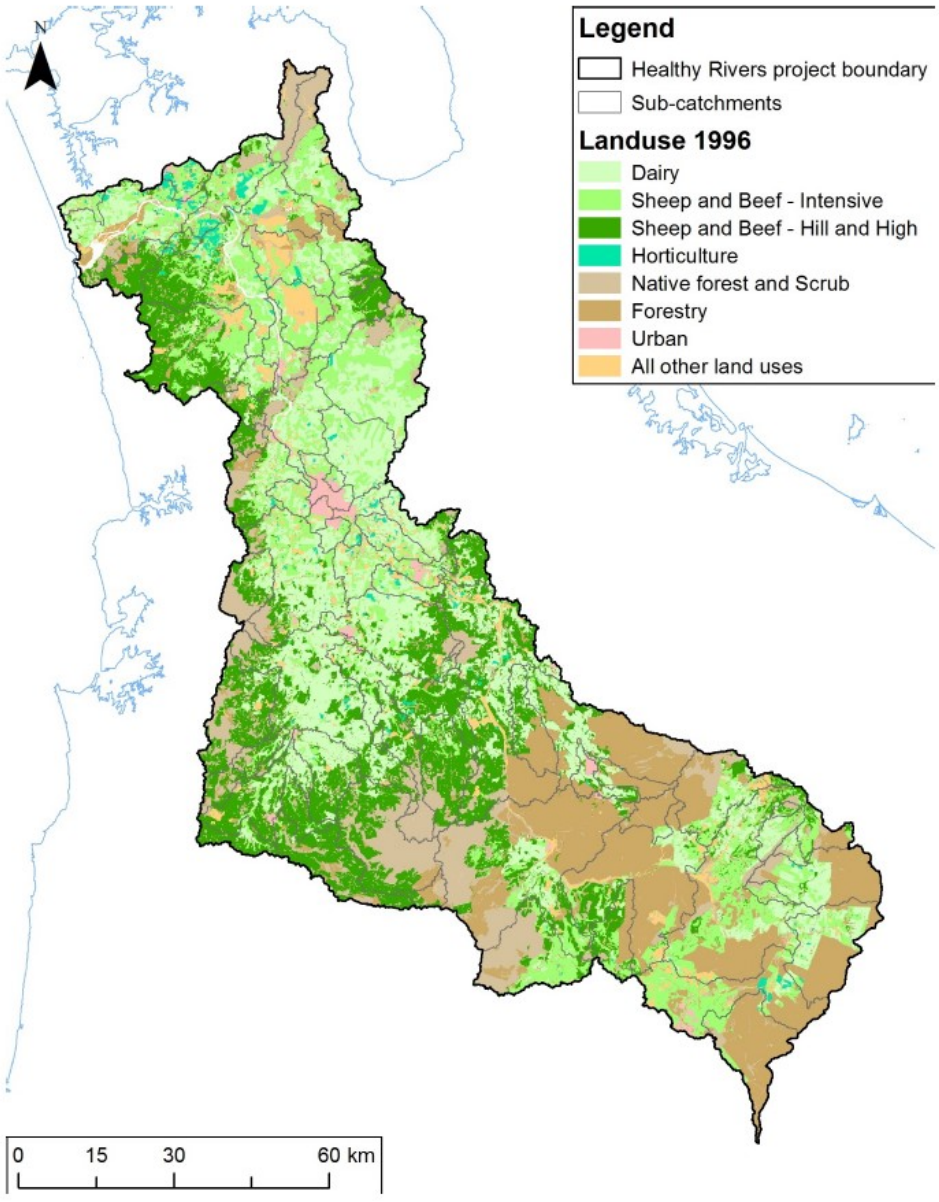
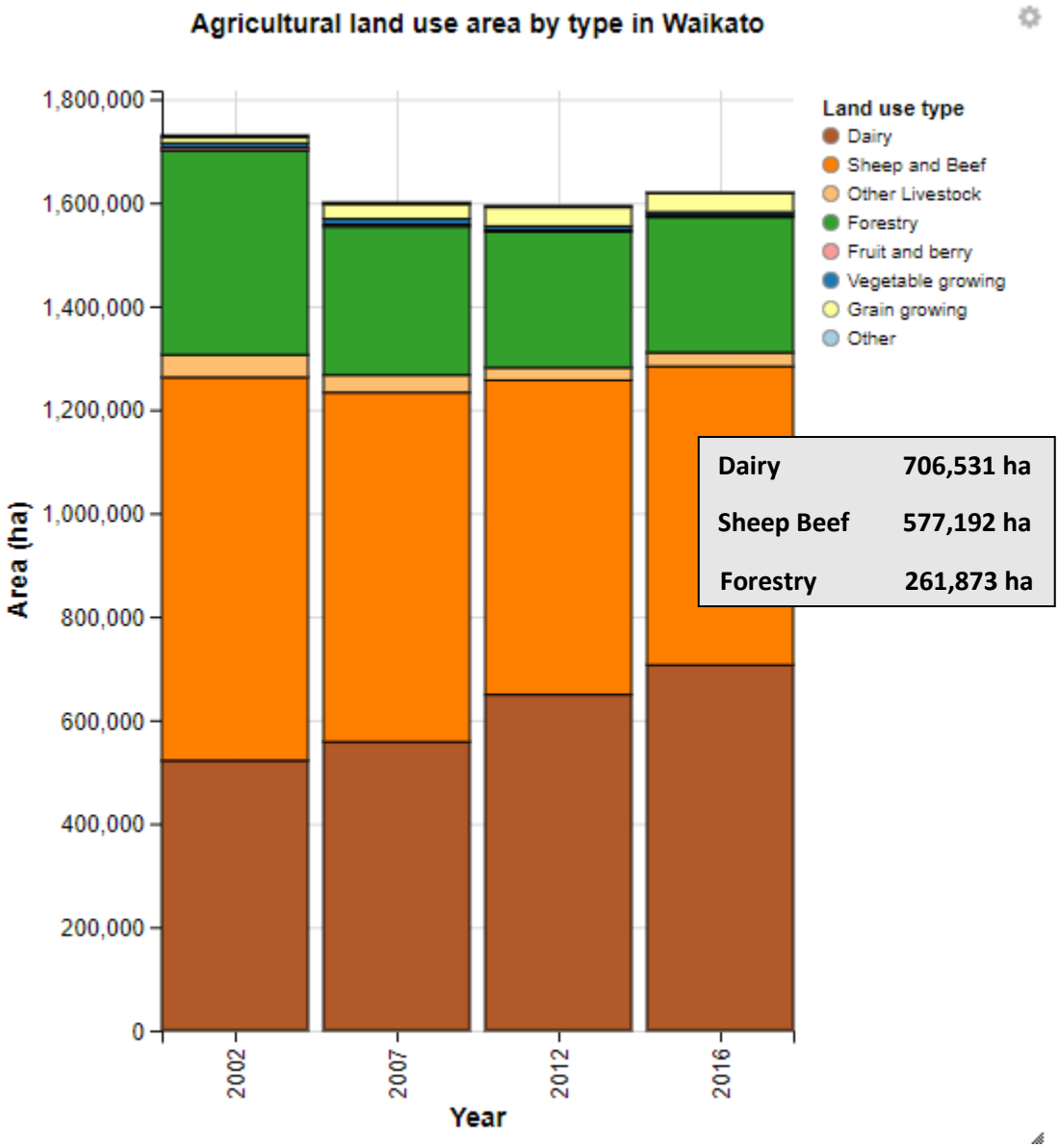


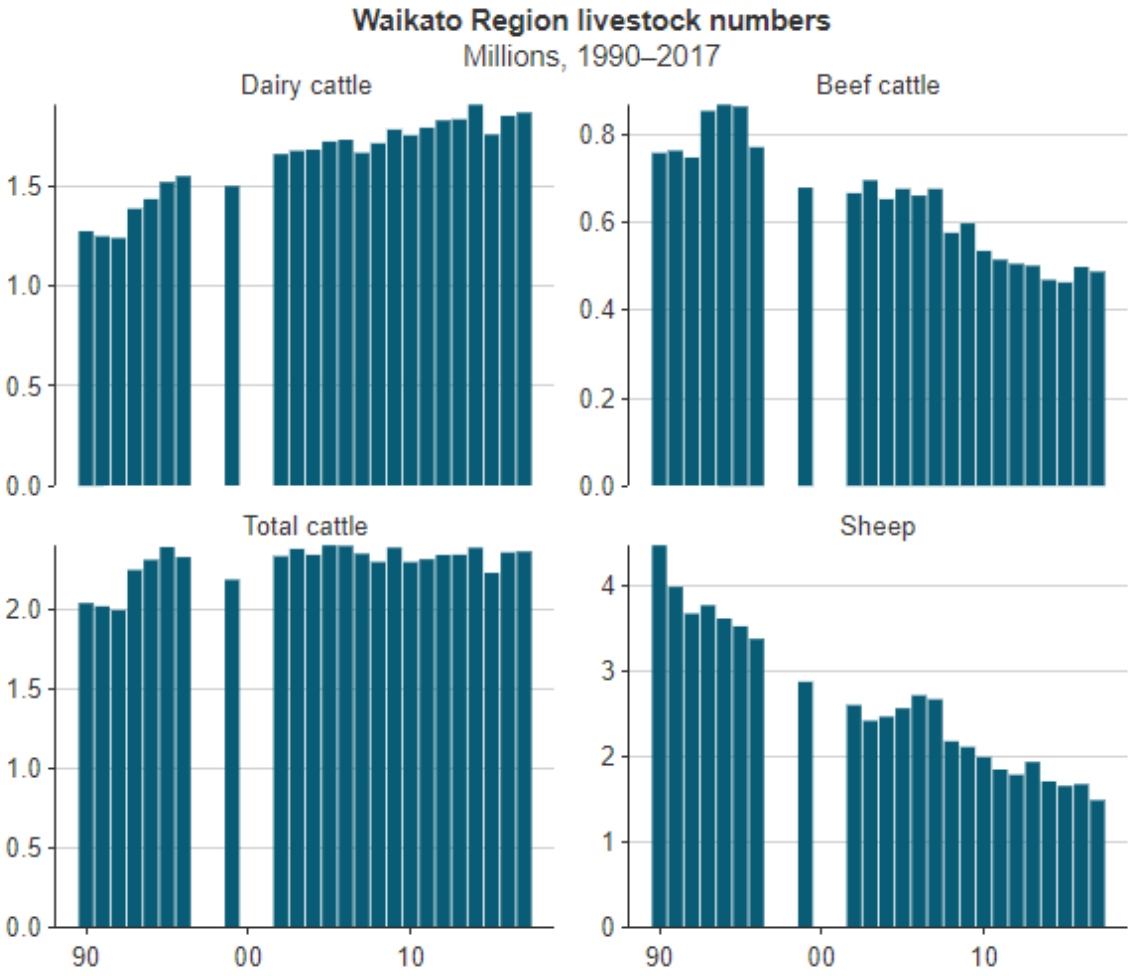
Figure 3-4: Land use for 1996.

