September 2013

Report 16

2058

An Overview of Genetic Modification in New Zealand 1973–2013

The first forty years

Appendices

MCGUINNESS INSTITUTE

Project 2058: Report 16

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Appendices

Published

This publications contains the Appendices for Report 16: *An Overview of Genetic Modification in New Zealand 1973–2013: The First Forty Years*

Citation

Please cite this publication as:
McGuinness Institute (2013). *Project 2058 Report 16 Appendicies – An Overview of Genetic Modification in New Zealand 1973–2013: The first forty years.* [online] Available at: www.mcguinnessinstitute.org/publications/project-2058-reports [Accessed date].

ISBN 978-1-972193-41-9 (paperback)
ISBN 978-1-972193-42-6 (PDF)

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About the Institute

The McGuinness Institute is an independently funded non-partisan think tank. The Institute's flagship project is *Project 2058*. The strategic aim of this project is to promote integrated long-term thinking, leadership and capacity-building so that New Zealand can effectively seek and create opportunities and explore and manage risks over the next 50 years. It is hoped that *Project 2058* will help develop dialogue among government, policy analysts and members of the public about alternative strategies for the future of New Zealand.

About the authors

Wendy McGuinness is the founder and chief executive of the McGuinness Institute. Originally from the King Country, Wendy completed her secondary schooling at Hamilton Girls' High School and Edgewater College. She then went on to study at Manukau Technical Institute (gaining an NZCC), University of Auckland (BCom) and the University of Otago (MBA), as well as completing additional environmental papers at Massey University. As a Fellow Chartered Accountant (FCA) specialising in risk management, Wendy has worked in both the public and private sectors. In 2004 she established the Sustainable Future Institute as a way of contributing to New Zealand's long-term future. Since 2012 the Institute has been known as the McGuinness Institute.

Renata Mokena-Lodge graduated from Victoria University of Wellington with an LLB in 2013. She has worked at the McGuinness Institute as a research analyst since completing her degree in February.

Acknowledgements

The Institute received considerable assistance and support while preparing this report. In particular, we would like to thank Simon Terry and Stephanie Howard of the Sustainability Council, Professor Jack Heinemann from the University of Canterbury, and Dr Kerry Grundy, team leader of Futures Planning at the Whangarei District Council. We thank Dr Elvira Dommisse for her comments, and Claire Bleakley and Linda Grammar for their assistance with *Appendix 1: Timeline of key events as at August 2013*.

This report could not have been written without the considerable work of the Institute's research team and ongoing feedback from interested parties. We are particularly grateful for the work of former Institute staff members Miriam White and Steph Versteeg, who assisted Wendy McGuinness with the 2008 report *History of Genetic Modification in New Zealand*.

We would like to thank all those who helped us access information for the report, in particular the Crown Research Institutes; the Environmental Protection Authority; Food Standards Australia New Zealand; GE Free New Zealand; the Ministry of Business, Innovation and Employment, the Ministry for the Environment and the Ministry of Primary Industries.

Lastly, we would like to thank Professor Richard J Wilkins and Dr J. Morgan Williams, two scientists who have worked hard to contribute to the dialogue on genetic modification.

Appendices

Tables

Appendix 1: Timeline of key events as at August 2013

Table 4 below lists events of the last forty years that the Institute identifies as being significant in the history of GM in New Zealand.

The Institute holds a range of GM-related information from government, non-government and Crown organisations. This includes Official Information Act requests, publications such as research reports and annual reports, journals, correspondence and media releases regarding the history of GM in New Zealand. This is available to the public.

Table 4: Timeline of key events as at August 2013

Source: See in-text references and SFI, 2008a

Date	Significant event
1973	First recombinant bacteria developed in a laboratory (GNN, n.d.)
1978	Cabinet appoints an Advisory Committee on Novel Genetic Techniques (ACNGT) to 'adjudicate on all proposed experiments with respect to the capabilities and training of the scientists involved, the suitability of the laboratories in which the experiments would be carried out and the possible risks inherent in each experiment.' The ACNGT had no legislative authority (RCGM, 2001a: 104-105)
1978	Moratorium on field release of genetically modified organisms is established (RCGM, 2001a: 105)
1986	Field Release Working Party established (RCGM, 2001a: 105)
1987	Field Release Working Party releases final report (RCGM, 2001a: 105)
1988	Moratorium on field release of genetically modified organisms lifted (RCGM, 2001a: 105)
1988	Minister for the Environment establishes the Interim Assessment Group (IAG) (RCGM, 2001a: 105)
1988	Minister for the Environment establishes the Interim Assessment Group (IAG). All proposals for government funded research outside contained laboratories, and the fermentation of genetically modified organisms in volumes greater than 10 litres, had to be submitted to the IAG. The IAG had no legislative authority (RCGM, 2001a: 105)
1992	The Crown Research Institute Act 1992 provides for the formation of Crown-owned companies to undertake research and other related activities
1993	Biosecurity Act passed
1993	Crop & Food biotechnologist Dr Elvira Dommisse leaves the CRI citing concerns over the direction the science is taking (Beston, 2003)
1996	Hazardous Substances and New Organisms (HSNO) Act passed
1996	Environmental Risk Management Authority (ERMA) established (Ministry of Justice, n.d.[a])
1996 December	G.B. Petersen, Department of Biotech, University of Otago, presents *Genetic Engineering – Laboratory Based Containment* to the Chemical and Biological Hazards Symposium (Petersen, 1996)

