BEFORE COMMISSIONERS APPOINTED BY THE WAIKATO DISTRICT COUNCIL

UNDER the Resource Management Act 1991

IN THE MATTER of a further submission on the proposed Waikato District Plan by the **LIFE SCIENCES NETWORK INCORPORATED** (further submission no. 1295)

EVIDENCE OF WILLIAM ROLLESTON FOR THE LIFE SCIENCES NETWORK INCORPORATED

19 December 2019

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1. QUALIFICATIONS AND EXPERIENCE

1.1. My full name is WILLIAM BLAIR RHODES ROLLESTON.

1.2. I hold a medical degree (MBChB) from the University of Otago (Medical School).

1.3. I am the Chair of the Life Sciences Network, Production Director and co-owner of South Pacific Sera, Chair of Genomics Aotearoa and am co-owner of Blue Cliffs Station – a sheep and beef property in South Canterbury which I operate in partnership with my brother and which has been in our family for more than 140 years.

1.4. I co-founded South Pacific Sera (SPS) 30 years ago which is a biotechnology company producing animal derived biologics for the pharmaceutical, diagnostics and medical research industries including the laboratory production of recombinant human proteins using genetically modified cells for cancer, diabetes and auto-immune disease research.

1.5. I am the code holder for SPS's Code of Ethical Conduct under the Animal Welfare Act and named person on SPS's Containment and Transitional Facility licences and its approvals for importation and development of genetically modified organisms in containment.

1.6. I practiced medicine until 2002 and have had previous governance roles in science, economic development and agriculture including:

a. Chairman of New Zealand's Biotechnology Industry Organisation, Biotenz (now Biotech New Zealand)
b. Chair of the Government's Innovation Board
c. Member of the Government's Science Board
d. Board Member of the Foundation of Research, Science and Technology (FoRST)
e. Vice Chair of the Aoraki Development Trust, South Canterbury's economic development agency.
f. National President of Federated Farmers of New Zealand
g. Vice President and Acting President of the World Farmers Organisation

1.7. In 2017 I was appointed a Companion of the New Zealand Order of Merit for services to farming, was awarded Distinguished Biotechnologist of the Year in

2009 for services to the biotechnology industry and received a Special Commendation at the Aoraki Business Awards in 2017 for services to South Canterbury business.

1.8. Genomics Aotearoa is a government funded national science capability platform for genomics and bioinformatics. It is hosted by the University of Otago.

1.9. I was chair of the Life Sciences Network during the Royal Commission on Genetic Modification. The Life Sciences Network (LSN) was formed in 2000 as an umbrella organization of national industry and science organisations to represent the interests of science, industry and agriculture in the public debates and regulation of genetic modification.

1.10. I was responsible for managing LSN's involvement in the Inquiry, and attended most, but not all, of the Inquiry's public hearing days. While representing science and industry at the Royal Commission, the LSN also coordinated the evidence of many of the 60 science and industry submitters to the Royal Commission. We also negotiated the voluntary moratorium on genetic modification during the Royal Commission.

1.11. In preparing this evidence I have reviewed/considered:

a. The submissions of various parties seeking the inclusion of provisions in the pWDP that would control the use of land in connection with GMOs ('the pro GMO control submissions')
b. The further submissions of LSN opposing the submissions of the pro GMO control parties.
c. The evidence of Professor Arthur Grimes, Professor Andrew Allen, Gerard Willis, Dr Tony Connor and Dr Elspeth MacRae.
d. Section 42A Report, Hearing 8b: Genetically Modified Organisms, Neil Taylor, 2 December 2019.
e. Material submitted by parties and reports in GMO plan changes in the Far North, Whangarei and Hastings Districts as well as Auckland Council.
f. The Report of the Royal Commission on Genetic Modification.

2. SCOPE OF EVIDENCE

2.1. I have been asked by the Life Sciences Network (LSN) to prepare evidence in relation to the request by some submitters to include controls and prohibitions on genetically modified organisms (GMOs) in the proposed Waikato District Plan.