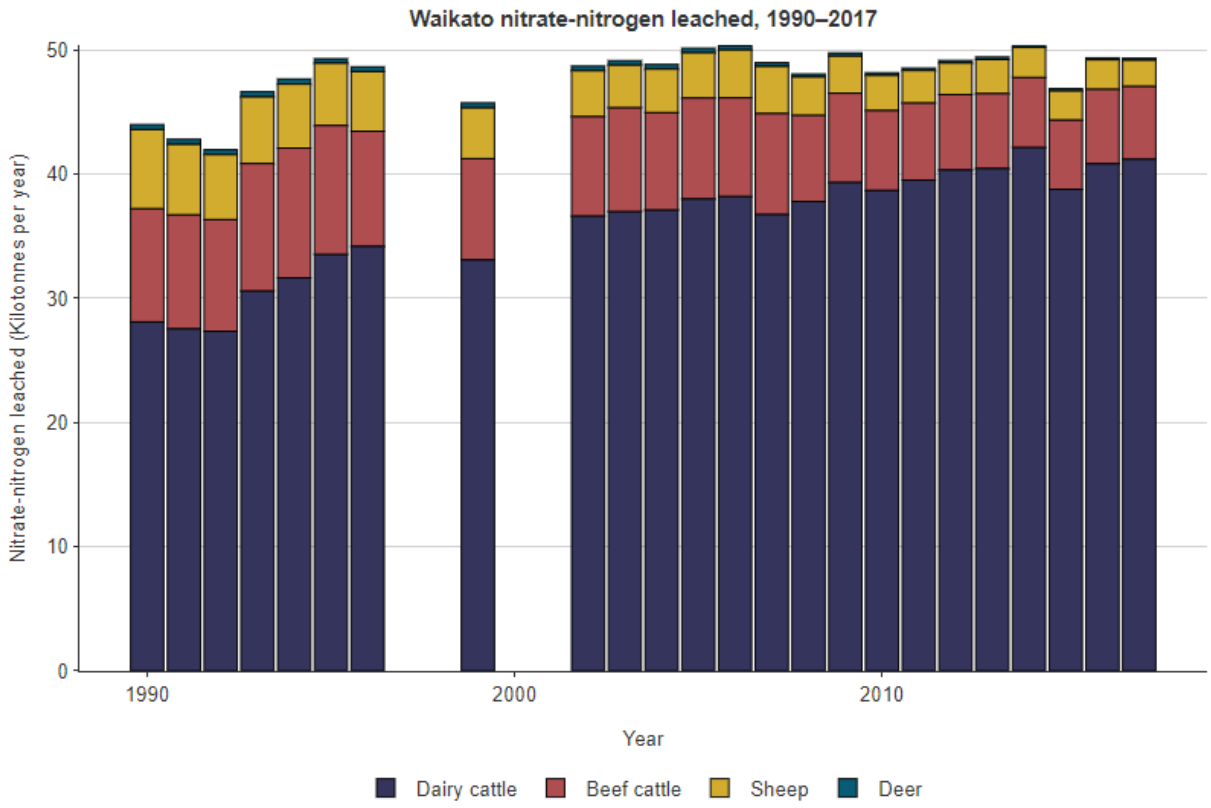
Ref - Review of historical land use and nitrogen leaching: Waikato and Waipa River catchments

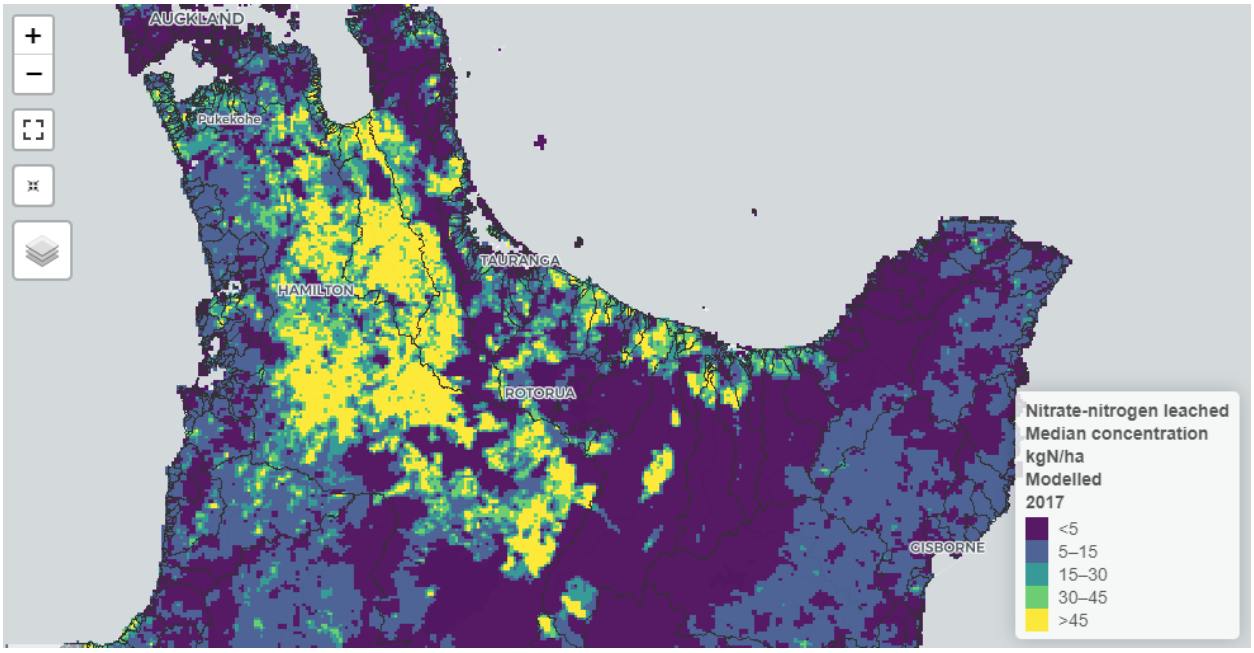


Ref - https://statisticsnz.shinyapps.io/agricultural_landuse/

10.

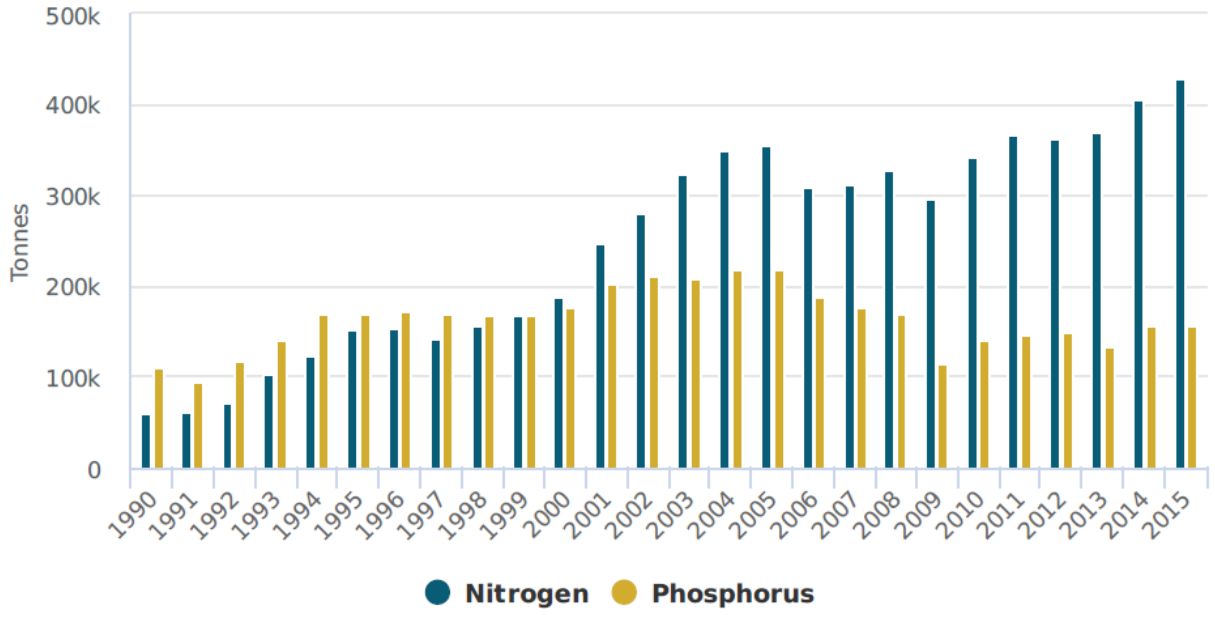

Waikato Region livestock numbers
Millions, 1990–2017
Dairy cattle
Beef cattle
Total cattle
Sheep
0.0
0.5
1.0
1.5
0.2
0.4
0.6
0.8
2.0
0
1
2
3
4
90
00
10





https://statisticsnz.shinyapps.io/nitrate_leached/

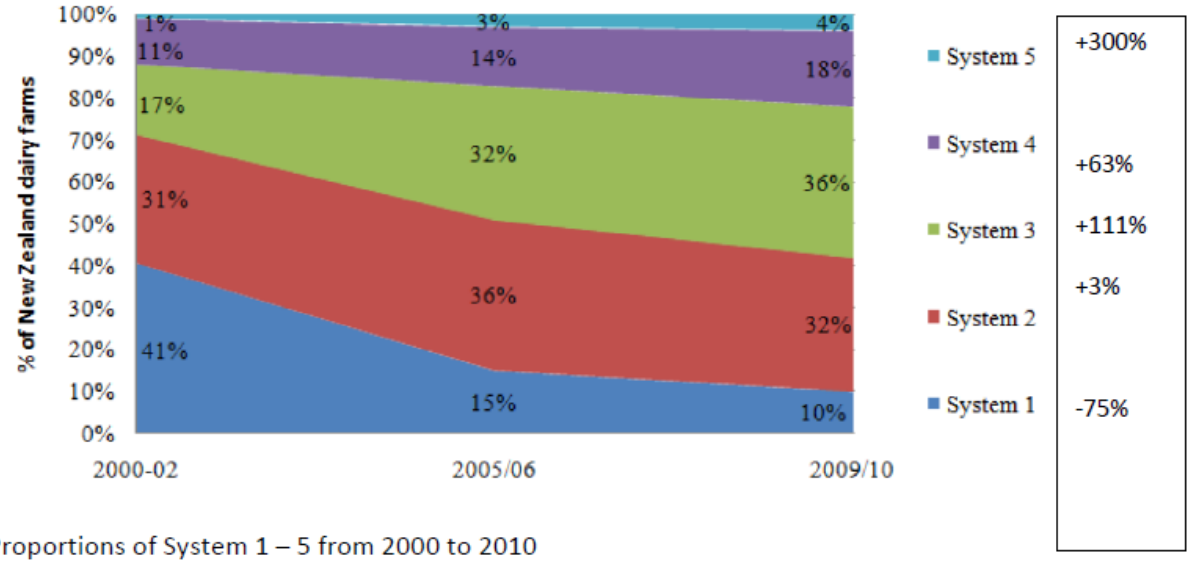
Nitrogen and phosphorus in fertiliser, 1990–2015



Data source: Fertiliser Association of New Zealand

Farms by farm type (ANZSIC06) and territorial authority (continued)[1][2]
At 30 June 2017

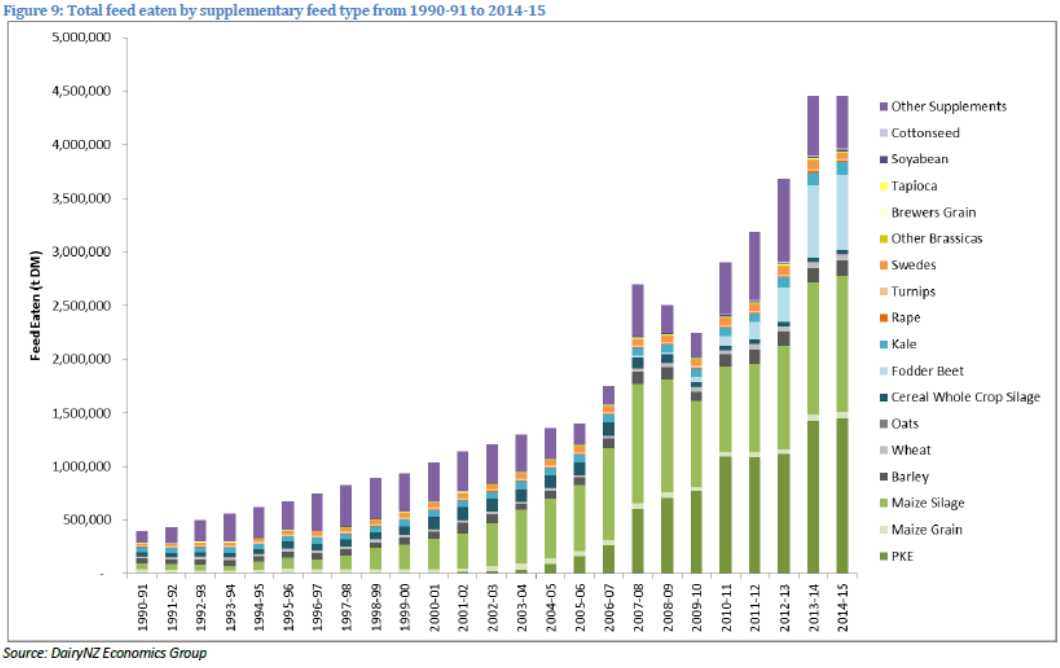
Territorial authority	Farm						
	Sheep farming (specialised)	Beef cattle farming (specialised)	Sheep-beef cattle farming	Grain-sheep and grain-beef cattle farming	Other grain growing	Other crops growing nec	Dairy cattle farming
Waikato district	**48**	**807**	**186**	**6**	12	114	**663**
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	**936**
Hamilton city	**3**	27	**3**	0	0	3	**24**
Waipa district	**27**	**384**	**54**	6	6	102	**573**
Otorohanga district	**18**	**165**	**60**	3	3	39	**369**
South Waikato district	**6**	**108**	**12**	3	0	36	**390**
Waitomo district	**27**	**141**	**207**	0	0	9	**75**
Taupo district	**24**	**105**	**39**	0	3	15	**135**



