AquaK NZ Ltd
Water Treatment Systems
Ministry for the Environment
31 October 2019

AquaK Submission to Action for Healthy Waterways – Consultation

Dear Sir/Madam

General responses to the proposals

Introduction

We appreciate the opportunity to make a submission on the Action for healthy waterways discussion document.

AquaK recognises the importance of protecting water quality from human based activities (agriculture and urban) and improving the health of waterways. But overall we think that the Actions for healthy waterways proposed are too limited in scope. They are focused on regulation rather than adding in support for those most impacted. Technology needs to be promoted as another option for improving discharges and water quality/quantity.

AquaK has partnered with Kuraray Co Ltd (Japan) to introduce to New Zealand proven and patented PVA Gel Technology for applications in Wastewater & Effluent Treatment. The technology has the potential for Zero Discharge and Potable Water to minimise environmental impacts. Aldee Ltd is AquaK’s manufacturing arm located in India producing a variety of containerised solutions to suit the needs of customers and their water issues e.g. processing effluent through to improving the efficiency of municipal systems.

AquaK has a passion for the environment and want to have a hand in making sure there are alternatives for water treatment that are efficient and cost-effective. AquaK are specialists in wastewater and effluent waste management. Through the patented technology of Kuraray PVA Gel, our system has higher bacterial retention than ordinary processes currently on the market and enables more efficient Wastewater treatment within a compact system.

AquaK’s technology for wastewater and effluent treatment is new to Australasia but has been tested extensively in a wide range of Asian markets. AquaK’s technology can offer the following solutions for:

Dairy Farm Effluent Management – a portable containerised system that can process dairy effluent direct from the milking sheds/feedlots and effluent holding tanks;

Industrial Water Treatment – the introduction of PVA and filtering technologies have the potential to reduce a range of industrial contaminants;

Municipal Sewage Treatment Plants – can be made more efficient (by up to 40%) and reduce sludge generation with the introduction of PVA gel and associated filtration technology
Water Purification / Recycle & Re-use – water can be treated to irrigation standard or drinkable water standard with the introduction of Kuraray filtration technology and improves water reuse on-site or water discharges.

The AquaK system has a wide number of applications to improve ecological, economic and social benefits. The key benefits and differentiating aspects of the AquaK system include:

Transportable design – The solution is contained in a range of differently sized containers depending on the loading with a range of wastewater inputs

Small Footprint – The units are self-contained where the PVA gel technology reduces the need for large ponds/contaminant of wastewater given its unique surface area capabilities. Each unit only needs a regular power source and flat surface to rest on

Adaptable - The system is based on a PVA gel and filtration systems and can be adjusted to meet the requirements of wastewater inputs and the location. The system can be monitored through telemetry and maintained efficiently should adjustments to the system need to occur

Low cost – 40% less capital costs than other solutions and 80-90% less operating costs than other systems

Regulatory compliant – the AquaK systems proposed for farm effluent treatment can comply with the majority of regional and district planning requirements and can reduce client’s contaminant loadings over the long term.

Proposals as a whole - please refer to questions 1-3 on page 19 of the discussion document

1. Do you think the proposals set out in this document will stop further degradation of New Zealand’s freshwater resources, with water quality materially improving within five years?

Not really if it the actions are based purely on rules and regulations and do not support the addition of technological alternatives. The proposal needs to consider all elements and allow a tool box approach to water quality improvement. In section 2.4 ‘Action for healthy waterways’, new systems and technology are referenced to deal with effluent so that waterways are not polluted. But these are identified as only existing practices - fencing, planting, fertiliser reduction and containment. There is no mention of new technological treatment options or investigation into how they could be used to support the actions proposed. It would be better to treat wastewater or effluent to a higher level that leave it completely too natural processes.

2. Do you think the proposals will bring New Zealand’s freshwater resources, waterways and ecosystems to a healthy state within a generation?

Not at this stage, the proposal limits itself themselves to regulation rather than incentivising the use of technology and alternatives. Yes, things need to change in terms of water quality, but people have livelihoods and businesses to run and need to transition to better practices. As an example if a farmer needs to reduce stocking numbers to a point where farming is no longer viable how do they afford to fence and plant waterways.