Date	Significant event
1998	First application for an outdoor field test received by ERMA (See Appendix 9)
1998	Minister for the Environment establishes the Interim Assessment Group (IAG). All proposals for government funded research outside contained laboratories, and the fermentation of genetically modified organisms in volumes greater than 10 litres, had to be submitted to the IAG. The IAG had no legislative authority (RCGM, 2001a: 105)
1998 July	HSNO (Methodology) Order 1998 comes into force
1998 August	ERMA issues 'annotated methodology' for the consideration of applications for hazardous substances and new organisms (ERMA, 1998a)
1999	Radical Green group the 'Wild Greens' trashes a field test crop of GM potatoes at Lincoln University's Crop & Food Research Institute (Darby, n.d.)
1999	Statistics New Zealand releases the first *Biotechnology Survey* with funding from the Ministry of Research, Science and Technology. It was issued every two years until it was replaced and expanded upon by the *Bioscience Survey* in 2009 (Statistics NZ, n.d.[b])
1999 March	ERMA issues protocols 1–9 between July 1998 and March 1999 (Erma, 1998b–i, 1999a)
1999 April	ERMA releases *Policy on Consultation and Interaction Under Part V of the HSNO Act 1996* which outlines procedures for consultation and interaction with stakeholders (ERMA, 1999b)
1999 May	Independent Biotechnology Advisory Committee (IBAC) established (IBAC, 1999)
1999 December	Independent Biotechnology Advisory Council releases *Economic Implications of a First Release of Genetically Modified Organisms in New Zealand* (IBAC, 1999)
1999 December	Helen Clark announces decision to form a Royal Commission on Genetic Modification from the throne at the Opening of Parliament (Clark, 1999)
2000 January	*Cartagena Protocol on Biosafety* signed (UN, 2000b)
2000 May	ERMA completed a nationwide check of research institutions to see if any non-approved GM research had been carried out since the passing of the HSNO Act. The survey found that at the time there were 196 examples of research that were not notified to the Ministry for the Environment when it prepared the Order in Council to gazette existing approvals in July 1998 and 113 instances of unauthorised GM work with no proper approval (ERMA, 2000b: 1–2)
2000 June 14	Moratorium on applications to field-test or release genetically modified organisms announced (RSNZ, 2000)
2000 July	ACRI (the New Zealand Association of Crown Research Institutes) releases report *The Place of Genetic Technology in New Zealand* (ACRI, 2000)
2000 September	Professor Barry Scott, an ERMA board member, offers to resign following revelations that he was supervising unauthorised GM experiments on *E. coli* bacteria at Massey University. His resignation is not accepted by Minister for the Environment, Marian Hobbs (Espiner, 2000)
2000 October	The Royal Commission on Genetic Modification begins hearings. It is brought about by an informal cooperation agreement between the Labour Party and the Green Party (Green Party, n.d.)

Date	Significant event
2000 November	Discovery that a shipload of GM corn seed has been planted in three regions of New Zealand. After initially intending to destroy the crops, the government reverses its decision and clears them for harvesting and sale. (See 2002 July) (Hagar, 2002)
2000 November	BERL (Business and Economic Research Ltd) issues *Review of Economic Modelling of Biotechnology Impacts* (BERL, 2000)
2001 March	Wires were cut and a sign stolen in an unsuccessful attempt to enter the AgResearch field test site (EPA, personal communication, 8 July 2013)
2001 April	Statistics New Zealand releases the report *Modern Biotechnology Activity in New Zealand* (Statistics NZ, 2001)
2001 May	High Court decision, Bleakley v ERMA, in Bleakley's favour, meaning that the AgResearch approval for GM cattle research would be reassessed by ERMA
2001 May	Press release from AgResearch concerning the High Court decision states that 'The decision is disappointing and will be frustrating for MS sufferers' (AgResearch, 2001)
2001 July	Lincoln University Commerce Division releases the discussion paper *Economic Analysis of Issues Surrounding Commercial Release of GM Food Products in New Zealand* (AERU, 2001a)
2001 July	*Report of the Royal Commission of Inquiry on Genetic Modification* is released (RCGM, 2001a)
2001 August	Lincoln University Agribusiness and Economics Research Unit releases *Environmental Beliefs and Farm Practices of New Zealand Organic, Conventional and GE Intending Farmers* (AERU, 2001b)
2001 August	The University of Waikato's Professor of Biological Sciences, Dick Wilkins, responds to AgResearch's claims about GM cows and MBP, stating that the medical benefits are 'largely a nonsense' and that 'the basic science behind the work would simply not stand up to serious review' ('Court calls for rapid rethink on GM cow research', 2001)
2001 August	Stanford University's Professor of Neurology, Dr Lawrence Steinman, is quoted in an August 2001 *Listener* article responding to AgResearch's assertion that its research will help sufferers of multiple sclerosis, saying that '[h]uman or cow MPB can easily be made in bacteria or microbes by fermentation. There is no need to produce it in cows at present' (Revington, 2001: 20)
2001 August	Harvested crop product tests positive for GM material (detected as a result of industry QA) (Hagar, 2002)
2001 August	BIOTENZ releases *A BIOTENZ Strategy for the New Zealand Biotechnology Sector in the 21st century* (BIOTENZ, 2001)
2001 August	Ministry for the Environment releases *Valuing New Zealand's Clean Green Image* which assesses the effect uncontrolled release would have on our national brand (MfE, 2001b)
2001 October	Moratorium on applications to release GM organisms is extended to 2003, but moratorium on field tests is lifted (Green Party, 2003b)
2001 October	Government releases a *Cabinet Minute of Decision in Initial Response to the Recommendations of the Royal Commission on Genetic Modification* (Cabinet, 2001)

Date	Significant event
2001 October	The first of two GE-free hikoi begins its journey from Northland to Wellington with 200 people arriving at Parliament on 31 October (Bennett, 2001)
2001 October	More than 850 New Zealanders endorse a communiqué calling on the government to implement the report of the Royal Commission on Genetic Modification; this includes CRI staff, members of Federated Farmers and other industry groups (LSN, 2001b)
2001 November	Government releases a series of six Cabinet papers as a response to the Recommendations of the Royal Commission on Genetic Modification (MfE, n.d.[d])
2002	IBAC disestablished to make way for the Bioethics Council (Nathaniel Centre, 2003)
2002 February	AgResearch releases a Statement to the Finance and Expenditure Committee regarding the moratorium on applications to field-test GMO and possible resulting commercial prejudice (AgResearch, 2002)
2002 February	AgResearch puts before the Finance and Expenditure Select Committee (which heard submissions on the Hazardous Substances and New Organisms [Genetically Modified Organisms] Amendment Bill 2001) a statement opposing the restriction on the release of GMOs. In this document, AgResearch states that successful completion of its joint venture with PPL Therapeutics 'will result in the creation of a New Zealand business worth approximately $50 million' (Atkinson, 2002)
2002 March	A consultation document is released: *A Proposed Revision of the HSNO Decision Making Methodology* (ERMA, 2002b)
2002 May	HSNO Amendment (Genetically Modified Organisms) Act (2002) passed
2002 May	Unexplained appearance of potato plants at the Crop & Food field test site; testing confirmed they were not GM (EPA, personal communication, 8 July 2013)
2002 July	Nicky Hager's book *Seeds of Distrust* is published. It claims there was a cover-up by the government during the 2000 GM corn scare (Hager, 2002)
2002 July	LSN places pro-GM advertisements in 21 newspapers three days before the general election, funded by a $180,000 contribution from AgResearch (Collins, 2002)
2002 August	Presence of GM maize seeds detected in crops harvested in Gisborne and Pukekohe earlier in the year (detected as a result of industry QA) (MPI, n.d.[g])
2002 August	ERMA releases a summary of submissions on proposed revised methodology for HSNO decisionmaking (ERMA, 2002c) (See Summary of Submissions on the Review of Methodology and 2003 March, MfE releases a *Review of the HSNO Decision-Making Methodology: Commentary on Submissions*)
2002 September	MfE releases a public discussion paper, *Improving the Operation of the HSNO Act for New Organisms*. The paper seeks feedback from the public on a range of issues, including improving operational efficiency, reducing compliance costs, and legal liability (MfE, 2002)
2002 October	*A Review of the Handling of the GM Maize Incident at Gisborne and Pukekohe: August–October 2002* is prepared for MAF and ERMA (McGregor, 2002)
2002 October	NZ Biotechnology Strategy Discussion paper is published by the Ministry of Research, Science and Technology (MoRST, 2002)
2002 December	The government establishes the Bioethics Council (MfE, n.d.[a])