My scope of evidence is as follows:

1. The Life Sciences Network Incorporated.
2. The Royal Commission on Genetic Modification, including its findings on Maori cultural concerns and potential liability for damages caused by the use of approved GMOs
3. HSNO Approvals
4. Field Trials
5. Co-existence
6. Pest Management under the District Plan
7. GE Free Zones and Market Premiums
8. Advice to Government

3. EXECUTIVE SUMMARY

3.1. Genetic Modification has been used commercially since the 1980s (medicine and 1990s (agriculture). New Zealand held a Royal Commission of Inquiry on Genetic Modification in 2001 which comprehensively considered issues relating to the safety of all types of GMOs and heard extensive evidence and submissions from New Zealand and overseas. The Royal Commission concluded New Zealand should proceed with caution on a case by case basis while preserving opportunities. It also concluded that our regulatory system was robust, and recommended changes to the existing HSNO Act which would further improve the system (changes have since been made to the HSNO Act).

3.2. The Commission's report concluded that there is range of views within Maoridom including those who are supportive of genetic modification. The report noted that Maori have processes to resolve tough issues such as genetic modification.

3.3. The EPA can impose conditions on approvals, including the use of bonds. It has considered doing so in applications. The same concerns about liability which have been raised in various submissions on their proposed Waikato District Plan were raised before the Royal Commission and were the subject of evidence and legal submissions. The Royal Commission deals with the issue of liability in its report to Government and considered bonds and similar financial instruments a barrier to innovation. It recommended no change to New Zealand's liability laws. Following a review by the Law Commission in 2002, the Government amended the HSNO Act to impose strict liability on applicants who breach controls. Another amendment to HSNO, implemented following the Royal Commission's recommendation, was to introduce the category of conditional releases of GMOs. Conditional release also now means bonds or insurance can be required as a condition of a grant of an approval to release.

3.4. There have been six release approvals under HSNO, all vaccines or medical treatments. Five with controls and one full release. There have been fifteen approved field trials. While there have been 10 breaches of field trial conditions since 1996, there have been no adverse effects which have been caused by those breaches.

3.5. Coexistence of GM crops and non-GM/organic crops is possible and being practiced in countries which authorise the use of GMOs in agriculture. Segregation is best managed through voluntary or industry protocols.

3.6. There are no specific pest provisions in the District Plan, however the Regional Pest Management Plan controls several economically important species (kiwifruit, conifers, goats, pigs and deer) which become wild or feral. That mechanism could provide an ultimate 'backstop' if any particular approved GM crop came to be seen as a pest plat in particular locations.

3.7. GE Free zones have been tried at the state level in Australia but have been or are to be abandoned in most states. Independent analysis indicates a net cost to the state and its farmers from ongoing moratoria. That analysis shows that banning GM from an area rarely, if ever, creates a premium for product from that area. Independent analysis has also indicated that there is no loss of premium for non-GM products in states which use GM.

3.8. Recent advice from officials and advisors to Government is that genetic modification has a potential to benefit New Zealand particularly as we face environmental challenges such as climate change and water quality while still needing to pay our way in the world.

4. Life Sciences Network Incorporated

4.1. The Life Sciences Network (LSN) is an organization which has, since May 2000, represented the interests of science and industry (including agriculture) in the public debates on genetic modification including regulation. The LSN was considered by the Royal Commission on Genetic Modification to have an interest greater than the general public and was thus awarded interested person status.

5. The Royal Commission on Genetic Modification

5.1. James Watson, Francis Crick and New Zealander Maurice Wilkins were awarded the Nobel Prize in recognition of their contribution to the discovery of the structure of DNA in the 1950s.

5.2. By the early 1980s scientists had developed methods to insert DNA into the genomes of organisms heralding the birth of the modern biotechnology industry.

5.3. The first products to be available were drugs such as insulin, produced by inserting the gene for human insulin into a bacteria. Prior to that insulin was collected and purified from the pancreases of slaughtered cattle and pigs but demand was outstripping supply and many people did not tolerate the animal version. There was also the risk of transferring diseases, in particular viruses and prions, from animal to patient. Genetically modified insulin eliminated these problems and today almost 100% of New Zealanders who need it inject themselves with GM bacteria derived insulin to manage their diabetes.