3. What difference do you think these proposals would make to your local waterways and your contact with them?

It will put pressure on the community and those that need to discharge as part of their business e.g. farmers and industrial users and those that want to see waterways clean up. The proposal
needs to be expanded to incentivising users and give them a range of alternatives, not just reduction of outputs.

Impacts and implementation - please refer to questions 4-6 on page 19 of the discussion document

4. What actions do you think you, your business, or your organisation would take in response to the proposed measures?

AquaK would be able to offer councils, farmers and business owners who are trying to manage their discharges (wastewater, effluent, industrial) a real alternative in water treatment even to a potable standard if required. The systems we offer are portable efficient and cost effective.

5. What support or information could the Government provide to help you, your business, or your organisation to implement the proposals?

Technical and regulatory support in the form of testing and monitoring new technology, AquaK is a new start up and has the technological backing but it is untested in New Zealand. Financial support (tax breaks, loans, R&D) for farmers and business owners to try new technology that is proven worldwide to treat water rather than contain it along with the other measures proposed. For example tax relief or refunds on electric cars is proposed versus higher polluting alternatives. This is a blueprint for how technology in the treatment sector could be incorporated into the tool box of alternatives.

6. Can you think of any unintended consequences from these policies that would get in the way of protection and/or restoration of ecosystem health?

It will hurt legitimate farmers and business owners and is compliance and monitoring cost that may not help their situations. If they are forced to reduce discharges (through herd numbers or upgrading plants) does that not economically impact their business and the ability to carry out these improvements? The government needs to incentivise new technology into all of these sectors as the loss of these businesses will impact taxes.

Water commission and other comments - please refer to questions 7-8 on page 19 of the discussion document

7. Do you think it would be a good idea to have an independent national body to provide oversight of freshwater management implementation, as recommended by KWM and FLG?

Possibly, but any independent body needs to have powers and funding streams to come up with solutions (support technology) rather than just making recommendations.

8. Do you have any other comments?

AquaK is an innovator who sees the potential to treat wastewater and effluent with a treatment system that uses its bacteria to breakdown wastewater for better water quality and less sludge. The integrated wastewater system utilises PVA Gel and advanced moving bed bioreactor in a self-
contained transportable container. The AquaK system is the future of wastewater and effluent treatment in New Zealand. As mentioned the system can be broken down into three parts:

1. Activated PVA gel allows bacteria to colonise each bead and those bacteria eat Ammonia (Nitrogen), BOD and Phosphates to reduce sludge levels and bacterial loading
2. Reduced Sludge levels can be siphoned off and formed into a dry product for storage and later reapplication as fertiliser
3. Final filtration systems that further reduces contaminant and pathogen levels and UV filtering to provide water to drinking water standard for discharge or reuse.

Through the AquaK system, liquid/solid waste is transformed in fertiliser and water. Promoting for better management and reuse of wastewater/effluent in a farming environment without discharging any contaminants/effluents into the environment. Water quality can be better managed by improving the water quality output and creating a storable fertiliser that only needs application at the right times to minimise runoff and groundwater contamination.

Current solutions involve storage and reapplication which are heavily influenced by climatic and groundwater conditions. AquaK technology is an engineered biological water treatment system that increases the biological activity of the bacteria. The bacteria work more efficiently for wastewater and effluent treatment affordably and sustainably. Given the outputs of irrigation or potable water, the system complies with the current regulatory environment and support an improved water quality regime as is proposed by the Ministry for the Environment in “Action for healthy waterways: Our proposals, your views”.

Notes

Questions on the proposed amendments to the National Policy Statement for Freshwater Management and ecosystem-health aspects of the proposed National Environmental Standards for Freshwater Drinking water, stormwater, and wastewater

Notes

Stormwater and wastewater - please refer to questions 46-50 on page 62 of the discussion document

10. Does the proposed Wastewater NES address all the matters that are important when consenting discharges from wastewater networks? Will it lead to better environmental performance, improve and standardise practices, and provide greater certainty when consenting and investing?