Date	Significant event
2002 December	ERMA publishes *Approach to Risk: Position paper on the approach to risk, methodologies for dealing with this and the technical and community information required for implementation* (ERMA, 2002d)
2003	Ministry for the Environment (MfE) releases a series of eight Cabinet papers entitled *The Government's Response to the Report of the Royal Commission on Genetic Modification:* 1. Legislative Changes for New Organisms: Overview 2. Laboratory Research, Cloning and Human Cell Lines 3. Streamlining the Approval Process for Medicines That Are or Contain New Organisms 4. Conditional Release and Enforcement 5. Liability Issues for GM 6. Ministerial Call-In and Confidential Supporting Information 7. Improving the Operation of the HSNO Act for New Organisms Including Zoo and Circus Animals 8. Changes to More Appropriately Reflect the Treaty of Waitangi Relationship under the HSNO Act (MfE, 2003a)
2003	Ministry of Agriculture and Forestry (MAF) releases two Cabinet papers entitled *The Government's Response to the Report of the Royal Commission on Genetic Modification: Report on Managing the Effects of GM Organisms in Primary Production* (MfE, 2003a)
2003 February	MfE publishes the summary of submissions received on improving the HSNO Act for new organisms. This includes proposals in response to the recommendations of the Royal Commission on Genetic Modification; 1011 submissions were received (MfE, 2003b) (see 2003 September)
2003 March	ERMA releases a *Review of the HSNO Decision-Making Methodology: Commentary on Submissions* (ERMA, n.d.)
2003 March	MfE releases *A Review of the Capability of the Environmental Risk Management Authority (ERMA) Relating to the Risk Management of New Organisms* (MfE, 2003c)
2003 March	Treasury releases the report *Briefing on Genetic Modification Economic Analysis* (Treasury, 2003)
2003 March	Ernst and Young releases a *Review of New Zealand's Biotechnology Sector Summary Report* (Ernst and Young, 2003)
2003 April	MfE and Treasury release the report *Economic Risks and Opportunities from the Release of Genetically Modified Organisms in New Zealand* (MfE and Treasury, 2003)
2003 May	Cook and Fairweather research report released: *Change in New Zealand Farmer and Grower Attitudes towards New Zealand Biotechnology Strategy Gene Technology: Results from a Follow Up Survey* (AERU, 2003a)
2003 May	Fairweather, Maslin, Gossman and Campbell research report released: *Farmer Views on the Use of Genetic Engineering in Agriculture* (AERU, 2003b)
2003 May	Biotechnology Taskforce releases the report *Growing the Biotechnology Sector in New Zealand* (Biotechnology Taskforce, 2003)

Date	Significant event
2003 May	Ministry of Research, Science and Technology releases *The New Zealand Biotechnology Strategy* (MoRST, 2003a)
2003 May	A hole was discovered in the boundary fence at the Scion field test site, concluded to be a break-in by a collector of mushrooms (EPA, personal communication, 8 July 2013)
2003 June	PPL Therapeutics 'pulls the plug' on its New Zealand GM sheep field-test after Bayer Healthcare withdraws from the project (GE Free NZ, 2003)
2003 July	The Hazardous Substances and New Organisms (Low-Risk Genetic Modification) Regulations 2003 come into force
2003 July	High Court decision in MAdGE v Minister for the Environment, over human genes in GM cattle, is in the Minister for the Environment's favour
2003 July	GM is discovered in sweetcorn product imported to Japan from New Zealand (MPI, 2003)
2003 August	Second GE-free hikoi departs from Northland, ending with hundreds of protesters gathering at Parliament (Green Party, 2003a)
2003 August	Report published: *Economic Impacts on New Zealand of GM Crops: Result from Partial Equilibrium Modelling*, by Saunders, Kaye-Blake and Cagatay (AERU, 2003c)
2003 August	The Sustainability Council commissions a nationwide Colmar Brunton poll which shows that 70 per cent of respondents support New Zealand's food production remaining GM Free (SCNZ, 2003b)
2003 September	ERMA releases a draft of its proposed revisions of the *ERMA New Zealand HSNO Methodology* (1998) for public comment. It aims to incorporate the implications of the New Organisms and Other Matters Bill which was released in October 2003 (ERMA, 2003c). Submissions were open until 3 October 2003, and the final Methodology was to be promulgated by Order in Council by 16 April 2004. (Neil Walter, ERMA, personal communication, 5 September 2003). However, it was never progressed (see Section 5.1)
2003 September	MoRST releases its report *Implementing the Government's Response to the Royal Commission on Genetic Modification's Recommendations on Research Priorities* (MoRST, 2003b)
2003 October	New Organisms and Other Matters Bill (NOOM Bill) is passed, including the HSNO Amendment Act (2003)
2003 October	Moratorium on applications to field-test or release GM organisms lifted (United Future NZ, 2003)
2004 January	Bioethics Council releases *Reflections on the Use of Human Genes in Other Organisms: Ethical, Spiritual and Cultural Dimensions* (Bioethics Council, 2004a)
2004 February	MoRST invites tenders for the supply of a biotechnology regulatory baseline study, as suggested in the Biotechnology Strategy, which recommends conducting '… periodic independently contracted system audits to assess whether the regulatory regime and its operation are achieving an appropriate balance between assurance and innovation' (MoRST, 2003a: 32)
2004 March	HSNO Amendment (Transitional Provisions and Controls) Act (2004) passed
2004 March	Duncan E.J. Currie releases *Liability for Damage from Genetic Modification* (Currie, 2004)