5.4. Genetically modified crops became available in the mid1990s. One of the first commercially available foods was the Flavr Savr tomato modified to retain its flavour and edibility after harvest but mostly broad acre crops were modified to confer resistance to the popular herbicide roundup or to insect pests.

5.5. New Zealand passed the Hazardous Substances and New Organisms Act in 1996. The HSNO Act regulates the use of new organisms including genetically modified organisms. Genetically modified food is regulated by the Australia New Zealand Food Authority.

5.6. By 1999 public concern was growing regarding the safety of genetic modification and the organisms they produced. "Frankenfoods" tapped into people's fears but the objections to GM and GMOs was varied and included playing God, unnatural, food safety, development of weeds, lack of control once released, consumer choice, anti-multi-national corporation sentiments and trade/commercial impacts from "contamination".

5.7. Just prior to the 1999 election a bill was introduced into the New Zealand Parliament (the "Bunkle Bill") by Alliance MP Phillida Bunkle. The Bunkle Bill sought a moratorium on GM in New Zealand but was defeated in the House when both National and Labour voted against it.

5.8. Implementing their election promise, the newly elected Labour Government established a Royal Commission of Inquiry on Genetic Modification (RCGM). The RCGM held 15 public meetings, 28 Maori workshops, 12 hui and a youth forum, received 10,000 written submissions and heard from nearly 300 witnesses during a 13 week hearing which involved over 100 interested persons.

5.9. I have reviewed the reasons for the many of the submissions seeking bans or controls on GMOs in the Waikato District Plan. Most, if not all, of the reasons given and the concerns expressed were also the subject of evidence and submissions put before the RCGM.

5.10. The major conclusion of the RCGM, which reported in 2001, was that New Zealand should proceed with caution on a case by case basis while preserving our opportunities.

5.11. The Commission said that "it would be unwise to turn our back on the potential advantages [of GM] on offer, but we should proceed carefully, minimising and managing risks." (RCGM Report, Executive Summary page 2)

5.12. The aim of their recommendations was to "encourage coexistence of all forms of agriculture". (Ibid) They did not see a future for New Zealand which was entirely free of all genetically modified organisms and products nor one in which genetic modification was entirely unregulated.

5.13. They were satisfied that: "the basic regulatory framework is appropriate and that the key institutions, the Environmental Risk Management Authority (ERMA)[1] and the Australia New Zealand Food Authority (ANZFA), carry out their functions conscientiously and soundly." (Ibid)

5.14. Among the Commission's recommendations were that:

- for the time being there be no change to the liability system
- HSNO be amended to provide for a further level of approval called conditional release.
- MAF develop an industry code to facilitate coexistence between GM and non-GM crops
- The Minister can call in any application with significant cultural, ethical and spiritual effects

Maori cultural issues

5.15. The Commission found a range of views from Maori noting that:

> "some Maori groups expressed a willingness to consider the use of genetic modification technology on their land."

5.16. In particular FOMA and Te Puni Kokiri expressed to the commission that GM could be of great benefit to Maori commercially but also helping them to manage commercial operations in a "sustainable and ecologically sound way". (para 15)

5.17. The Commission considered ethical, spiritual and cultural values and within that Maori values and processes. Again there were a range of views including

> Kaore he tapu rawa e kore rawa e taea te wananga.[2]
> [There is no tapu beyond all tapu that cannot be analysed.]

5.18. They noted that the values and world views do not need to be shared, but need to be understood and respected if a mutual way forward is to be agreed. (RCGM para 67)

5.19. But the Commission was specific in not proposing a novel procedure to address these issues, including Maori issues. (RCGM para 107)

[1] Now the EPA (The Environmental Protection Authority)
[2] Quote from a Tuhoe Tohunga (RCGM para93)

Liability and the use of Bonds

5.20. The RGCM was presented with evidence and legal submissions related to potential liability, both of the unauthorised use of GMOs, and any unanticipated adverse effects which might arise from GMOs which have been approved. The Commission also obtained separate legal advice on liability from Professor Stephen Todd of the University of Canterbury. In its report the Royal Commission noted that a bond system "would equate to a penalty on a particular activity or product, disadvantaging those wishing to trade in the field, compared with other industries" and "…effectively the activity would be prohibited, contrary to the Commission's wish to maintain options." (RCGM, para 58)