Proportions of System 1 – 5 from 2000 to 2010

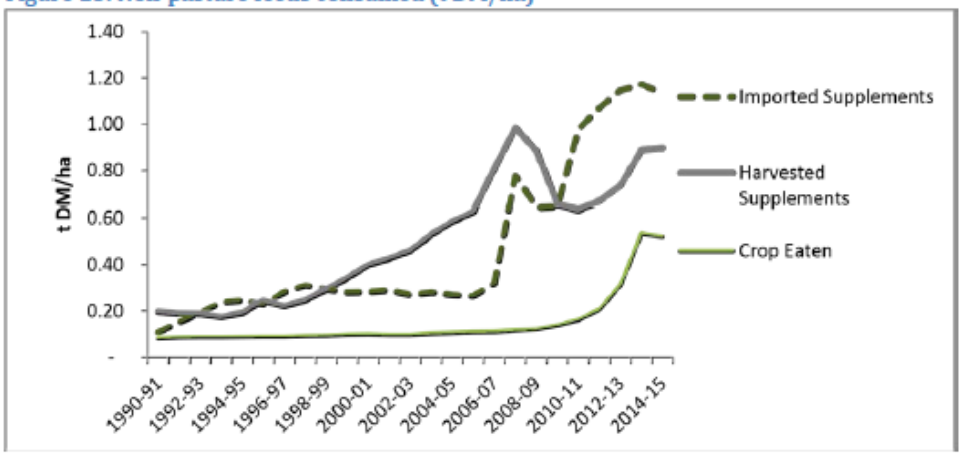
Source: DairyNZ Economics Group

Dairy Farm Systems 1 to 5



Ref - Feed Use in the NZ Dairy Industry MPI Technical Paper 2017/53

Figure 15: Non-pasture feeds consumed (t DM/ha)



Ref - Feed Use in the NZ Dairy Industry MPI Technical Paper 2017/53

Table 3.3: Herd analysis by district in 2017/18

Region	District	Total herds	Number of owner-operators	Number of contract milkers	Number of share-milkers	Total cows	Total effective hectares	Average herd size	Average effective hectares	Average cows per hectare
Waikato	Waikato	648	369	87	189	217,787	77,536	336	120	2.81
	Hamilton City	18	10	1	7	5,512	1,970	306	109	2.80
	Waipa	547	306	83	157	200,733	64,546	367	118	3.11
	Otorohanga	361	204	47	110	134,970	46,905	374	130	2.88
	Thames-Coromandel	88	52	20	16	26,499	9,869	301	112	2.69
	Hauraki	381	214	72	94	111,513	40,236	293	106	2.77
	Matamata-Piako	902	470	111	320	282,364	90,776	313	101	3.11
	South Waikato	377	183	77	116	156,444	52,691	415	140	2.97

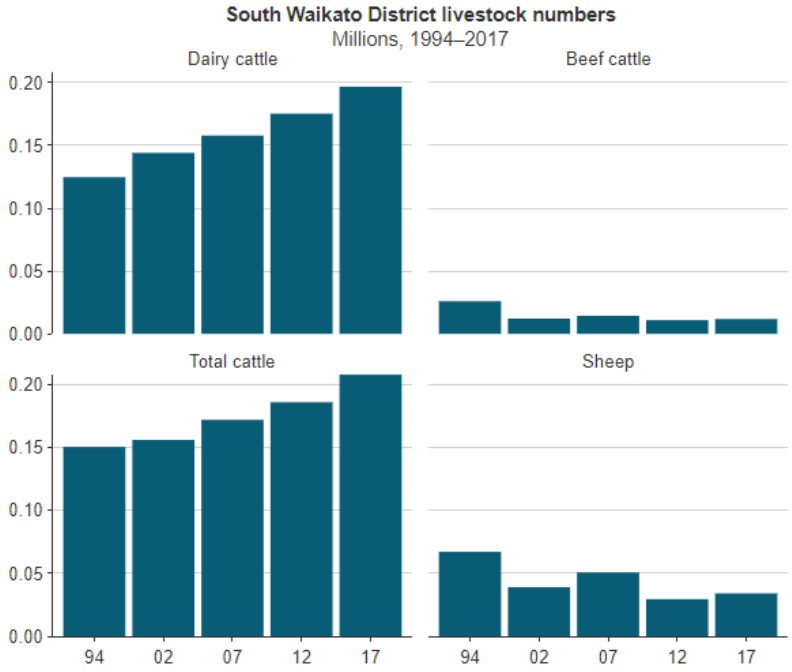
Table 3.3: Herd analysis by district in 2014/15

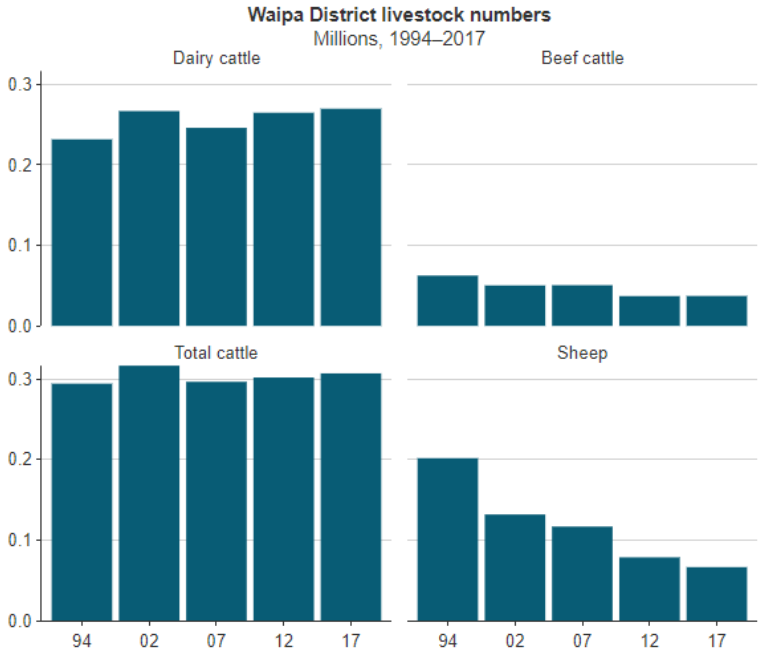
Region	District	Total herds	Number of owner-operators	Number of share-milkers	Total cows	Total effective hectares	Average herd size	Average effective hectares	Average cows per hectare
Waikato	Waikato	687	461	224	231,517	81,729	337	119	2.83
	Hamilton City	15	8	7	4,384	1,526	292	102	2.87
	Waipa	570	376	194	202,331	65,807	355	115	3.07
	Otorohanga	378	244	134	141,865	47,970	375	127	2.96
	Thames-Coromandel	95	66	29	27,675	10,558	291	111	2.62
	Hauraki	408	283	124	116,743	41,611	286	102	2.81
	Matamata-Piako	972	592	380	294,701	94,484	303	97	3.12
	South Waikato	382	254	128	154,204	51,619	404	135	2.99

Table 3.3: Herd analysis by district in 2012/13

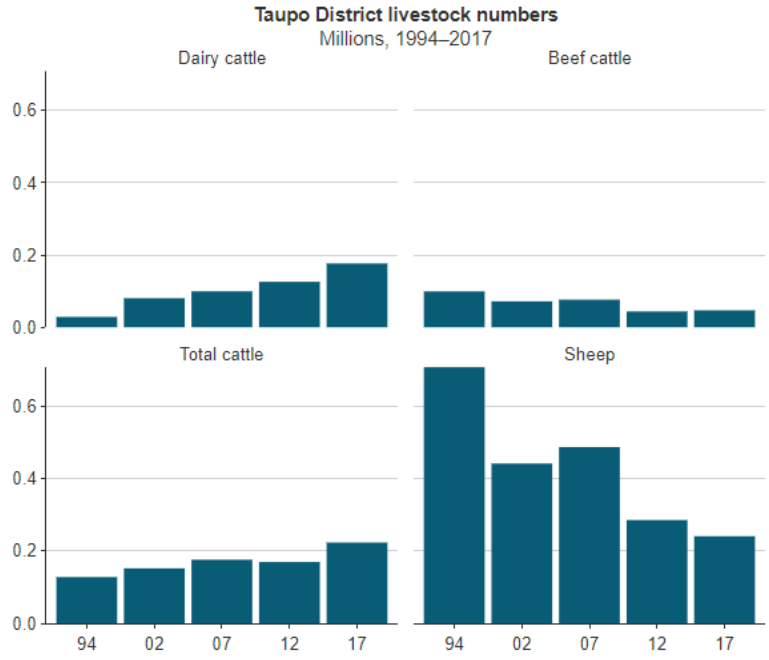
Region	District	Total herds	Number of owner-operators	Number of share-milkers	Total cows	Total effective hectares	Average herd size	Average effective hectares	Average cows per hectare
Waikato	Waikato	686	439	246	223,998	79,829	327	116	2.81
	Hamilton City	17	9	8	4,896	1,641	288	97	2.98
	Waipa	580	371	209	198,360	65,097	342	112	3.05
	Otorohanga	383	238	145	138,216	48,028	361	125	2.88
	Thames-Coromandel	93	60	33	26,108	10,025	281	108	2.60
	Hauraki	413	274	139	115,287	42,078	279	102	2.74
	Matamata-Piako	1,000	576	424	295,550	94,374	296	94	3.13
	South Waikato	382	237	145	146,138	49,139	383	129	2.97

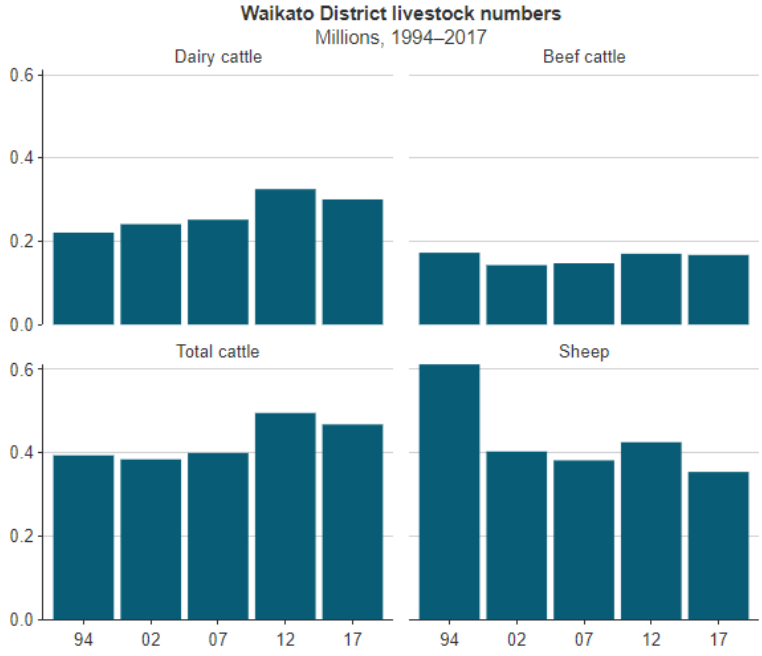
Ref - https://www.lic.co.nz/documents/450/NZ_DAIRY_STATISTICS_2017-18-WEB-10_OCT.pdf

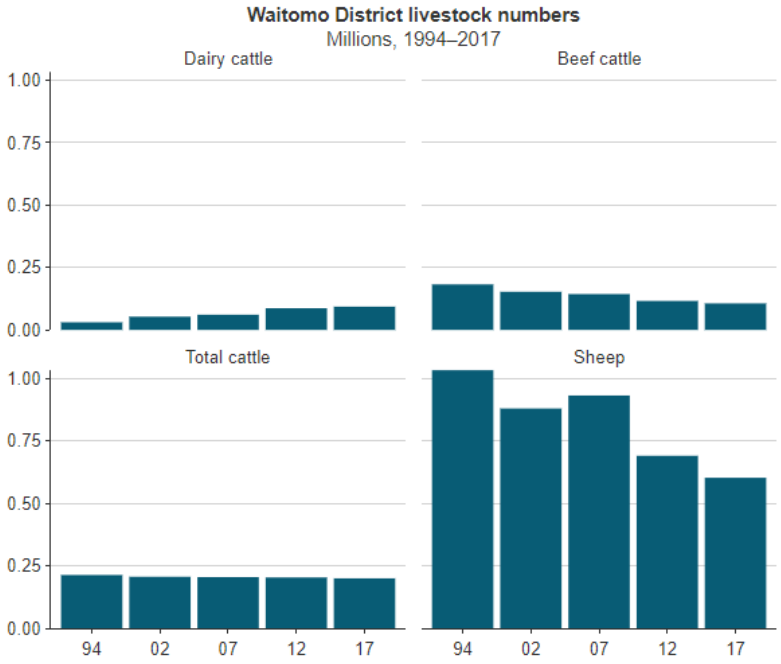

South Waikato District livestock numbers
Millions, 1994–2017
Dairy cattle
Beef cattle
Total cattle
Sheep
0.20
0.15
0.10
0.05
0.00
94
02
07
12
17


Waipa District livestock numbers
Millions, 1994–2017
Dairy cattle
Beef cattle
Total cattle
Sheep
0.3
0.2
0.1
0.0
94
02
07
12
17

11.