Date	Significant event
2004 March	A MAF audit of Biogenetic Services Ltd Laboratory (in the US) finds significant issues with the way GM test results were reported for seed imported the previous season. Retesting of some imported seed finds it to be positive for a GM construct. At the time of detection the crops were close to harvest and the grain produced was harvested, dried, stored and devitalised under supervision (MAF, 2004)
2004 March	*Community Management of GMOs: Issues, Options and Partnership with Government*, commissioned by the Inter-council Working Party on GMO Risk Evaluation and Management Options and prepared by Simon Terry Associates, is released (Simon Terry Associates, 2004)
2004 March	PPL Therapeutics, a Scottish biotechnology company that had entered into a joint venture with AgResearch and conducted research on GM sheep in New Zealand, announces its impending bankruptcy (Stewart, 2004)
2004 June	MfE releases *Genetic Modification: The New Zealand Approach* (MfE, 2004)
2004 July	Sustainability Council of New Zealand releases *Seeding Purity: Improving Practices to Avoid GM Contamination of Seed Imports* (SCNZ, 2004)
2004 August	Bioethics Council releases *The Cultural, Ethical and Spiritual Dimensions of the Use of Human Genes in Other Organisms* (Bioethics Council, 2004b)
2004 October	Government releases the report *Inquiry into the Alleged Accidental Release of Genetically Engineered Sweetcorn Plants in 2000 and the Subsequent Actions Taken: Report of the Local Government and Environment Committee* (Local Government and Environment Committee, 2004)
2004 December	High Court decision, Bleakley v ERMA, MAF, MfE and Whakamaru Farms Ltd, in favour of ERMA, MAF, MfE and Whakamaru Farms Ltd, meaning the decision not to reassess controls on the PPL sheep field test and post-field test monitoring practices would not be reviewed
2005 January	Bioethics Council discussion document released: *The Cultural, Spiritual and Ethical Aspects of Xenotransplantation: Animal-to-Human Transplantation* (Bioethics Council, 2005a)
2005 March	Dr R.J. Somerville QC writes a letter to Mr G.J. Mathias regarding 'Opinion on Land Use Controls and GMOs' (Somerville, 2013)
2005 May	*Community Management of GMOs II: Risks and Response Options*, commissioned by the Inter-council Working Party on GMO Risk Evaluation and Management Options and prepared by Simon Terry Associates and Mitchell Partnerships, is released (Simon Terry Associates and Mitchell Partnerships, 2005)
2005 July	GM presence in a shipment of maize is detected. Tests determine that the positive result was caused by accidental mixing of the maize with GM soy. The GM construct in the soy had been approved for human consumption by Food Standards Australia New Zealand (MAF, 2005)
2005 August	Bioethics Council releases its report *The Cultural, Spiritual and Ethical Aspects of Animal-to-Human Transplantation* (Bioethics Council, 2005b)
2005 August	The Sustainability Council commissions a nationwide DigiPoll poll which shows that 74.5 per cent of respondents support New Zealand's food production remaining GM Free (SCNZ, 2005)
2005 November	Dr Kerry Grundy releases a *Briefing Paper on GE Initiative* (Grundy, 2005)
2005 December	ERMA issues report *Ethics Framework* (ERMA, 2005a)

Date	Significant event
2006	Report of the Bioethics Council review released (Hon. Nanaia Mahuta, Associate Minister for the Environment, personal communication, 25 March 2008)
2006 February	Sustainability Council of New Zealand report released: *Brave New Biosecurity: Realigning New Zealand's Approach to the Cartagena Protocol* (SCNZ, 2006)
2006 June	MoRST report released: *Research and Development in New Zealand: A Decade in Review* (MoRST, 2006)
2006 October	MAF discovers contamination in some consignments of corn seed imported into New Zealand during October and November 2006. These had been accompanied by test certificates showing positive results for the presence of GM organisms and had been cleared in error at the border (MPI, n.d.[g])
2007 January	*Inquiry into the Circumstances Associated with the Imports of Certain Corn Seeds in Late 2006* prepared by David Oughton for MAF in response to the 2006 GM corn security breach (Beehive, 2007)
2007 July	Whangarei District Council media release 'Responsibility for GE clean-ups would land on local government and local land owners' (Whangarei District Council, 2007)
2008 January	AgResearch announces intention to apply for new approvals to continue its transgenic cattle research. The existing approvals expire November 2008 (ERMA, 2008a)
2008 January	'GE protesters chopped down trees at Scion research institute' (Rowan, 2008)
2008 January	ERMA issues a media advisory stating that, contrary to reports, any application by AgResearch to move GM cattle around the country will be subject to full public consultation (ERMA, 2008a)
2008 April	The Institute releases *The History of Genetic Modification in New Zealand* (SFI, 2008a)
2008 April	The Institute releases *The Review of the Forty-Nine Recommendations of the Royal Commission on Genetic Modification* (SFI, 2008b)
2008 May	Unsuccessful appeal by GE Free New Zealand in the High Court against ERMA (GE Free New Zealand In Food and Environment Inc v Environmental Risk Management Authority [2008] BCL 611)
2008 July	The New Zealand Science Media Centre officially opens (Science Media Centre, n.d.)
2008 September	Correspondence between the Minister for the Environment, Trevor Mallard, and Jon Carapiet of GE Free New Zealand includes a summary of the government's decisions on each of the Royal Commission's 49 recommendations, and an analysis of the Institute's 2008 report *The Review of the Forty-Nine Recommendations of the Royal Commission on Genetic Modification* (Hon. Trevor Mallard and Jon Carapiet, personal communication, 4 September 2008)
2008 November	Unauthorised personnel (environmental group members) enter the Plant & Food Research GM *Brassica* field test site at Lincoln (EPA, n.d.[i])
2008 November	The Hazardous Substances and New Organisms (Genetically Modified Organisms – Information Requirements for Segregation and Tracing) Regulations 2008 come into effect