5.21. The Royal Commission report concluded that the existing liability regime of tort and statute is sufficient and that "the common law … [is] well able to mould new remedies for novel situations" and "From a legal liability perspective we have not been persuaded there is anything so radically different in genetic modification as to require new or special remedies". (RCGM, para 80)

5.22. In 2002 the Law Commission was asked by Government to again consider the issue of liability and compensation with respect to GMOs. The Law Commission identified and commented on several options used in other legal jurisdictions, including a strict liability regime, compulsory insurance, bonds and a compensation fund. Their conclusion to the Government was that this was a policy decision for Government.

5.23. In response to both the RCGM and the Law Commission's report, the Government amended the HSNO Act to:

- create strict liability for any person who breached HSNO controls or conditions imposed on an approval;
- create a new category of Conditional Release (Release with controls as recommended by the Royal Commission); and
- provide for the imposition of a range of conditions on HSNO approvals, meaning conditions requiring bonds and insurance could be included.

5.24. The EPA is therefore able to impose bonds or require specific insurance and has considered doing so. For example, in making its decision in Scion's 2010 application to field test *Pinus Radiata* (application code number ERMA200479), ERMA said:

> "However, after taking into account the containment regime, the likelihood of a self-sustaining population and the existing liability provision, the Committee did not impose a control requiring that a bond be provided by the approval holder. The Committee also noted that discussions regarding the existing liability provisions were best directed to the Ministry for the Environment." (para 6.4.2)

6. HSNO Approvals

6.1. Under the HSNO Act anyone importing or developing genetically modified organisms must get approval from the Environmental Protection Authority.

6.2. In general the following levels of approval apply:

- Importation or Development in Containment
- Field Test in Containment
- Conditional Release
- Full Release

6.3. A GMO is no longer a new organism once it is fully released but remains a GMO unless otherwise specified by regulation. (s2 and s2A HSNO Act1996)

6.4. Qualifying organisms are living GMOs which are, or are contained in, a medicine or a veterinary medicines and which meet the conditions of the HSNO Act.

6.5. Applications for Field testing, Conditional Release and Full Release require public notification where the public have the opportunity to submit. The EPA takes into account submissions when making its decision and setting controls.

6.6. It must also take into account the "distributional effects of the costs and benefits over time, space, and groups in the community." (HSNO (Methodology) Order schedule s13(c)). I understand that to mean that the EPA must take into account local effects.

6.7. Applications to import or develop a GMO in containment or to release a Qualifying Organism do not require public notification. .

6.8. Since the HSNO Act was enacted in 1996 there have been six approvals for the release of GMOs into the environment. While the 2008 application was publically notified, the others were not as they were Qualifying Organisms under the Act. These are:

Release of GMOs for medical use		
APP203750	26/09/19	To release genetically modified live Chimaeric Antigen Receptor T-cells for use in a Phase 1 dose escalation clinical trial to examine safety and efficacy in patients with relapsed and refractory B cell lymphomas
APP202371*	30/04/19	To import and release a genetically modified live attenuated vaccine that protects humans against Japanese encephalitis (Imojev) into New Zealand.
APP203530	23/04/18	to import a genetically modified live-attenuated oncolytic vaccinia virus for conditional release in a phase 1b clinical trial as an experimental therapy for renal cell carcinoma
APP202854	12/02/18	To import for release a genetically modified adenovirus (Telomelysin) for use in a Phase II clinical trial for patients with advanced melanoma
APP202601	28/10/15	To import for release a genetically modified live-attenuated vaccinia virus (Pexa-Vec) for use in a Phase 3 clinical trial for patients with hepatocellular carcinoma
Release of GMOs for veterinary use		
GMR07001	19/11/08	To gain approval to import for release genetically modified vaccines (Proteqflu and Proteqflu Te) to protect horses against Equine Influenza

***Note: APP202371 was approved by the EPA for release without controls**

6.9. In 2015 the EPA considered an application to import for release the live genetically modified BoHV-1.1 strain (strain CEDDEL) contained within the veterinary vaccine Hiprabovis IBR Marker Live. This application was declined by the EPA decision committee as it was not satisfied that the vaccine would not combine with wild strains of the IBR cattle virus.