   The Wastewater NES does not allow or encourage new technology or help those that need to manage water quality transition into the higher standards proposed.

11. Do you agree with the scope of the proposed risk management plans for wastewater and stormwater operators? Are there other aspects that should be included in these plans?

   RMP’s need to factor in new technologies as discussed with some of our potential clients. If systems were damaged or overflow (due to climatic conditions or mechanical failure) AquaK could drop in a temporary solution for treatment.
12. What specific national level guidance would be useful for supporting best practice in stormwater policy and planning and/or the use of green infrastructure and water sensitive design in stormwater network design and operation?

The promotion of new technologies, financial incentives and centralised research.

13. What are the most effective metrics for measuring and benchmarking the environmental performance of stormwater and wastewater networks? What measures are most important, relevant and useful to network operators, regional councils, communities, and iwi?

Research and Development of new technologies needs to be brought to the forefront and supported with appropriate technical experts and funding need to ensure the right solution for the right locations which are efficient and cost effective.

14. Do you have any other comments?

Notes

Improving farm practices

Restricting further intensification - please refer to questions 51-53 on page 80 of the discussion document

Immediate action to reduce nitrogen loss - please refer to questions 58-64 on page 80 of the discussion document

15. Which of the options (or combination of them) would best reduce excessive nitrogen leaching in high nitrate-nitrogen catchments? Why?

All combinations and new technologies need to be considered as a tool box approach.

16. If you are in a high nitrate-nitrogen catchment, what would you have to do differently under these options?

Improve the discharges and take out the nitrate-nitrogen if they cannot be reduced.

17. In addition to those already identified, are there other high nitrate-nitrogen catchments that should be subject to these options?

Notes

Farm plans - please refer to questions 54-57 on page 80 of the discussion document

Notes

18. Do you think the action already underway in five regions (identified in section 8.4) will be effective in reducing excessive nitrogen leaching in those high nitrate-nitrogen catchments?

A lot of these catchments still have high levels of nitrate-nitrogen in the system so they need to be reset first.
19. Should there be higher thresholds for farms that produce food products in winter, and if so, which food products?

20. What alternative or additional policies could contribute to reducing nitrogen loss?

Support for new technologies and funding alternatives for introducing it as another option in a tool box approach.

21. Do you have any comment on what would be required to ensure this proposal could be effectively implemented?

Notes

Feedlots and stock holding areas - please refer to questions 71-75 on page 81 of the discussion document

Restricting Feedlots

22. Do you have any comment on the proposal to restrict feedlots?

With some capture and treatment options it may be possible to reduce the impacts of feedlots rather than restricting them.

Reducing pollution from stock holding areas

23. Do you support the proposal relating to stock holding areas? Why/why not?

Consider other alternatives including new technologies for treating effluent runoff from these areas.

24. Do you think sacrifice paddocks should be included?

25. What would you have to do differently if this proposal was implemented?

Do you have any comment on what would be required to ensure this proposal could be effectively implemented?

Notes

Other comments on the proposed National Environmental Standards for Freshwater - please refer to questions 76-78 on page 81 of the discussion document

Draft proposed National Environmental Standards for Freshwater

26. Are the definitions used in the policies accurate, and if not, how do you suggest improving them?

27. What are your thoughts on the proposed technical definitions and parameters of the proposed regulations? Please refer to the specific policy in your response.

New technologies need to include engineered treatment solutions not just storage, fencing and planting regimes.

28. What are your thoughts on the timeframes incorporated in the proposed regulations? Please refer to the specific policy in your response.

Ambitious, consideration needs to be given to best practice in other countries and appropriate technological solutions.
Notes

Interactions between National Policy Statement for Freshwater Management, National Environmental Standards for Freshwater and other policies.

New technologies for wastewater and effluent treatment need to be considered across all of these statutory documents. Additional consideration needs to be given to research and development and financial incentives to allow the introduction of these new technologies as another tool in managing water treatment and maintaining our waterways.

Thanking you

On Behalf of AquaK NZ Ltd

*Personal details removed*