Date	Significant event
2008 November	ERMA states in a *Briefing for the Incoming Minister* that it has commenced consultation on a revised Methodology to replace the one that had been in operation since 1998. A document with final proposed revisions is to be presented in February 2009 (ERMA, 2008b)
2008 December	Two Crown Research Institutes, HortResearch and Crop & Food Research, merge to form Plant & Food Research (Plant & Food Research, n.d.)
2008 December	Flowering GM *Brassica* plant is found outside of a containment facility in Lincoln by Soil & Health Association spokesman Steffan Browning ('GE activists call for trials to be ended', 19 January 2009). The plant was from the field test of broccoli, cabbage, cauliflower and forage kale approved for 10 years in 2007. The approval number of the test is GMF06001
2009	Plant & Food's policy on GM states that '[b]ecause of the greater sensitivity and costs, a high threshold will apply to field trials. These will only be conducted in New Zealand if there is clear public support from the relevant New Zealand industry sectors and full approval from regulatory authorities. If a field trial is required to provide important or valuable knowledge for New Zealand, we may conduct field trials outside New Zealand in territories where this is lawful, the risks are lower, and within the bounds of a visible commercial or research relationship with clear benefit to New Zealand' (Plant & Food Research, 2010)
2009	Plans by the Pastoral Genomics consortium and AgResearch to conditionally release or field trial GM grasses are shelved due to a lack of support from the pastoral industry (SCNZ, 2011c)
2009 January	Plant & Food Research releases an internal review of procedures following the *Brassica* field test breach GMF06001 (Plant & Food Research, 2009)
2009 January	Plant & Food Research is found to be in non-compliance with Hazardous Substances and New Organisms Act (HSNO) controls for allowing GM *Brassica* to flower. The approval number of the test is GMF06001 (MPI, 2009a)
2009 March	The Bioethics Council is disestablished (MfE, n.d.[a])
2009 May	An unauthorised person enters the GM cattle field test at AgResearch Ruakura (EPA, n.d.[i])
2009 May	Horticulture New Zealand releases a policy statement on genetic modification stating that in light of 'considerable consumer opposition to genetically engineered food products … research for the New Zealand horticulture industry should at this stage focus on the application of technologies in areas other than those that will result in the production of genetically engineered crops' (Horticulture New Zealand, 2009)
2009 June	GE Free wins its case against AgResearch and ERMA in the High Court to restrict applications to import genetically engineered material and livestock
2009 October	ERMA releases a report on the Plant & Food Research field test that was cancelled in February 2009 (see 2009 January). ERMA found that the controls in place would have been sufficient to prevent such a breach if they had been complied with. The approval number of the test is GMF06001 (ERMA, 2009a)
2009 November	Two *Arabidopsis thaliana* plants are found outside a GM plant house at Plant & Food Research, Lincoln. A MAF investigation could not conclusively determine whether the plants were GM or not (EPA, n.d.[i])

Date	Significant event
2009 December	A compliance order is issued from MAF requiring Plant & Food Research to carry out a number of actions in response to the potentially GM *Arabidopsis* found outside the containment facility in November 2009. They were: • Testing the remaining plant samples for the presence of genetic modification. • Treating the soil in risk areas, through removal and deep burial or sterilisation on site. • Treating hard surfaces in risk areas to kill remaining plants and seeds. (MPI, 2009b; 2009c)
2010 March	The Court of Appeal overturns the June 2009 High Court decision favouring GE Free New Zealand and finds in favour of ERMA and AgResearch
2010 April	The HSNO Amendment Act (2010) is passed
2010 April	AgResearch is granted approval for outdoor development of GM animals (cattle, sheep and goats). The consent is approved until April 2030. The approval number of the test is ERMA200223 (EPA, n.d.[j])
2010 May	Food Bill (160-2) is introduced (first reading) (NZ Parliament, n.d.)
2010 June	GE Free New Zealand is declined leave by the Supreme Court to appeal against the decision from the Court of Appeal
2010 September	Submissions on Food Bill (160-2) closed; 66 submissions were received (NZ Parliament, n.d.)
2010 November	Bay of Plenty Regional Council publicly notifies a proposed Regional Policy Statement. Clause 1.7 of the proposed statement requires a precautionary approach to be taken when dealing with any GMOs (Bay of Plenty Regional Council, n.d.[a])
2010 December	Scion is granted approval for field tests of GM *Radiata* pine. The consent is approved until December 2035. The approval number of the test is ERMA200479 (EPA, n.d.[j])
2010 December	The Select Committee releases its report on the Food Bill (160-2). The words 'genetic modification' are removed from s 346 (NZ Parliament, n.d.)
2010 December	Unsuccessful appeal by GE Free New Zealand in the High Court against ERMA (GE Free New Zealand In Food and Environment Inc v Environmental Risk Management Authority [2011] NZRMA 45)
2011	A group including some of Hawke's Bay's biggest horticulturists, producers and marketers – under the banner Pure Hawke's Bay – launch a campaign to have the region's status as a GM-free food producer formalised through local planning documents (Sharpe, 2011b)
2011 February	Submissions close on the proposed Regional Policy Statement by the Bay of Plenty Regional Council (Bay of Plenty Regional Council, n.d.[a])
2011 February	MoRST merges with FRST to form the Ministry of Science and Innovation (MSI) (Mapp, 2011)
2011 February	AgResearch decides to end its cloning trials due to unacceptable death rates in laboratory animals (Chug, 2011)
2011 May	HSNO Amendment Act (2011) is passed