Taupo District livestock numbers
Millions, 1994–2017
Dairy cattle
Beef cattle
Total cattle
Sheep
0.0
0.2
0.4
0.6
94
02
07
12
17


Waikato District livestock numbers
Millions, 1994–2017
Dairy cattle
Beef cattle
Total cattle
Sheep
0.0
0.2
0.4
0.6
94
02
07
12
17


Waitomo District livestock numbers
Millions, 1994–2017
Dairy cattle
Beef cattle
Total cattle
Sheep
1.00
0.75
0.50
0.25
0.00
94
02
07
12
17

Low – medium intensity pastoral land use ≤ 18 su/ha ~ 1000 kgLW/ha (wintered 1st July)

12. I contest that low – medium intensity land use that entails farm systems having a stocking rate intensity ≤ 18 su/ha ~ 1000 kgLW/ha (wintered 1st July on effective grazed area) will incur an environmental footprint upon water quality that is by and large acceptable underpinning the outcomes that are sought for ecosystem and human health underscoring Te Mana o te Wai.
13. It would also be apparent that some low – medium intensity farms, in some locales they will already have a discharge of contaminant loss on a property basis that is no greater and often could be less with respect to the subcatchment target. The impact of this type of farming system is relatively benign and should not be penalised in any capacity.
14. Should these farms do better and strive to reduce loss rate further – Yes
    a. It is noted that many low – medium intensity farms probably will have to undertake more mitigative action particularly in regard to sediment, microbial and phosphorus loss and this is an acceptable demand.
    b. However, the answer is no if doing so provides someone else opportunity to continue polluting freely and quietly for their own personal profitable gain
15. With respect to nitrogen loss there should for low N loss farm systems be flexibility to adjust where stocking rate does not increase above an extensive / intensive livestock stocking rate threshold which I believe should be set at 18 su/ha over the whole effective area of the farm.
    a. Note land users who have been early adopters of mitigation action for example livestock exclusion with riparian setback buffers should not be penalised for the land area now no longer included in the measured effective grazing area. This leniency must be afforded otherwise the signal is not to do anything in advance because the polluter is rewarded!
16. Nitrogen ↓↑ flexibility is an integral part of low intensity extensive farm systems (these are farm systems noted for being complex, diverse and have revolving livestock policies to fit market and climate change) and so this fundamental insight

from the beginning should have been factored into the modelling work used to assess contaminant concentration, load and impacts which informed the decision making process to develop Plan Change 1.

17. It must be noted that low intensity farm systems operating with natural grass growth constraints will often be economically limited in ability to purchase supplementary feed inputs that would sustain stocking rate intensity above that having a natural fit.
    a. Note s42a provides no recommendation of flexibility for low N loss farm systems
    b. This again is a failure to understand farm systems!
18. It also must be noted that low intensity extensive farms systems despite having low N loss may have problematic issues about sediment, microbial pathogen and phosphorus loss. This situation has always been acknowledged by S&B farmers supported by sector representatives without obdurate endeavours to downplay, ignore or hide. (HCG farmers described this as 'warts and all')
19. I also firmly suggest that low – medium intensity land use should be granted a permitted activity where located in Priority Two and Three subcatchments and a controlled activity in Priority One subcatchments
20. This divergent of consent pathways has been proposed because of the known WRC incapacity to resource the processing of consents in good time hence the need to focus available limited resource where it is most needed. This recognises the staged approach as proposed is unfortunately getting sharply squeezed towards the end date and all work now coalescing together defeating the original intent.
21. I believe there is enough rigor using a permitted activity pathway that incorporates farm environment plans, identifies management of stock exclusion and critical source areas, the engagement of certified farm advisors, and audit scheduling to ensure overall compliance. Plus, there is nowadays enough external witness of farm activities and other coercive forces to ensure farmer engagement in this process is maintained to a good standard.

22. I also recognise that the year-2026 (Plan Change 1 end date) is fast approaching limiting opportunity for Plan Change 1 to be truly effective and provide meaningful restoration in a staged and measured manner as originally anticipated. This demands a more pragmatic focus concentrated towards high risk vulnerable Priority One subcatchments, greater focus upon high risk land use and an extension of time along.
23. To create a more seamless pathway forward partially to avoid litigious disruption at each plan change it is proposed here that an interim year-2050 target state of water quality is established to provide better certainty of outcome.
24. By providing an interim target year-2050 state of water quality it also allows a restart of conversation and dialogue about our farm land use and the environment, a conversation that leverages good science and irrefutable evidence yet is precautionary where knowledge is scant, where problem understanding is shared, and through collaboration and working in genuine partnership we strive to put up workable solutions
25. Farming as a land use is diverse and can be complex, the land itself is variable in nature and therefore no policy and / or rule, individually or as a suite, can prescriptively define the need for interpretation and flexibility to ensure day-to-day activity can adapt to changeable circumstances. There needs to be discretion and scope (within boundaries) to allow this within a permitted activity framework and where consent has been granted. To juggle this need for tailored solutions and certainty of outcome to give confidence can be manageable by targeting assessed risk and frequency of audits.
26. Farmers have 'skin-in-the-game' probably more so than any other stakeholder yet we also acknowledge the strong interdependency and other linkages that bond us all together as a community
27. Farmers want to provide other stakeholders and the wider community that there will be good measurable certainty and confidence of outcome with an improved state of water quality

28. Farmers have a special unique knowledge and perspective about the farmed environment
29. Farmers have a crucial role in producing high-quality food and fibre whilst protecting, maintaining and enhancing the farmed environment
30. Farmers have an irreplaceable role in managing our valued environment
31. There is obvious connection between agriculture, our environment, our landscapes, our communities, our culture and our heritage which must be positively recognised and embraced
32. We must ensure the long-term productive potential of land is preserved and retained for such purposeful manner, a stance enhanced by acknowledging the dependency upon sustainable use of natural resources incurring minimal (and acceptable) is related to risk of nuisance and degradational impact upon the downstream receiving environments
33. The farmers must have prerogative to adopt and implement a range of potential actions most appropriate to the farm's circumstances to reduce contaminant loss that will contribute and deliver an outcome having positive environmental benefit
34. Farmers are prepared to do what is right when given fair and equitable opportunity
35. Farmers demand and must be provided greater clarity of expectation
    a. Identify the problem, provide a tangible and 'stretch' target that is doable and reasonable (give direction and pace of travel with clear line of sight)
    b. Always having to be mindful of downstream effects on receiving environments (this is a new concept for many)
    c. Seek solutions without resorting to theft of opportunity (no strong arm or subversive tactics)
    d. Allow for innovation and adoption of novel solutions
    e. Time to transition
    f. Independent assessment, review and audit
    g. Monitor, benchmark, review and adjust progress

Hill Country > 15-degrees will require different assessment of land use impact and likely mitigation actions that is not as black ’n white as may be found for lowland country

Waikato – Waipa Water Quality Plan Change 1

36. NZ sustainable management "managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people to meet their needs now without compromising the ability of future generations to meet their own needs."
37. Plan Change 1 is recognition that natural resource usage in the Waikato – Waipa is found to be in some subcatchments in a state of over-allocated. There has been a failure to adopt precautionary principles to avoid over allocation as was the intent of the RMA and the NPS Freshwater as originally envisaged by their respective architects in advance of allowing intensive land use change.
38. The finding of over-allocated subcatchments was identified by modelling work that informed the notified plan which has been confirmed by new independent modelling work for example B+LNZ Dr Tim Cox who has indicated significant pastoral land area will need to be potentially re-afforested to reduce the excess contaminant load.
39. Plan Change 1 is set out to be part of a staged restorative process that commences to place limits on contaminant loss. This will potentially curtail current and future land use economic activities to ensure usage does not impose irreversible environmental costs on future generations. By doing so it is considered the PC1 process is positively and actively intervening in favour of Te Mana o te Wai and the welfare and opportunity of future generations.
40. Plan Change 1 begins by adoption of processes to reduce contaminant load that threatens ecosystem and human health using constraints and thresholds which are triggers to impose a threat of punitive deterrent on economic activity.
41. Plan Change 1 however in my opinion imposes disproportionate costs onto some community sectors in an endeavour to lessen the burden of others, principally others who have contributed the greatest increase of contaminant load. This unfairness and inequitable approach is considered a conflict which does not favourably support or encourage the well-being of a united community.

In summary there is a need for

42. The management of all four contaminants i.e. Nitrogen, Phosphorous, Sediment and Microbial pathogens needs to have focus principally on subcatchments and this be managed in a fair and equitable manner;
43. Plan Change 1 must embed systems and frameworks that allow future plan changes to step up actions without interference of continual obdurate debate and discussion;
44. Reductions of contaminant loss arising at source on farms that are of high risk to further environment nuisance must be undertaken by those who are culpable without demands placed on unrelated land users who have been wrongfully asked to share-the-pain for no consideration;
45. With recognition there is substantial upcoming change required it has been determined that a staged transitional approach is necessary to avoid widespread disruption and angst in an endeavour to retain vibrant, local communities and a strong regional economy;
46. A transitional approach will for low N loss land users an allowable flexibility to adjust N loss rate up to a flexibility threshold (≤ 18 su/ha ~ 1000 kgLW/ha) to accommodate market and climate change;
47. An interim year – 2050 target state of water quality should be established to identify with better certainty the direction and pace of travel required
    a. Plan Change 1 year-2030 (date shifted from year-2026)
        i. Date shift recognises troubled delays in commencement
            1. Variation 1 Hauraki
            2. Insufficient capability to provide oversight
                a. WRC staffing
                b. Certified farm advisors and auditing
            3. Insufficient time to implement
                a. Livestock exclusion
                b. Nitrogen Reference Point Overseer calculations
                c. FEP preparation

b. Plan Change 2 year-2040

c. Plan Change 3 year-2050 (interim year-2050 target state of water quality)

48. There will be land use change to achieve the desired water quality outcomes over the long term which needs to be carefully managed;

49. There must be more comprehensive monitoring to ensure better and more complete understanding of water quality and ecosystem and human health.

The problem set and related issues

that sit behind the proposed Plan Change 1…

50. The problem set and related issues that sit behind the proposed Plan Change 1 have been defined but not all are well articulated, or constructed without bias, and there is some out of place context, nor definitive in explaining what the actual problems are, making it difficult to work up a solution(s)
51. Nevertheless, there is no turning back, change is required. It is therefore a troubling vexed exercise about how to convey what could be solution(s) to these problems
52. Farming is dynamic and always evolving in response to a wide array of enablers, stressors, economic and climate change, consumer demand and other. Land use and production methods have changed considerably in recent history. There was earlier reference to the map Land Use 2018 B+LNZ Dr Tim Cox which highlights how important up-to-date information is extremely important to make good informed decisions.
53. Farmers are innovative and adaptive in response to change and will readily adopt new technology and methods when considered worthwhile to do so. Any endeavour to protect and cocoon farmers, or a selected group of farmers, to lock in business-as-usual only staves off the inevitable change that will ultimately occur would be foolish and will bring about recrimination.