6.10. In addition between 2014 and 2018 GM petunias were sold through garden centres throughout New Zealand. MPI issued a recall[3] earlier this year when they realised certain varieties were likely to be genetically modified but do not appear to have undertaken any testing or surveillance work to understand the dispersal of this organism stating that it is neither a threat to health nor the environment. Nor to my knowledge have they undertaken any eradication.

7. Field Trials in New Zealand have had no adverse effects

7.1. In considering controls on field trials in the District Plan it is worth considering the field trials which have been carried out since the HSNO Act was passed.

There have been 17 approvals for field trials under the HSNO Act 1996.

Year	1998	1999	2000	2001	2003	2007	2008	2010
Number of Field Trial Approvals	1	6	2	2	1	1	1	1

7.2. In May 2002 the HSNO Act was amended by the then Labour government to include additional controls and considerations for field trials which is described in Dr Conner's evidence.

7.3. The EPA monitors and reports all incidents relating to the containment and use of new organisms (non-GMO) and GMOs. The 2016 EPA monitoring report[4] cites 73 incidents (some of which had adverse effects) as well as three fatalities in the period 2009-2015 attributable to non-GM new organisms. In comparison there were 10 incidents involving GMOs with none causing any adverse effects. An incident includes a breach of any condition.

[3] MPI recall: Unauthorised GM petunias may be in New Zealand, Jun 2017 https://www.mpi.govt.nz/news-and-resources/media-releases/unauthorised-gm-petunias-may-be-in-new-zealand/

[4] Monitoring the Effectiveness of the Hazardous Substances and New Organisms Act 1996. EPA June 2016

8. Coexistence

8.1. The Royal Commission on Genetic Modification noted that "the organic sectors of many of the economies around the world that allow genetic modification are expanding."

8.2. Arthur Grimes, in his evidence has shown the rapid expansion of GM crops in the USA. Organic production utilises about 1-2% of agricultural land while 90-95% of farmers use GM in the crops in which it has been approved. In addition, New Zealand's GM-free (i.e. tested GM-free) corn seed also comes from the USA suggesting that co-existence exists where there is a will.

8.3. In a farmer paper for the Grasslands Conference in 2016 I looked at the actions I would have to take if, as a farmer, I wished to use GM varieties of the corn, ryegrass, clover and brassicas I normally grow on our sheep and beef farm (if GM varieties were available and approved). A copy of that paper is attached to Mr Gerard Willis' evidence.

8.4. Countries require a level of purity before food products are accepted or have to be labelled. For the presence of approved GM varieties this is variable but generally around 1%. Customers such as supermarkets, and certifiers such as the non-GM Project in the USA, also have purity specifications with similar thresholds. Organics certifiers specify the type of production system so generally prohibit the use of GM rather than setting any tolerance level for adventitious presence.

8.5. Animals which consume GM feed are not considered GM for international trade purposes and it is worth noting that Europe is a large importer of GM animal feed which it uses in its livestock industries. Animals fed GM feed are not considered genetically modified and therefore are not required to be labelled and international trade is not restricted. However I considered a 1% GM presence level of a neighbour's crop as a benchmark.

8.6. Canterbury grows a considerable amount of seed and to achieve the required purity levels a voluntary system of notification and good practice has been established, the New Zealand Seed Crop Isolation Distance Mapping Scheme. In essence farmers register their crops through an internet portal and work with their neighbours to achieve the required separation distances.

8.7. The MPI Seed Varietal Certification Programme specifies separation distances for crops of the same type from 50 metres to 700 metres. These practices provide a useful guideline for neighbours to coordinate their crops with ryegrass requiring as little as 150m. Otago University is developing a non-flowering ryegrass which could be used to eliminate buffer distances entirely.

8.8. The USA has one of the largest organic industries in the world yet coexistence is maintained without regulation.

9. Pest Management under the District Plan

9.1. The Waikato Regional Council manages the unwanted presence of economically useful species through their Pest Management Plan[5] including:

- Wild Kiwifruit
- Wild Conifers
- Feral Goat
- Feral Pig
- Wild Deer

9.2. Good neighbour rules are contained in the Pest Management Plan for wilding kiwifruit (rule 5.65.1) and wilding conifers (Rule 5.66.1).