Date	Significant event
2011 May	The EPA is formally established under the Environmental Protection Authority Act 2011. The EPA takes over the regulation of environmental functions formerly held by MfE, MED (now MBIE), ERMA, and the Ministry of Foreign Affairs and Trade (MFAT) (Smith, 2011)
2011 June	Sustainability Council of New Zealand releases *Betting the Farm* (SCNZ, 2011d)
2011 June	Sustainability Council of New Zealand releases *Hide and Seek* (SCNZ, 2011a)
2011 June	Sustainability Council of New Zealand releases *Semantically Engineered Grasses* (SCNZ, 2011e)
2012 March	Bay of Plenty Regional Council's decisions on the Coastal Environment and Water Quality and Land Use provisions of the proposed Regional Policy Statement are publicly notified. Eight appeals were lodged with the Environment Court in relation to these decisions (Bay of Plenty Regional Council, n.d.[b])
2012 March	Pure Hawke's Bay commissions a regional Colmar Brunton poll which shows that 84 per cent of respondents want local councils to ensure that Hawke's Bay's fields remain GM-free (Colmar Brunton, 2012)
2012 April	Activists destroy 375 plants at Scion. The test continues (RadioNZ, 2012)
2012 April	Sustainability Council of New Zealand releases *Citizens' Arrest Accounting for GM Foods Arrested Development* (SCNZ, 2012)
2012 July	MAF and the Ministry of Fisheries merge to create a single agency that spans the entire primary sector: the Ministry for Primary Industries (MPI) (MPI, n.d.[b])
2012 July	MBIE is formed from the merger of the Department of Building and Housing, MED, Department of Labour, and MSI (MBIE, n.d.[a])
2012 August	The remaining Bay of Plenty Regional Council decisions on the proposed Regional Policy Statement are publicly notified; 25 appeals have subsequently been lodged with the Environment Court. Those appealing the precautionary approach clause 1.7 are Federated Farmers and Scion (NZ Forest Research Institute Limited). The Environment Court Reference numbers are: Federated Farmers ENV-2012AKL-000182 and Scion ENV-2012-AKL-000146 (Bay of Plenty Regional Council, n.d.[b])
2012 August	Steffan Browning tours New Zealand with two Australian farmers to raise awareness of the risks of GM crops. Discussed were issues of liability, coexistence and contamination ('GE opponents on tour', 2012)
2012 August	Prof. Jack Heinemann publishes a report assessing the risks from creation of novel RNA molecules in genetically engineered wheat plants (Heinemann, 2012)
2012 September	Scientist Dr Clive James and US State Department advisor Jack Bobo speak at an international agricultural biotechnology conference in Rotorua, warning participants that 'NZ risks being left behind' if an anti-GM stance is continued (Piddock, 2012)
2012 September	The International Conference for Agricultural Biotechnology (ABIC) is hosted by NZBIO in Rotorua. The conference was sponsored by the Ministry of Science and Innovation (now MBIE). Attendees included Professor Bob Reiter of Monsanto, an advocate for genetic modification (Holland, 2012)
2012 September	Sustainability Council of New Zealand releases *The GM Food Issue: Key Facts and Figures 2012* (SCNZ, 2012)

Date	Significant event
2012 October	Food Standards Australia New Zealand (FSANZ) calls for submissions on an application to change the food standards code to allow for food derived from a genetically modified soybean. The application number is A1073 (FSANZ, n.d.[b])
2012 October	AgResearch and scientists from University of Waikato create Daisy, a GM cow whose milk lacks a protein to which some people are allergic (Science Media Centre, 2012)
2012 December	In a statement prepared for Radio New Zealand, Fonterra states that it does not support outdoor GM experiments in New Zealand for the time being. 'There is not sufficient acceptance for the use of GM technology in New Zealand or by some of our customers in key markets to warrant our support of its introduction at the moment' (Fonterra, 2012)
2013	Statistics New Zealand discontinues its biennual Bioscience Survey (Statistics NZ, 2013)
2013 January	NZ King Salmon aquaculture general manager Mark Preece states that the company intends to dispose of the stored GM material left over from its small-scale research project into growth-enhanced salmon in the late 1990s: 'There is a long and involved process to dispose of it requiring public notification which we plan to apply for in due course' (Bell, 2013)
2013 February	FSANZ approves a draft variation to the standard allowing for food derived from a genetically modified soybean. The application number is A1073 (FSANZ, n.d.[b])
2013 February	GE Free New Zealand issues a press release claiming that approval of the GM soybean by FSANZ (application A1073) is a world first, that US applications have been deferred until 2014, and that FSANZ and MPI are ignoring toxicity risks of the GE soybean (GE Free New Zealand, 2013)
2013 February	The Inter Council Working Party (ICWP) releases its recommendations on risk evaluation and management options associated with the outdoor use of genetically modified organisms (GMOs). The ICWP recommends that councils can also regulate and manage GMOs under the Resource Management Act 1991 in their local areas (Auckland City Council, 2013)
2013 March	There is a possible breach of containment of GM fungi *Beauveria bassiana* at Lincoln University (Bayer, 2013)
2013 March	Whangarei District Council agrees to seek changes to its district plan to prohibit the release of GMOs to the environment (until more is known about risks and benefits) and require strict liability conditions on GMO field trials (Whangarei District Council, n.d.)
2013 April	A group of scientists from University of Canterbury question the impartiality of the Science Media Centre on GM issues. Geneticist Professor Jack Heinemann is quoted saying that the Centre had 'failed as an objective or evidence-based provider of information for the media on the issue of GM' (Gorman, 2013)
2013 April	The Hastings District Council releases a draft district plan which includes Section 15.8: Hazardous Substances and Genetically Modified Organisms District Wide Activity. This section proposes a prohibition on the release of GMOs and makes outdoor field tests a discretionary activity (Hastings DC, n.d.)

Date	Significant event
2013 April	AgResearch announces it will be investing $100 million dollars in facilities and resources for new science and innovation hubs over the next four years. 'This will provide our science and support staff, our industry and Government partners, and the sector as a whole, access to scientific support, facilities and innovation that will help us provide safe, premium-value food that meets the world's growing demands' (AgResearch, 2013)
2013 April	The EPA releases its decision on an application by Scion to determine whether Zinc Finger Nucleases (or ZFN-1) and Transcription Activator-Like Effector nucleases (TALEs) should be considered as new organisms under the HSNO Act 1996. The EPA decides that they are not genetically modified and therefore will not be considered new organisms (EPA, 2013)
2013 May	New Zealanders take part in a world-wide protest against Monsanto. Protests are held in Christchurch, Wellington, Rotorua, Whangarei, Tauranga, Nelson and New Plymouth, and 250 other cities around the world (McMurray, 2013)
2013 May	Minister for the Environment, Amy Adams, responds to an OIA request from the Institute, stating that there are no plans to develop a new HSNO methodology (see Section 5.1)
2013 June	Following the Monsanto protests, MP Nikki Kaye tables in Parliament a petition on behalf of GE Free New Zealand. The petition, which has 1697 signatories, calls for a freeze on all new GM applications, a review of existing GM foods, and full labelling on all foods containing GM ingredients for all approvals made by FSANZ (Shane Ardern to Jon Muller, personal communication, 6 August 2013)
2013 June	Sustainability Council announce a High Court action against a decision by the EPA. The decision would allow a technique called ZNF-1 to be used in New Zealand to engineer genes without having to undergo economic or environmental assessment (SCNZ, 2013[b]) (see April 2013)
2013 June	The Minister for the Environment, Amy Adams, announces plans to prohibit local councils regulating the use of GMOs in their local or regional plans through the Resource Management Act (Davison, 2013b)
2013 August	The Chief Ombudsman, Dame Beverley Wakem, responds to a complaint by GE Free New Zealand in regard to AgResearch's decision to refuse an OIA request to release photos of cows and calves born and raised on the Ruakura site since 2000. The Ombudsman rules that AgResearch was within the law to refuse this request, agreeing with its assertion that the photos could be used to 'present a biased representation of the effects of GM' (Dame Beverley Wakem to Jon Muller, personal communication, 2 August 2013)
2013 August	The Regulations Review Committee agrees to hear oral evidence from GE Free New Zealand on its complaint regarding the New Zealand (Australia New Zealand Food Standards Code) Food Standards 2002, Amendment No. 53 (Hon. Maryan Street to Jon Muller, personal communication, 19 August 2013)
2013 September	The Sustainability Council prepares a paper on new generation GM plant breeding (Stephanie Howard, personal communication, 25 August 2013)