55. There are numerous good examples of innovation and change in recent NZ farm history, many have been extremely positive and rewarding whereas others doomed and now confined to history:

Improved efficient grassland management	Grazing science McMeekan
Hill country pasture fertility	Aerial topdressing fertiliser
Bush sickness in the Upper Waikato pumice country	Cobalt B12
Marginal land development	Misplaced land use
Removal of subsidies	False protection → no resilience
Land use change and intensification	Dairy industry growth
Dairy industry processing concentration	Fonterra
Winter wet pugging	On – Off grazing
Improved fencing	Electric fence
Efficient milking systems	Herringbone design
Improved effluent discharge	Spray irrigation
Kiwifruit PSA disease aftermath	Industry single desk marketing
Misplaced farming ‘the bridge to nowhere’	Walk away – the land reverted
Poor sheep productivity	Improved breeding genetics
Ostriches	No critical mass to establish
Cashmere and Mohair	Boom bust boom cycle
Market differentiation	A2 milk

56. The lesson from above as we look over the problem set is about the decision-making process to determine what is the most appropriate course of action. The decision-making process must be robust and be mindful to avoid unnecessary disruption and has examined carefully the many nuances so unintended consequences if any are minor so ensuring good progress can be achieved towards target outcomes. The process however cannot afford to protect current day land use, to do so would be fraught as history foretells however there must be guidance and nurturing.
57. The right decisions must be made so everyone has good certainty and confidence about what comes next to minimise possibility of regret and disappointment.

Solutions –

pragmatic, reasonable and doable; embraced by all

Farming Fits the Land

The landscape vista affords a mosaic of diverse different land use reflecting the versatility, capability and assimilative capacity of each class and unit of land

There is universal acceptance to apply land use constraints to ensure the environmental footprint in all receiving environments is minimised and suitable to restore the mauri and mana of the wai

Ecosystem and human health attributes will be apposite allowing swimmable waters and Mahinga Kai to be safe when such activity in commonly enjoyed

Solutions

A Vision of Success

An interim year – 2050 target state of water quality

Ecosystem and Human Health

Te Mana o te Wai

Restore the mauri and mana of the wai

Robust and vibrant rural communities

Swimmable waters and Mahinga Kai (when good and safe to undertake)

i. An appreciation it will never be 'pristine' everywhere
ii. Acknowledges there is an acceptable environmental footprint

A focus on subcatchments

Nitrogen

- **Nitrogen Reference Point**
- **Nitrogen flexibility**
- **Nitrogen allocation**

Livestock exclusion and Buffer width setback

Horticulture

Seamless transition into Plan Change 2 and 3

Farm Environment Plan

Other water quality attributes

Flood protection and Land drainage schemes

Point Source Discharge (Significant Industry and Infrastructure)

Please note there are common themes linking the topic subjects between Block 1, 2 ad 3 and this has often been difficult to tease apart separately

What is the Vision of Success?

1. I believe we have today good enough evidential science and where it may be lacking, we have good intuitive understanding to take a precautionary position to work up solutions for Plan Change 1 and more importantly where we must be in 20 – 30 years from now.
2. The excusive response provided by some submitters that we need further science and / or more data to make the right decision is simply an endeavour to slow up and delay making some obvious game changer calls until Plan Change 2. I regard this has simply a ruse to retain business-as-usual and make someone else pay.
3. We must all (or at least a good majority) be desirous of the targeted end goal and objectives
4. Plan Change 1 will be inoperable if we cannot all together agree on process and then implement. A lot of strategic thinking is required to turn the worm, to shift from a business-as-usual mindset to encompass and embrace new opportunities with a cultural shift where our actions are not simply exploitive leaving behind unwanted externalities.
5. Plan Change 1 must be implementable for the right reasons so it will not be an invitation to encourage unnecessary push-back (particularly from individual farmers who want to do what is right)
6. Plan Change 1 and the future plans thereafter will involve organisational change, disruption and upheaval however the direction of such must be fair and equitable and for the right reasons.
7. Plan Change 1 is an intermediary step to establish and embed process that will be furthered and advanced by succeeding plan changes to ultimately give effect to the Vision and Strategy.
8. It is important therefore that Plan Change 1 leverages existing land use and management in a manner that is directional towards targeted outcomes and embeds process that could be considered as game changers to enable significant shift in how we use our natural resources

What are we trying to do?

What will Plan Change 1 achieve?

9. To begin we must start with a well-articulated Vision of Success that provides an opportunity to demonstrate strong leadership
10. The Vision of Success must be supportive and give effect to Te Ture Whaimana o Te Awa o Waikato – the Vision and Strategy for the Waikato River
11. A Vision of Success and any supportive policy and rules that have impacts on rural communities should be worked through with those communities and associated stakeholders; most importantly including landowners and local farming groups
12. To date the Vision of Success is not clear nor is it communicated in an unambiguous manner

    Te Mana o te Wai (a key framework to leverage)

    a. Restore the mauri and mana of the wai
        i. Ecosystem and Human health
    b. Robust and vibrant rural communities
    c. Swimmable waters and Mahinga Kai (when good and safe to undertake)
        i. An appreciation it will never be 'pristine' everywhere
        ii. Acknowledges there is an acceptable environmental footprint

    A focus on subcatchments

    a. The water quality from every subcatchment and tributary will be the outcome upon which success will be measured
13. A Vision of Success must be anchored onto tangible and realistic outcomes because it is important to create certainty and provide a long-term and stable policy environment, *with a clear target state of water quality that provides for ecosystem and human health*
14. Establish an interim year-2050 target state of water quality
    a. (Ecosystem and human health) see below further discussion and details
    b. An interim target ensures that business, industry and others have good enough time to plan and adjust because it provides advanced and sufficient expectedness,

without being too far ahead that it becomes hard to account for technological advances and other relevant upcoming developments.

c. An interim year-2050 target allows 3 plan changes to present staged step changes within known principles and frameworks in a seamless progressive manner to occur which can be adapted, changed and moderated according to progress.
d. An interim year-2050 target avoids the possibility of restarting the process from scratch every plan change cycle. This also avoids the possibility of momentum slip if plan changes are subject to revisit and debate of all underlying principles and frameworks.
e. An interim year-2050 target will provide policy stability to be sheltered from the short-term ebb and flow of politics and whims of local government.

15. There is an expectation that all farms will operate following and incorporating good management in the context of a Farm (Compliance) Environment Plan. With a realistic understanding of the scale of change involved this will be challenging and I envisage will not happen during the next few years for Plan Change 1 by the year-2026

Establishing underpinning principles

16. Te Mana o te Wai
    a. (it is notable very little heed is accorded to Te Mana o te Wai, the concept is poorly embraced and not well explained)
    b. Ecosystem and human health

        Bottom lines to restore the mauri and mana of the wai
17. A focus upon subcatchments to deliver targeted water quality improvements
    a. The water quality from every subcatchment and tributary will be the outcome upon which success will be measured
18. Reduction of contaminant loss, diffuse and point source where associated environment footprint becomes externalised
    a. This has a direct loopback to the interim target year-2050 state of water quality

        and, with Table 3.11.1 (when updated with amendments)
19. Fairness and equity, proportionality*

    Diffuse vs Point source Pastoral vs Horticulture Dairy vs S&B

    *Note * Proportionality is a difficult construct for Phosphorus, Sediment and Microbial Pathogens when they are not benchmarked. Also, there may be contaminant loss that continues in excess despite all management endeavours to mitigate indicating land use is misplaced and so must ultimately change*
20. No offsetting without consideration
21. No one-size-fits-all
22. A desire for seamless transition between plan changes
23. No favouritism or endeavour to pick 'winners'
    a. Policy and rules should not be coupled to existing land use
    b. Only constraint are limits to avoid breach of ecosystem and human health

Farming Fits the Land

Mosaic of diverse and different land use having a good fit

a. Versatility, capability and assimilative capacity of the land

No under overs offset to provide overall improvement

b. Flexibility to adapt to market and climate change
c. Ecosystem services and provisioning are accounted for

24. There must be understanding about business profitability and the drivers that support business (need to assist transition without crippling businesses)
25. Establish frameworks to provide a platform of change with structure and certainty to allow responsible informed investment decisions while maintaining flexibility to respond to changes in circumstance
26. Recognise impact of delays upon process – advance end date to year-2030
27. A need for more monitoring to inform decisions

More additional in-stream attributes

28. No penalty or restriction because already an early adopter

Freshwater Management Units

29. Every subcatchment is a FMU

Seamless progression into Plan Change 2 and Plan Change 3

30. It would seem logical to ensure process is established within Plan Change 1 to enable seamless progression into Plan Change 2 and 3
31. See below – establishing an interim year-2050 state of water quality
32. Provide certainty of expectation, direction and pace of travel with clear line-of-sight
33. Establish frameworks
    a. Te Mana o te Wai
        i. Interim year-2050 state of water quality
        ii. Ecosystem and Human Health

        a. See B+LNZ Dr Tim Cox mainstem river TN target and LUC N loss rates

a. Natural Capital N allocation – LUC proxy

Focus on Sub Catchments A successful outcome only achieved when every tributary…

34. All potential loss sources to be examined

    Urban / Rural / Industry / Infrastructure

    Significant infrastructure and industry

35. No under overs offsetting

36. Sub Catchment Groups

    To be further discussed in Block 3

    Refer to B+LNZ Block 3 expert evidence

37. Priority sub catchments

    Identify high risk

    a. Resource consent
    b. Reductions required to be very targeted

Permitted Activity A need for time to catch up and develop capability and competency

38. Low risk sub catchments
39. Recognises WRC oversight capability and resources to are non-existent

Overseer

40. A need for one tool to ensure uniformity and consistency
41. Limitations are recognised and allowed for
42. S-Maps updates applied universally and speedily
43. LiDAR to provide slope and other information in support

Nitrogen Reference Point

44. Need to inform science –

    what is current land use and contaminant loss / concentration / load?

Nitrogen flexibility

45. low N loss land use afforded flexibility ≤ 20 kgN/ha

    or use 25th percentile from dairy sector per FMU

46. Use of stocking rate proxy flexibility ≤ 18 su/ha

The preference is to use stocking rate as the proxy

Nitrogen reduction

47. Widespread application of GMP relevant to industry / sector and loss risk

– every subcatchment

Targeted reduction within overallocated high risk subcatchments

48. Potentially more than the 75th percentile

49. Transitional adaptation

Establish an interim target year-2050 State of Water Quality

50. Direction, pace and certainty of travel – towards a known end point
51. This will set the tone of the conversation and dialogue
52. It will set out the step change between current outcomes and the expected outcome that must be satisfied
53. I believe there must be an interim target state of water quality reflecting ecosystem and human health established in the year-2050 to provide better tangible clarity and certainty of expectation because the current position is too open ended and without rigor.
54. It is well known agriculture diffuse contaminant loss is difficult to address due to its unseen cumulative nature thereby problematic to identify who is culpable
55. Establishing an interim target as an identifiable end point allows for greater awareness by everyone of what is required considering size of reduction and change that may be required, and a better ability to plan and map a strategy forward. This will allow more prescription and embedment of frameworks that will be supportive to the intent and need for restoration of water quality.
56. An interim target year – 2050 can be grasped with better appreciation of what comes next as it provides a clear line-of-sight. It is approximately a 30-year exercise, giving a 1 * generation time interval allowing inter-generational planning, it is equivalent of a standard 1 * pine tree rotation.
57. An interim target would recognise the inputs of contaminants arising from diffuse and point source with expectation both need to be managed
58. An interim target with a 30-year time duration allows plan changes to adopt reasonableness yet unmistakable expectation. With adoption of appropriate frameworks established and embedded within Plan Change 1 ensures systems are established, supported and organised by necessary capability to manage. This would allow a shift whereby land use is managed via resource consents rather than by permitted activity rules. This is a transitional approach along with requirements of moving from Good Management Practices to Best Practice.
59. Also, importantly the 30-years provides transitional time where land use is found to be currently misplaced with excess contaminant loss and substantive change is required. There

cannot be expectation that existing use is locked in using grandparenting and good farming practice accepting there is some retrenchment as it is not fair nor equitable as an allocation framework (note further discussion below about 'good farming practice' confusion).