9.3. There is no mention of these pests in the Waikato District plan. Pest management appears limited to generic enabling measures for pest control and considerations during subdivision.

9.4. Should separation distances be required between GM crops and non-GM/organic crops, as an alternative or an addition to being managed through a voluntary industry code, it appears that any unwanted presence of economically useful GM species could also be managed through the Regional Pest Management Strategy. Neither of these approaches require district level regulation under the RMA.

[5]Waikato Regional Pest Management Plan 2014-2024
https://www.waikatoregion.govt.nz/assets/PageFiles/21542/3583%20-%20RPMP_2014-24.pdf

10. GM Free Zones and Market Premiums

10.1. In 2016 The Australian Productivity Commission undertook an Inquiry into the Regulation of Australian Agriculture including the regulation of genetic modification (see Referenced Documents). Australian law allows states to ban GMOs to address market access and trade concerns.

10.1.1. The inquiry found no economic or health and safety justification for banning GMOs and that moratoria are likely to impose net costs on the community. Tasmania remains GMO free in its food production systems but the Commission found that the regulatory cost borne by the Tasmanian Government to be AUD700,000 per annum.

10.1.2. Extending the moratorium in Victoria for a further eight years would have cost the Victorian economy a direct net cost of AUD110-$115 million.

10.2. The inquiry also found that “coexistence of GM and non-GM crops is possible and has been demonstrated in Australia and internationally.”

10.3. South Australia announced in early December 2019 that it will lift its GM moratorium following an independent report by Professor Emeritus Kym Anderson of the University of Adelaide School of Economics (see References). Professor Anderson found no evidence, with one qualified exception, that “would support the view that any current price premium or market access for non-GM crops would be diminished if GM food crops were allowed to be grown in the state on condition of careful segregation.”

10.4. Other findings from Professor Anderson’s report pertinent to the consideration of prohibitive rules in the Waikato District are:

- segregation and identity preservation protocols and practice codes can and do ensure the successful coexistence of GM and non-GM crops [these codes are voluntary or industry driven]

- the persistence of a GM crop moratorium in South Australia, especially in the face of the removal of moratoria a decade ago in neighbouring states, has discouraged both public and private agricultural R&D investments in this state

- there has been no premium for grain from South Australia despite it being the only mainland state with a GM crop moratorium

- the cumulative cost to canola farmers of South Australia's GM crop moratorium is estimated to be up to $33 million over 2004-18, and will be at least another $5 million if the moratorium is kept until 2025

- gross revenue for the producers of GM canola seed would have been an estimated $5.4m higher during 2004-18 without the SA crop moratorium

- the benefits of removing the state's GM moratorium may be far greater than just those from canola as new GM varieties of other crops (and pasture grasses) of relevance to South Australia are developed and approved

11. Recent Officials' Advice to the New Zealand Government

11.1. New Zealand's regulatory regime is already considered one of the most cautious in the world and advice to government has suggested that the HSNO Act and/or its subservient regulation should be reviewed. In addition there is growing recognition from government departments and advisors that genetic modification could be beneficial to New Zealand.

11.2. The following are excerpts from various government agencies and advisors:

11.2.1. Conservation Authority Briefing to incoming Minister 2017

> "The Authority supports research into new ways of eradicating pests and weeds; and in this respect, it is taking a close interest in assessing the potential of new genetic technologies (such as gene editing) to address long-term, expensive problems, such as wilding pines (via sterility), and to address biosecurity threats such as kauri dieback and myrtle rust (via disease tolerance)."