Appendix 2: The Warrant establishing the Royal Commission

Source: RCGM, 2001b: 157–161

1. Appointment and order of reference

Know ye that We, reposing trust and confidence in your integrity, knowledge, and ability, do, by this Our Commission, nominate, constitute, and appoint you, The Right Honourable Sir Thomas Eichelbaum, Jacqueline Allan, Jean Sutherland Fleming, and The Right Reverend Richard Randerson, to be a Commission to receive representations upon, inquire into, investigate, and report upon the following matters:

a. the strategic options available to enable New Zealand to address, now and in the future, genetic modification, genetically modified organisms, and products; and
b. any changes considered desirable to the current legislative, regulatory, policy, or institutional arrangements for addressing, in New Zealand, genetic modification, genetically modified organisms, and products:

2. Relevant matters

And, without limiting the order of reference set out above, We declare that, in conducting the inquiry, you may, under this Our Commission, investigate and receive representations upon the following matters:

a. where, how, and for what purpose genetic modification, genetically modified organisms, and products are being used in New Zealand at present:

b. the evidence (including the scientific evidence), and the level of uncertainty, about the present and possible future use, in New Zealand, of genetic modification, genetically modified organisms, and products:

c. the risks of, and the benefits to be derived from, the use or avoidance of genetic modification, genetically modified organisms, and products in New Zealand, including:

    i. the groups of persons who are likely to be advantaged by each of those benefits; and

    ii. the groups of persons who are likely to be disadvantaged by each of those risks:

d. the international legal obligations of New Zealand in relation to genetic modification, genetically modified organisms, and products:

e. the liability issues involved, or likely to be involved, now or in the future, in relation to the use, in New Zealand, of genetic modification, genetically modified organisms, and products:

f. the intellectual property issues involved, or likely to be involved, now or in the future, in relation to the use in New Zealand of genetic modification, genetically modified organisms, and products:

g. the Crown's responsibilities under the Treaty of Waitangi in relation to genetic modification, genetically modified organisms, and products:

h. the global developments and issues that may influence the manner in which New Zealand may use, or limit the use of, genetic modification, genetically modified organisms, and products:

i. the opportunities that may be open to New Zealand from the use or avoidance of genetic modification, genetically modified organisms, and products:

j. the main areas of public interest in genetic modification, genetically modified organisms, and products, including those related to:

    i. human health (including biomedical, food safety, and consumer choice):

    ii. environmental matters (including biodiversity, biosecurity issues, and the health of ecosystems):

    iii. economic matters (including research and innovation, business development, primary production, and exports):

    iv. cultural and ethical concerns:

k. the key strategic issues drawing on ethical, cultural, environmental, social, and economic risks and benefits arising from the use of genetic modification, genetically modified organisms, and products:

l. the international implications, in relation to both New Zealand's binding international obligations and New Zealand's foreign and trade policy, of any measures that New Zealand might take with regard to genetic modification, genetically modified organisms, and products, including the costs and risks associated with particular options:

m. the range of strategic outcomes for the future application or avoidance of genetic modification, genetically modified organisms, and products in New Zealand:

n. whether the statutory and regulatory processes controlling genetic modification, genetically modified organisms, and products in New Zealand are adequate to address the strategic outcomes that, in your opinion, are desirable, and whether any legislative, regulatory, policy, or other changes are needed to enable New Zealand to achieve these outcomes:

3. Definitions

And we declare that in this Our Commission, unless the context otherwise requires, **genetic modification** means the use of genetic engineering techniques in a laboratory, being a use that involves:

a. the deletion, multiplication, modification, or moving of genes within a living organism; or the transfer of genes from one organism to another; or

b. the transfer of genes from one organism to another; or

c. the modification of existing genes or the construction of novel genes and their incorporation in any organisms; or

d. the utilisation of subsequent generations or offspring of organisms modified by any of the activities described in paragraphs (a) to (c)

genetically modified organism means an organism that is produced by genetic modification

organism includes a human being

product includes every medicinal, commercial, chemical, and food product that (while not itself capable of replicating genetic material) is derived from, or is likely to be derived from, genetic modification:

4. Exclusions from inquiry

But We declare that you are not, under this Our Commission, to inquire into the generation of organisms or products using modern standard breeding techniques (including cloning, mutagenesis, protoplast fusions, controlled pollination, hybridisation, hybridomas and monoclonal antibodies):

5. Consultation and procedures

And you are required, in carrying this Our Commission into effect, –

- to consult with the public in a way that allows people to express clearly their views, including ethical, cultural, environmental, and scientific perspectives, on the use, in New Zealand, of genetic modification, genetically modified organisms, and products; and
- to adopt procedures that will encourage people to express their views in relation to any of the matters referred to in the immediately preceding paragraph; and
- to consult and engage with Māori in a manner that specifically provides for their needs; and
- to use relevant expertise, including consultancy and secretarial services, and to conduct, where appropriate, your own research:

And you are empowered, in carrying this Our Commission into effect,

a. to prepare and publish discussion papers from time to time on topics relevant to the inquiry; and

b. unless you think it proper in any case to withhold any evidence or information obtained by you in the exercise of the powers conferred upon you, –

   i. to include in any discussion papers prepared and published by you all or any of that evidence or information; and

   ii. to publish or otherwise disclose in such other ways as you think fit all or any of that evidence or information:

6. Reporting date

And, using all due diligence, you are required to report to His Excellency the Governor-General in writing under your hands, not later than 1 June 2001, your findings and opinions on the matters aforesaid, together with such recommendations as you think fit to make in respect of them:

7. Extending time within which the Royal Commission on Genetic Modification may report

And we do further declare that you have liberty to report your proceedings and findings under this Our Commission from time to time if you judge it expedient to do so:

By orders of Council dated 14 May 2001, the time for reporting was extended to 27 July 2001.