60. I suggest that B+LNZ evidence by Dr Tim Cox provide part of the framework to establish an interim target state of water quality placed in the year-2050. This framework will probably need further additions and elaboration however it assists determine likely targets
61. From B+LNZ Dr Tim Cox the TN 'targets' applied to Waikato mainstem FMUs which could be utilised as Interim year-2050 targets:

    Upper Waikato = 0.25 g/m3

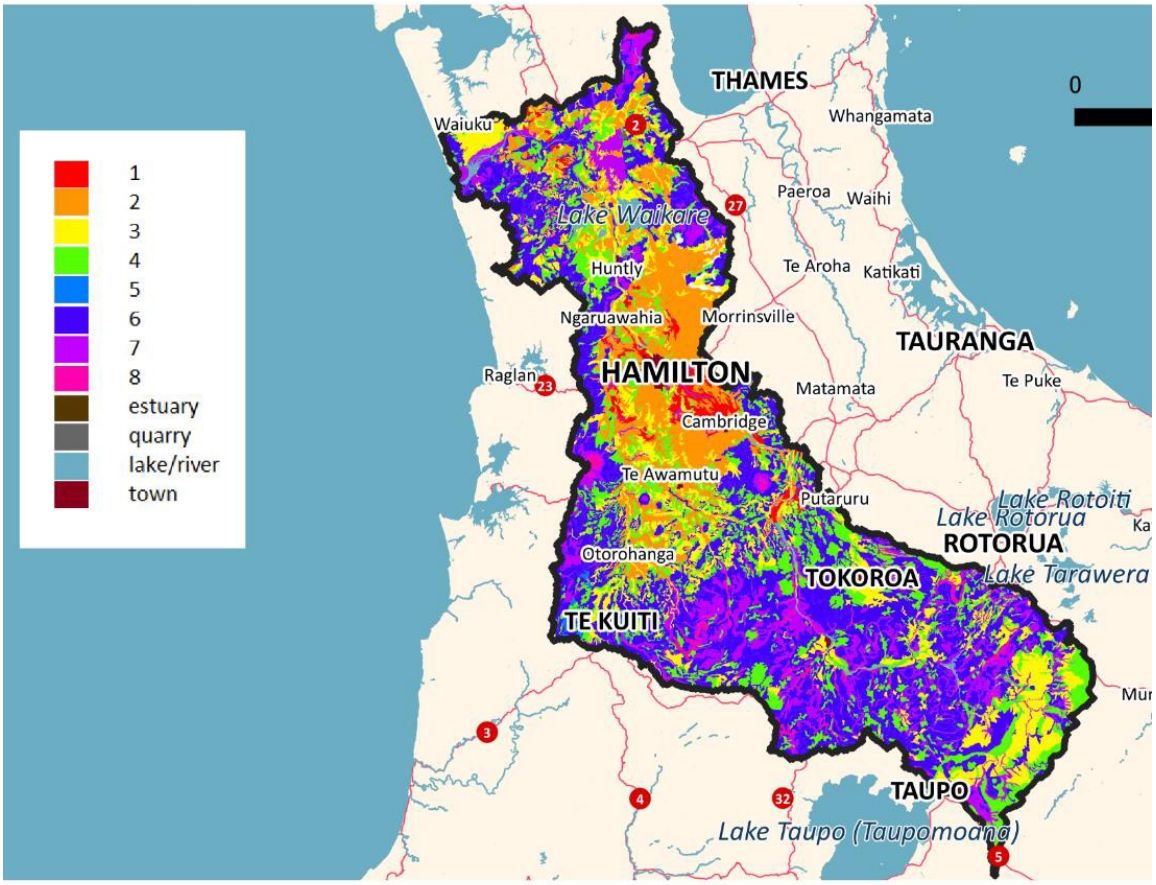
    Middle Waikato = 0.51 g/m

    Lower Waikato = 0.81 g/m3

62. This modelling work by Dr Tim Cox could be expanded to provide subcatchment and tributary concentration and load which would be extrapolated into individual property allocation using LUC principles
63. And also, from B+LNZ Dr Tim Cox establishing a 'Natural Capital' nitrogen allocation framework using LUC as a proxy as per the table below. These LUC loss numbers may need verification however they establish a target, and this signals clearly to land users a transitional period to achieve giving direction and pace of travel certainty.

LUC Class	Upper Waikato (kg-N/ha/yr)	Middle Waikato (kg-N/ha/yr)	Lower Waikato (kg-N/ha/yr)	Waipa (kg-N/ha/yr)
I	29.7	29.7	26.4	29.7
II	25.3	24.2	22	25.3
III	17.6	18.7	19.8	19.8
IV	17.6	18.7	17.6	19.8
V	15.4	15.4	15.4	15.4
VI	13.2	15.4	13.2	15.4
VII	8.8	9.9	8.8	11
VIII	4.4	4.4	4.4	4.4

64. I am in favour of embedding the natural capital allocation framework into Plan Change 1 and that it becomes immediately operable. Whilst capability to allocate still requires work this will be resourced due to necessity e shortfall here is taken up by



65. It is important also to note other submitters have also recommended the usage of 'Natural Capital' as an allocation methodology. This includes Fish and Game, DG Conservation and many individual farmers**.**

66. It is also to note from B+LNZ Dr Tim Cox evidence that the total N load from low N loss land use appears to be somewhat less than that modelled by the TLG. This provides further support that low N loss flexibility will not add greatly to total N loss to cause an overshoot. Such flexibility being a normal part of S&B farm systems should have been originally incorporated in modelling work to ensure allowance was included in any outcomes.

Natural Capital Allocation framework

67. Embedding a natural capital framework gives certainty what comes next
68. The LUC proxy leverages existing resources i.e. using the NZ Land Resource Inventory (NZLRI) and the Land Use Capability (LUC) Classification
69. The grave danger of not embedding a natural capital framework is the continuance of grandparenting into Plan Change 2 which is not tenable!

Nitrogen Reference Point

70. Nitrogen reduction for high N loss land use
71. High N loss management should be targeted where impact in waterways is greatest. This avoids one-size-fits-all and gets to the heart of the problem at source.
72. Needs to be more targeted and focused on high risk subcatchments, which could require a reduction target substantively more than the proposed one-size-fits-all 75th percentile threshold
73. High N loss reduction must be achieved even if it requires more downward decrease beyond what good management and mitigative actions could provide

Nitrogen flexibility for low N loss land use

74. It is accepted that nitrogen is the only quantifiable contaminant and hence has weighted focus
75. Required for understanding todays land use and contributive contaminant loss
76. The reference years agreed however a discussion needs to be had regarding horticulture which has 10 years vs 2 years for pastoral land use
77. Closer inspection required for moderate to high N loss 50th to 75th percentile to ensure 'real and enduring' reduction is applied
78. This is a signal that highlights further N loss reduction beyond PC1 will be required in most subcatchments and this therefore provides opportunity to assess worthiness of GMP mitigation actions would be sufficient relative to reduction that may be required

79. The 50th percentile is a new s42A descriptor to examine N loss
80. I support 'real and enduring' in that it does not for PC1 require any further clarity and it provides messaging about direction certainty but as yet the pace of the journey is not well specified which is itself a fault.
81. Note I am critical of the 75th as a one-size-fits-all reduction rather than identifying subcatchments that are high risk having elevated over allocation and need greater reduction whereas other subcatchments have less need for reduction. This adopts a more balanced and proportionate approach being fairer and equitable. There is a need to avoid disruption where it is not required
82. I do have concerns about how the 75th or other numeric percentile will be identified in good time and how this knowledge will be conveyed and then implemented. With slippage of time there may be insufficient time to implement and ensure compliance
83. I maintain that due diligence would have identified intensive agriculture was not suitable is all subcatchments as science 15+ years ago was knowledgeable
84. Flexibility for low N loss farm systems
85. The immediate short-term solution (with a sunset clause)
86. A broad one-size-fits-all approach 20 kgN/ha
87. A more specific and differentiated approach that fits subcatchment and FMU profile
88. Usage of stocking rate, intensity and livestock policy monitoring is a better preferred monitoring tool as a proxy of likely change and shift in contaminant loss and particularly nitrogen
89. Embedded now as the long-term framework and within 10-years fully functional
90. An allocation specific to each land user and property by establishing an allocation framework for example natural capital using LUC as proxy
91. The 5-year rolling average is too cumbersome blunt and costly. It does not readily accommodate change in market and climate. There is however a need to accommodate Overseer variability inconsistency and change in Overseer version shifts

92. The NRP must be measured total farm area not effective area to allow offset available within the property so not to discourage existing adoption of mitigation or deter creation of sinks and traps
93. No other tool other than Overseer despite known flaws – these flaws are to be addressed with government support
    a. Overseer it is recommended to be the default, the errors are better and more widely understood and validation – fixes will be more readily forthcoming
    b. If another tool is available and used widely then the output will be confused with distortion and not able to be aggregated. Those who understand the vagaries and weaknesses of each model will deliberatively be selective and choose the model that provides a more palatable outcome i.e. gaming of the system
    c. And who provides the go ahead of what different model is acceptable and how it may be used?

Grandparenting

Grandparenting discourages and disincentivises doing the right thing

94. It would be a travesty if grandparenting gets locked in not only in Plan Change 1 but also forward into Plan Change 2 because of failure to embed a better fairer and more equitable framework now.
95. Grandparenting is a stylised rob Peter to pay Paul scenario with no consideration on offer
96. However, if applied judiciously grandparenting with flexibility granted to land use with low impact relatively in comparison to high impact could be a short-term expedient that then must quickly morph and transition into an allocation that recognises the versatility, capability and assimilative capacity of the land for productive usage.
97. The short-term impact of grandparenting must therefore be buffered by providing flexibility.
98. The use of the precautionary principle and establishing a threshold for example Nitrogen Reference Point (NRP) is likely to appear more tolerable to one land user group compared to another. Thus, those countries that are more directly dependent on resource exploitation and conversion to achieve a higher level of economic development may not accept any global conservation strategies that disproportionately affect them unless they are adequately compensated by other countries.

Livestock Exclusion

99. Provide definition about waterway types

Perennial, Intermittent, Ephemeral and Wetlands

100. Establishing risk-based thresholds

Livestock exclusion – a focus on risk

Lowlands ≤ 15-degrees all waterways

Need better waterway definition

Hill country > 15-degrees risk where stocking rate intensity

≥ 18 su/ha ~ 1000 kgLW/ha

101. Remove difficulty to measure slope

102. Purposeful direction of focus only on high risk particularly critical source area

103. Land, Livestock and Environment Plan see below

Intensive farming stocking rate ≥ 18 su/ha in hill country will require livestock exclusion from waterways

Livestock Exclusion (and riparian setback)

104. Contaminant loss reduction must occur where risk of loss is highest, the risk must be identified, and rules must be designed to ensure mitigation is undertaken in a prioritised manner according to risk.

105. This is particularly important when considering livestock exclusion rules. It appears simple to apply broad one-size-fits-all because it is immediately tangible however it fails to consider other options and alternatives particularly regarding critical source areas having greater risk

106. There are several submissions related to livestock exclusion and setbacks, for example The DG Conservation submission has sought amendments to the stock exclusion provisions as follows:

10m setbacks for cultivation from permanent rivers, lakes and outstanding waterbodies,

5m cultivation setbacks from intermittent rivers and wetlands,

20m setback for cultivation from peat lakes, and

20m grazing and cultivation setbacks for sloping land of 20 degrees or more.

It is important to understand the definition of waterways is unequivocally clear about what is or not a waterway and the different types

107. The request for setbacks by the DG Conservation is substantially greater than proffered by most other submitters and should demand more than casual scrutiny to understand merits or otherwise. This amounts to a substantial take of private land and the scientific evidence of purpose could be said to be lacking robustness and has not been subjected to inquisitive costs benefit analysis.

Lowlands ≤ 15-degrees will require livestock exclusion

A mix of slope requires discretion and pragmatic resolve to do what is right

Hill Country > 15-degrees will require discretion in favour of risk assessment, examination of critical source areas and establishing a livestock intensity threshold ≥ 18 su/ha

Riparian buffer setbacks

108. A need for science validation of purpose and impact of

109. There is grave deep-seated concern that the riparian buffer discussion has not considered implications and unintended consequences of a mandatory buffer setback in hill country ≥ 15-degree. There is now good evidence that sediment loss will increase because of many factors including fence line construction, changing vegetation and other morphology as the waterway course reconfigures to a new equilibrium ref Whatawhata studies by NIWA John Quinn and others

110. The science on riparian setback is not conclusive in recommendation

111. In my opinion it is therefore suggested that the short-term solution must be established on risk management principles knowing that there is good purpose for setback in some locations and where land use will exacerbate the risk

112. Risk management thresholds

113. Critical Source Areas

Critical Source Areas

Hill Country critical source area mitigation using space planting poplar and / or willow trees

Hill Country critical source areas are high risk more so than livestock when livestock intensity is low

Hill Country critical source area indeterminate solution when natural erosional forces are instrumental is creating risk problems

Hill Country critical source area successful mitigation

On-farm infrastructure critical source area requires scrutiny to determine what may construe to be good mitigation action to resolve

Horticulture

Horticulture nitrogen

114. Allow industry self-management

115. Recognises crop rotation and lease of land

116. The horticulture sector is relatively unique in the Waikato – Waipa occupying a relatively small area in comparison to pastoral agriculture yet it does have a high nitrogen footprint

117. There are known difficulties with Overseer and limitation to how horticulture is modelled. However, the Overseer model is the most used despite failings and is programmed for future updates noting new funding to do so from the Crown.