One of its five strategic priority areas is:

> "enhance threatened species protection by boosting control of pests of both flora and fauna and supporting the assessment of new technologies such as 'gene drive'"

11.2.2. The EPA Briefing to Ministers, October 2017

> “New biotechnologies are developing at break-neck pace. They can bring enormous benefit, but can also be significant disruptors, especially as many New Zealanders are sceptical about new developments they little understand. “Science denial” describes the growing climate of scepticism about science in some quarters, which makes it more difficult to promote the potential benefits of more advanced and unproven biotechnologies. Science denial, which often substitutes belief for data and evidence, is manifest in debates about the merits of fluoridisation, vaccination, genetic modification, 1080, and many other issues.” (para 36)

Maori Issues

> “Facts, data, science, and mātauranga Māori are crucial to sound decision making about new technologies in New Zealand. The EPA is uniquely positioned to weave and fuse these elements together, using a socially inclusive approach.” (para 38)
>
> “For example, our Kaupapa Kura Taiao group undertakes cultural risk assessments of HSNO applications, which are routinely integrated into decision making processes. These assessments cover issues such as impacts on culturally significant species (e.g. tuna/eels); customary practices (e.g. the use of kawakawa for rituals); and taonga. For applications likely to be of substantial interest to Māori, the EPA also works with applicants to facilitate establishment of an appropriate Māori Reference Group.” (para 39)
>
> “Further, Ngā Kaihautū Tikanga Taiao, our statutory Māori Advisory Committee, offers strong leadership in facilitating conversations with Māori. This will be critical in addressing some of the more challenging aspects of new biotechnologies for Māori, such as the potential impacts on kai, plants, and rongoā.” (para 40)

11.2.3. Email from MfE to Minister Parker's Office, 26 Jan 2018.

> "New biotechnology techniques offer increased precision for the genetic modification of plants and animals. This provides new opportunities in New Zealand to increase the productivity, value, resilience and sustainability of the primary sectors and wider economy It also provides opportunities to meet the increasing challenges presented by drought and other changing climatic factors, as well as current and future pest and disease incursions."
>
> "New Zealand's regulatory framework for genetic modification … is increasingly difficult to enforce and may be limiting NZ's competitiveness."

11.2.4. MfE Briefing to Minister Parker, 6 June 2018

> "The technical advancements present new applications and methods for use in genetics that are accessible, easy to use, fast and have high success rates. It is becoming commonplace to use genetic technologies to make changes that are indistinguishable from natural genetic variation (changes that could occur naturally).
>
> "…. major players appear to be moving towards less regulation on some organisms created using [gene editing]. This is based on their country's own scientific risk assessment and regulatory framework concluding that [gene editied] organisms do not pose added risks compared with organisms developed through conventional breeding." (para 6)

11.3. The Royal Society in its most recent report[6] on gene editing has made similar recommendations, stating that regulation of genetic technologies "would be more effectively achieved with a risk-tiered approach where regulatory burden is commensurate with risk." (Recommendation 4)

[6] Ref: Gene editing: Legal and regulatory implications https://www.royalsociety.org.nz/assets/Uploads/Gene-Editing-Legal-and-regulatory-implications-DIGITAL.pdf

12. CONCLUSION

12.1. Genetic Modification has been used in medicine and agriculture for more than two decades. Concerns raised by submitters to the Waikato District Plan regarding issues such as bonds and similar financial instruments, Maori consultation, regional considerations and precaution were considered by the Royal Commission on Genetic Modification, the Law Commission and others. In response the Government further strengthened the HSNO amended legislation and regulation, and determined that no changes were needed to the liability regime.

12.2. There have been no adverse events resulting from field trials and release of GMOs in in New Zealand, and in other countries coexistence is possible through industry and voluntary schemes.

12.3. GE Free zones add little or no value to produce but are a hand-break on innovation.

12.4. Mechanisms exist (such as Pest Management Plans) should they prove to be necessary in particular locations without the need to amend the District Plan.

References and Documents Referred to in this Statement of Evidence

Law Commission. Liability for Loss Resulting from the Development, Supply or Use of Genetically Modified Organisms, Study Paper 14, 2002
https://www.lawcom.govt.nz/our-projects/genetically-modified-organisms

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https://www.mfe.govt.nz/publications/hazards/report-royal-commission-genetic-modification

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https://www.pc.gov.au/inquiries/completed/agriculture/report

Anderson K, Independent Review of the South Australian GM Food Crop Moratorium, Report to the South Australian Government 2018
https://www.pir.sa.gov.au/primary_industry/genetically_modified_gm_crops/gm_review