118. The horticulture sector is relatively organised as a sector (because of its smallness)

119. Could it self-manage a block of nitrogen which the horticulture industry allocates to growers?

120. The nitrogen block is moveable with crop rotation and land leasing

121. A residual nitrogen loss remains with the land for example 20 kgN/ha when the crop is returned to pastoral land use or similar

122. The nitrogen block is fixed finite in size (with sinking lid) and so not rigidly fixed with land area allowing land area utilised flexibility to increase

123. Could it within a block allocation, knowing that there is a range of N loss depending on horticulture crop grown ensure that the total allocated block is given a sinking lid? For example, a sinking lid reduction of 2 percent every year for next 10 years

124. Could it be input controlled rather than output?

125. This follows industry good practice and quality assured programs
    a. Preplanning crop production plans (noting need for flexibility)
    b. Cover cropping where appropriate
    c. No single dressing per crop greater than xx (each crop type specified)
    d. No total dressing per crop greater than yy

Farm Environment Plans (FEP) – to be discussed in more detail Block 3

Sub Catchment profiling

a. The biophysical state
b. Land use, historic and existing with timelines where available
c. Historic aerial photographic record
d. Human history
e. Urban / industry / rural / other spatial location
f. Land, Livestock and Environment Plan
g. To inform land use opportunities within constraints
h. SWOT analysis (Strength, Weakness, Opportunity, Threat)

126. Understanding what the versatility, capability and assimilative capacity of each land class is most important to determine appropriate land use options

127. Land user's prerogative and flexibility to choose how to use and manage

    a. Avoid investment in land use that would be deemed misplaced
    b. Identify current land use that is misplaced and transition towards more appropriate use
    c. Farming Fits the Land
    d. The landscape vista a mosaic of diverse and different land use
    e. In depth understanding about the natural resource i.e. the land
        i. Soil, geology, climate, topography, land use etcetera
        ii. Waterways
    f. Farm map and overlays of built on-farm infrastructure
    g. Land Management Units
    h. LUC mapping
    i. Mitigator and / or LUCI
    j. Critical Source Areas
    k. Nutrient management
    l. Livestock policies and management
    m. Mitigation program project management

128. Farm Compliance Plan for regulatory oversight and management only
    a. A check list of 'how' land use will be managed to comply
129. FEPs and Practice Change
130. A purposeful need for leadership and direction
131. Awareness of Unintended Consequences

Afforestation

132. Not the silver bullet re sediment loss

Riparian zones

133. Weed and pest management responsibility
134. Waterways clogged – impeded drainage during flood
135. Flood Protection Schemes
136. Drainage network maintenance disrupted
137. Regulatory responsibility
138. All regulatory responsibility sits with WRC

Subcatchment monitoring profile target direction and end point

139. Direction and pace of travel per subcatchment
140. There must be clear policy that water quality i.e. ecosystem and human health must be improved in every subcatchment, and that policy does not allow support of an overall measure buttressed by under and overs offsetting.

Subcatchment profiling

141. The subcatchment profile provides in-depth information to advise needed if required reductions of each contaminant, necessary to achieve the objectives of Plan Change 1 and beyond (as may be articulated in an interim year-2050 target state of water quality – see below)
142. Detailed examination of the receiving environments

143. This is particularly pertinent for Lake FMUs

144. Lakes are known to need additional contaminant load reduction

145. Narrative about the physical habitat, invertebrates, fish, birds

146. Land use – current and former historic usage

147. Urban / rural / industrial / forestry / transport (road and / rail) corridors / flood – drainage schemes

148. Contaminant / Nutrient status

149. Clarity and sediment

150. relationships between TN, TP, periphyton, MCI & flow (if known)

151. Farm Environment Plans (FEPs),

    a. Land, Livestock and Environment Plan

    b. Farm Compliance Plan

152. Nutrient management

153. Soil conservation measures,

154. Waterway riparian setback

155. Riparian vegetation enhancement – canopy closure

156. Fish passage

157. Environmental flows (minimum flows and allocations)

158. Monitoring program

159. This approach needs greater communication to allow better understanding and buy-in by those charged with undertaking the work on the ground.

Farm Planning – a cascade approach

Subcatchment profile

160. What is current state of water quality and why
161. Understanding of subcatchment water quality issues and beyond having context of the whole river catchment as the receiving environment
162. Interim target year-2050 state of water quality

→ Land, Livestock and Environment Plan (a 'living' document)

163. Opportunities within constraints and / or limits
164. Flexibility to fit market and / or climate change
165. Personal prerogative of choices
166. Existing land use does it fit?
167. How will application of mitigative actions provide improvement of outcomes?
168. Cost benefit assessment and time to implement

→ Farm Compliance Plan (aka Farm Environment Plan)

169. How we will comply with Permitted Activity / Resource Consent
170. A minimum set of compulsory actions
171. Certified Farm Advisors to provide advice, assistance and review
    i. Advisor qualified sector experience 5-years minimum
    ii. Repeatable, consistent and reliable
    iii. Evidential record of mitigative actions, progress timelines as part of an accounting system and monitoring

→ Farm Compliance Plan Audit Framework

b.	Risk class	Permitted	Nitrogen	Audit return
c.	High risk	NA	Priority One Subcatchment	3-year
d.	High risk	NA	≥ 50th percentile	3-year
e.	Medium risk	NA	25th – 50th percentile	5-year
f.	Low risk	18 su/ha	< 25th percentile	10-year

→ Certified Industry Scheme

a. A role that is secondary and supportive yet equally rigorous
b. It cannot release WRC responsibility to ensure compliance
c. Reliance upon third parties can be fraught

Farm Environment Plans (further discussion to be provided in Block 3)

renamed Farm Compliance Plans

172. Farm Compliance Plans should be mandatory but firstly there need to be clear recognition of what a compliance plan is and for what purpose.

173. Firstly, a land user must have a **Land, Livestock and Environment Plan** which is an information rich document describing the natural resource i.e. the land that is available and the context around its usage relative to the subcatchment it is part of. The LEP works up an understanding of opportunities that could be exploited without breaching constraints that have been purposely imposed to provide for a state of water quality via ecosystem and human health metrics

174. The **Farm Compliance Plan** sits alongside the Land, Livestock and Environment Plan but is for different purpose as it compiles a checklist and presents a program of work(s) for mitigation actions to describe "how" outcomes specified firstly as a permitted activity then having morphed to a resource consent what is and how activities and land use are managed

175. The Farm Compliance Plan presents a checklist and / or scorecard of measure to assess how far away current state is from target or conversely that all is satisfied and perhaps some 'headroom' is available

Good Management Practice (confusion about which takes precedent)

176. It is noted in the reading of different submissions and S42A reports that a variety of Good Management Practise alternatives and interpretations are used. As a farmer there is confusion about what is meant by or the difference between:

a. Good Management Practice

b. Best Management Practice

c. Good Farming Practice

d. Best Practicable Option

177. Good Farming Practice (GFP) is not defined in PC1 and Variation 1 though there is now reference to this in the S42A reports. GFP is considered by some to be an update to the concept of Good Management Practice outlined in the "Industry-agreed Good Management Practices relating to Water Quality" (September 2015). GFP has been outlined in the "Good Farming Practice Action Plan for Water Quality 2018"

178. There is a need to simply and reduce to one definition to avoid confusion.

Submission dates and Completion dates

179. It is my view that there will be considerable delay in achieving any of the submission and completion dates unless there is considerable resourcing available and a comprehensive communication strategy to inform

180. Submission dates to present farm plans and nitrogen reference points could be subjected to significant delay

181. Completion dates will be severely challenged particularly livestock exclusion due to many factors but chiefly related to the scale of work that may be directed.

182. There needs to be a comprehensive review about the capability to deliver

183. It is easy to say commencement must begin immediately and as-soon-as-possible however reality on the ground is different with a myriad of issues to overcome

184. Any threat of severe regulatory authority to force compliance is likely to be met with united stubbornness

a. There must be better consideration about priority of action and where to commence focus
b. The use of waitlists or similar and very targeted prioritisation having comprehension about the size of task and insufficient resource availability are tools to assist avert this issue
c. A partial solution to lessen the roadblock perhaps needs to consider:

185. Prepare robust defensible understanding about contaminant loss and from where it arises with an updated Table 3.11.1
186. Prioritise high risk by close detailed examination of subcatchment profiles
187. Identify and examine critical source areas
188. Avoid one-size-fits-all rules and replace with intense focus upon critical source areas
189. Target subcatchments with excessive contaminant load and high in-stream concentrations
190. Target land use with truly excess contaminant loss
191. LiDAR or similar digital mapping is undertaken to produce good mapping of slope
192. S-Maps are completed for the region ensuring best soil information is available
193. Better precise identification about Good Management Practice
194. Clearer more visible identification of existing land use that is misplaced and that GMP will not bring about enough reduction
195. Agreed livestock exclusion rules that are more pragmatic
196. Better understanding and definition about waterways and types
197. Instigate additional monitoring
198. Establish frameworks for allocation and embed within PC1 to ensure seamless transition into Plan Change 2 – continuance of grandparenting must be avoided
199. Prepare an interim target year-2050 state of water quality

MCI attribute

200. I believe MCI should be established for subcatchments and particularly tributary streams as an indicator of ecosystem health. It is however recognised that stream

type i.e. hard or soft bottomed will require different MCI methodology and there is a risk that a narrow perspective about nutrient management may also be futile in endeavours to improving MCI scores. To remove ambiguity, it should be recommended that a stream map as part of the subcatchment profile is prepared which would describe which MCI score type is applicable.

201. It is also known that MCI is influenced by many different, often non-associated, stressors e.g. riparian management, stream flood hydrograph, slope, sediment deposited etc. rather than simple causal relationship and so a poor MCI result would require wide investigature to ascertain possible cause of outcome.

202. I understand care is required to ascribe a target MCI because the natural conditions prior to land use intensification has never itself provided environmental uniformity and this spatial difference remains.

203. Also, there must be recognition of natural change and the range of change, where monitoring data is sparse or non-existent there must be time allowance 3 – 5 years, to collect the required data and identify trends

Periphyton attribute

204. I believe that a periphyton attribute should also be established for subcatchments and particularly tributary streams. The monitoring and observation of periphyton is another important indicator of ecosystem health. This is central to provide better and more complete understanding about effect of contaminant load and the success or not of endeavours to reduce nutrient concentration where it is appropriate to do so. It is noted though that in-stream monitoring of periphyton is difficult noting need for safe access and length of reach to obtain representative samples. This does lead to support of other proxy measures for example nutrient thresholds which is discussed below.

Establish in-stream TN and TP concentrations

205. To better manage MCI and periphyton in subcatchments there is I believe a need to establish in-stream TN and TP concentrations (or other N and P forms which are

agreed upon and are robustly defensible by the science community) that together are co-managed for this purpose. This added detail of monitoring will allow more informed decisions to be undertaken about land use and the conflict this use may have upon receiving environments. The nutrient in-stream concentration must be soundly based and within reasonable opportunity to attain without need to resort upon widescale disruptive land use change. With regard to restoration of water quality it is understood and agreed that there can be no further deterioration however the upward shift of improvement must be mindful of the maximal upper level that can be universally achieved where pastoral land use currently dominates which I suggest would be somewhere close to 'B' band status rather than an endeavour to the more aspirational 'A' pristine band. This recognises improvement of water is important and also equally that there is an environmental footprint with human requirements to live noting this footprint must be minimised.

Sediment – Clarity

206. There is a strong division in the Waikato – Waipa of waterways that either have i) variable sediment – clarity often related to flood flows and ii) other waterways that appear permanently in a poor state with high sediment (suspended) load or other issue impacting clarity. A smarter approach is to identify these waterways on a map to ensure relevant attributes or limits apply appropriately. Caution must be used to ensure limits do not impose unintended consequence as mitigation may not be enough in the short term.

Variable clarity – clear waterways

207. When the river flow is less than median

208. Clarity black disc > 1.6m for recreation values and > 0.5m for ecosystem values

209. Deposited fine sediment < 20% for ecosystem values – applies at all times

Permanent poor clarity

210. No recommendation – cannot or will be difficult to improve in short term

    a. Fine sediment in suspension

    b. Peat and other organic tannins

Framework ecosystem health attributes (embedding the framework within PC1)

211. The important issue I believe for Plan Change 1 is to embed in the framework ecosystem health attributes in the knowledge that the threshold and / or limits established are firstly indicators of required direction and pace of travel (travel towards interim year-2050 target state of water quality). Ongoing monitoring allows benchmarks and other observation to be made. Achievement of attribute targets is not the initial aim for PC1 but rather a signal of intent that drives transitional direction and gives certainty of expectation. The provision of time allows opportunity to innovate and adapt in response to monitoring or outcomes.

212. It is always about load to receiving environments in a cumulative manner and this must be factored into establishing the allocation of subcatchment contaminant loss limits, mindful as always that there cannot be an overall averaging under overs offsetting where upstream subcatchments must provide dilutant waters with fair and equitable consideration

213. Also, there must be account for effects of infrastructure for example hydro dams, urban and industry waste and storm water whereby the negative effects here are not buffered by restraining other upstream opportunity

214. There must be recognition of Te Mana o te Wai and Mountains-to-the sea as demanded by NPS Freshwater

215. Some subcatchments need to do more than others

216. Prioritisation of subcatchment when they must be inspected

217. Risk management and targeted delivery of where to reduce

218. Every land user has personal responsibility and culpability

219. All land users must adopt GMP prioritised and staged according to level of loss

220. GMP would apply whether discharge is either to land and / or water and the nature of discharge is diffuse or has discernible loss pathways

221. Proportionality is a key determinant who needs to do more

222. Some land users need to do more than others

223. Other land users will have some 'headroom' having loss rates lower than an allowable loss rate / environmental footprint

224. Whilst there may be 'headroom' there must always be expectation that GMP is adopted noting that this may create additional 'headroom' which is advantageous

225. This satisfies requirement to reduce and restore in an enduring manner

226. Allowable environmental footprint

227. Not 'pristine' but acceptable in that agreed attributes are not compromised for example swimmable waters when good to go swimming, Mahinga Kai when it is good to do so

228. Ensure loss no more than allowable – how much is too much?

229. There must be clearer direction GMP vs BMP vs GFP vs BPO etcetera to avoid misinterpretation

230. No clear understanding that in some subcatchments the implementation of GMP will not be enough where applied by individual land users and in a cumulative manner knowing that some land use is misplaced with too much loss because of biophysical parameters that are conducive of high loss

231. All items of decision making need to be clearly stipulated within the plan and not subject to open ended discretion that may proffer bias, favouritism or discrimination. All decisions must be similar, consistent and repeatable. The WRC chief executive cannot have overriding power, the farm advisor independent or within WRC cannot provide different interpretation

232. Table 3.11.1 is indicative only PC1 provides no indication how contaminant loss will be improved beyond 2026 except there is knowledge we are on a staged journey but today is locked in at business-as-usual

GMP and Offsets

233. There needs to be some discussion and clarity that to reduce contaminant loss how this may occur. An offset could allow continuance of high-risk land use without need to introduce GMP and so this is avoidance. This could occur on the same property

234. There should be expectation that all land use activity is undertaken with GMP and then further to this offset within same property and enterprise could introduce a neighbouring offset

Permitted Activity (including limited discussion about FEPs)

235. It is recognised there are many restraints to manage the overall state of water quality with intense oversight and therefore some activities must be granted leeway as permitted activity.

236. The usage of permitted activity does not absolve responsibility, it does however recognise acceptance of some contaminant loss to some threshold or limit i.e. there is an acceptable environmental footprint which is accorded social licence.

237. There is recognition that contaminant loss is cumulative, and thresholds / limits are applied cautiously

238. Permitted activity still requires application of risk management, undertaking GMP with allowance to be tailored to individual needs. GMP must be sector relevant and specific and not one-size-fits-all for convenience

239. The arrangement and purpose of FEPs must be clearly articulated, the framework needs good structure – to be discussed further in Block 3

240. Audited FEPs, auditing provides opportunity to examine and inspect, what is being implemented and is this having appropriate response

a. “Reduce catchment-wide and subcatchment-wide diffuse discharges of nitrogen, phosphorus, sediment and microbial pathogens from farming activities on properties and enterprises, through Farm Environment Plans”

241. It is recognised that GMP is not often quantifiable as to contaminant loss reduction and that there may be significant lag time to observe and measure reduction. Care is therefore required in how GMP is recommended and equally that some GMP is avoided because of associated cost to implement

242. The examination of GMP applied via FEPs needs assurance that there is consistent uniformity and repeatability across and between all land users to avoid bias, favouritism and dislike

Land Use Change

243. The Land Use Change rule is further continuance and support for grandparenting. The purpose of the rule is recognised however it is blunt and denies opportunity where appropriate low risk land use change could occur

244. There is a need for a more fair and equitable transition of opportunity that is not disruptive nor provides support for land use that is not justifiable

Transitional time

245. the balance between costs and benefits must be appropriately struck

246. cost-benefit analysis is being used indirectly to substantiate those targets and to help determine

247. the time-paths for their achievement

248. some environmental attributes should not be subject to scrutiny as there is no tradeoff

249. non-use values need to understand how to quantifiably define the relevant population for non-use values

Underlying principles to be embedded as part of Plan Change 1 cont.

Flood protection and Land drainage schemes

250. I firstly raise the question whether flood protection and land drainage schemes are designated to be within the scope of significant infrastructure and what this will mean?

251. There has been in my opinion poor examination of the flood protection and land drainage schemes (75 schemes operable in the Waikato – Waipa) and the purposeful value these schemes create, contribute or not. The examination needs to fully consider the wider environment of the scheme(s) and their relatedness to the subcatchment and other catchments regarding flood routing, contaminant loss, impacts of drainage upon soil quality, soil consolidation, carbon storage and more.

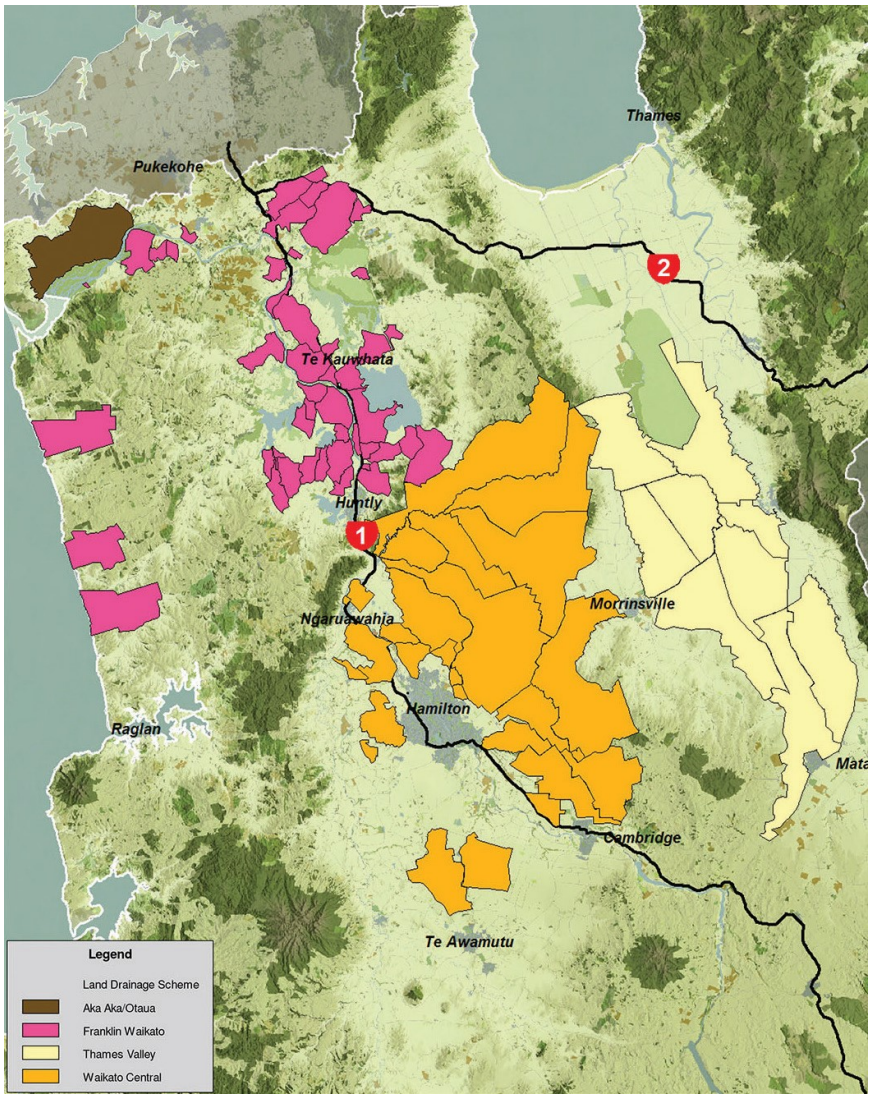
252. Drainage schemes by their nature have removed what was typically once wetlands that provided many different services including entrapment and filtering which all have been extinguished.

253. It is notable that nitrogen loss is typically low in poorly drained heavy clay and peat soils however little regard has been applied to other contaminant loss primarily via overland pathways for example microbial pathogens. The issues may only be a matter of timing when drainage pumps are operating and the length of time when operable, but it is nevertheless of importance to know about as a potential source.

254. Of interest here is whether the measure of dissolved oxygen would be applied as an attribute and the implication this may have

255. With drained land predominantly used for intensive farming is there enough focus upon management practices and how this may be addressed using the Farm Environment Plan process.

256. It is therefore important these matters are examined to ensure the purpose of flood and drainage schemes on our landscape are functional and fit-for-purpose



Ref - WRC Land Drainage Information Brochure 2018

Point Source Discharge (Significant Industry and Infrastructure)

259. First up I find it difficult to find concise definition, importance and purpose of what is significant industry and infrastructure. At face value it is recognisable and appears justifiable that there is due recognition because so much of society is leveraged on the existence and need.

260. There appears to be a relaxed loophole to allow significant industry and infrastructure some leniency to continue engaging in activity with high loss. To provide for headroom that is allocated specifically for this purpose and is not contestable i.e. it is locked in for considerable time via resource consent and not subject to being called in, unlike agriculture diffuse loss which must operate with a sinking lid that is presently open ended is an unequal outcome.

261. To amend and bring into line with common values shared across the management of all anthropogenic sources of contaminant loss the allocation framework that needs to be embedded into Plan Change 1 should provide that point source discharges are equally contributing in the short-term and progressively thereafter to the achievement of the water quality objectives in a proportional manner.

262. It is understood that resource consents with long duration of time give certainty (we all want certainty) there must be opportunity to review and call in when such consent becomes an anomaly.

Point Source Discharge (and a discussion about offsetting)

263. There should be no favouritism towards how contaminant loss could be mitigated by use of offset

264. There needs to be greater clarity for the point source definition because some diffuse loss practices for example effluent irrigation could be deemed a point source where application occur directly overhead drainage pathways either overland and / or underground

265. Urban point source discharge is increasing with population consequently the total wastewater discharge volume and contaminant load will increase and be spatially concentrated. In this situation we must be mindful whilst allowance for mixing water prevails that dangerous conditions may exist with volume load increase.

266. Conversely agricultural diffuse and cumulative load is being capped and reduced. This situation will at first glance appear to be antagonistic to point source discharge and so requires further robust deliberation.

267. Point source discharge must have no greater load than what is being contributed today

268. The opportunity to offset point source is available however there is difficulty to reconcile this because it is envisaged due to climate change there will be more variability, and this will be demonstrated particularly during dry summer which affects baseflow volumes

269. The discussion about offsetting and what offsetting entails is very limited with no depth of detail about best practice and how this will be managed. This is a serious gap in policy development and understanding how offsetting as a tool will be applied.

270. There must be examples of offsetting best practice (internationally?) that could be considered here and applied where relevant.

Iwi land use change

271. I have been silent for this topic because it is somewhat vexed

272. The need to provide headroom and by whom

273. The allocation of headroom and how much, what is the allocation framework with preference for natural capital

274. The opportunity to undertake land use change must be mindful of the need to avoid further increases in contaminant load where over allocated

275. The time period to provide transitional time to allow