Appendix 3: The Royal Commission public engagement process

Source: RCGM, 2001b: 102–156

The Commissioners conducted a comprehensive public engagement process, the main facets of which are detailed below.

Background papers: To help identify questions and issues for the Commission to address, nine background papers were requested on major issues considered relevant to the inquiry.[1] These were presented to the Commissioners in their initial weeks on the job.

Scoping meetings: The public consultation began with a series of scoping meetings. These were held with the intention of gaining an understanding of the potential issues that would be raised in submissions, to help prevent issues additional to those already identified being overlooked in deliberations. The process also provided information to participants; this information was also communicated online.

Interested Persons: A process of formal hearings was established for 'Interested Persons'. Interested Persons were entitled to be heard and able to apply to cross-examine other submitters. Many persons and organisations were excluded on the basis that their interest was no different 'apart from any interest in common with the public'. This was a significant concern to doctors and scientists, and many representatives of iwi and hapū who were not given Interested Person status.

> Organisations wanting to tamper with genes had gained status whereas organisations specifically set up to provide expert advice on gene technology and others with a specific interest in the impacts of gene technology had been denied status. (Keown, 2000)

A call for applications for Interested Person status was placed in 22 national newspapers on 29 July 2000. By the closing date six days later (4 August 2000), 265 applications had been received; this later increased to 292. On 14 September 2000, after multiple hearings, 117 applicants were awarded Interested Person status. Submissions and witness briefs were then received. From 16 October 2000, formal hearings took place for 12 weeks during which 107 people gave presentations. In March 2001, legal submissions and new or rebuttal evidence was heard.

Wider public consultation: The Warrant required the Commission to consult with the New Zealand public in a way that allowed them to express their views clearly. Not all people who held a strong view could gain Interested Person status, so a series of less formal public meetings were set up. These meetings consisted of a workshop with an open floor and question time. Fifteen meetings were held in main centres throughout New Zealand between 18 September 2000 and 16 November 2000.

There was also a call for submissions from the public. This was notified via news releases, public notices and through the public meetings, with a closing date of 1 December 2000 stipulated. In total 10,904 submissions were received from members of the New Zealand public. A telephone survey of 1153 New Zealanders was also conducted by BRC Marketing and Social Research between 22 March and 8 April.

1 These papers were: *Current Uses*, Professor A.R. Bellamy; *Legal Aspects*, Helen Atkins; *Ethical Issues*, Dr Barbara Nicholas; *Public Perceptions*, Joanna Gamble; *Māori Aspects*, Bevan Tipene Matua; *Environmental Aspects*, Dr Lin Roberts; *Economics*, Dr Janice Wright; *Human Health Aspects*, Dr Michael Berridge; *International Aspects of Genetic Modification*, Ministry of Foreign Affairs and Trade (RCGM, 2001b: 190–193).

Māori consultation: The Warrant specified that the Commission should engage and consult with Māori as part of its inquiry. On 21 July 2000 an initial hui was held to seek input into defining an appropriate consultation process for Māori. This led to a programme of 28 regional workshops, 10 regional hui and one national hui between 24 October 2000 and 10 March 2001. During this time a wide range of views and submissions were heard from Māori.

Youth forum: The Commission wished to consult with youth as part of its strategy to engage with the New Zealand public. It was felt that the outcome of this inquiry would particularly impact on this age group. In Wellington on 5 March 2001, a one-day forum involving role-play, brainstorming, workshops and discussion was attended by 99 young people aged 12–25 years.

Appendix 4: The Royal Commission recommendations not implemented or partially implemented as at 2008

It is beyond the purpose of this report to reassess the extent to which the 49 recommendations of the Royal Commission have been implemented as at 2013. However, for those wishing to understand what policy changes were not implemented or partially implemented seven years after the Royal Commission, we have included the results of our 2008 report below. Recommendations have been categorised in separate tables to indicate whether they were not implemented at all by 2008 (Table 5 below) or partially implemented by 2008 (Table 6 below).

We have further categorised these recommendations by type. This is dependent on whether we considered a recommendation was strategic or operational in nature. Strategic recommendations refer to the 13 recommendations discussed in Chapters 13 and 14 of the Royal Commission's report and are further separated into Strategic: GM crop recommendations and Strategic: institutional (a two-pronged approach). We have called them 'strategic recommendations' as together they provide the Commission's high-level framework for achieving the strategic option of 'preserving opportunities' for New Zealand. The recommendation types used in Tables 5 and 6 are listed below.

Tables 5 and 6 key:
Strategic GM crop[1] – The nine recommendations discussed by the Royal Commission in Chapter 13: Major conclusion: Preserving opportunities.
Strategic Institutional[2] – Comprised of four recommendations discussed by the Royal Commission in Chapter 14: The biotechnology century: Three major proposals.
Operational – All other recommendations are referred to as 'operational' recommendations.

1 In Chapter 13 when addressing the question '*Is compatibility possible?*', the Commissioners said the first decision to release a GMO in New Zealand would be a 'watershed decision' – '*We make this recommendation because the first release would be very much a watershed decision. At that point we would no longer be a genetic modification-free nation in terms of crops.*' This concept of a 'watershed decision' becomes crucial when considering the strategic framework that would be needed in order to support such a decision. As noted by the Commissioners: '*A recommendation to preserve opportunities is only as good as the means put in place to give it effect.*' For this reason we decided to refer to the nine recommendations discussed in that context as the 'watershed decisions' (RCGM, 2001a: 336, 338)

2 Three of the four recommendations discussed in Chapter 14 refer to the implementation of three new institutions required to action the Commission's conclusions. *'[W]e have proposed appropriate safeguards to ensure the well-being of the community and the environment'* (RCGM, 2001a: 342).

Table 5: Seventeen recommendations of the Royal Commission not implemented as at 2008

Source: SFI, 2008b: 119–121

Number	Recommendation	Type of recommendation
1	**6.12** That the Environmental Risk Management Authority (ERMA) require research on environmental impacts on soil and ecosystems before release of genetically modified crops is approved.	Operational
2	**7.1 (Bt Strategy)** That, prior to the release of any Bt-modified crops, the appropriate agencies develop a strategy for the use of the Bt toxin in sprays and genetically modified plants, taking into account: • The concept of refugia; • Limitations on total planted area; and • Home gardener use.	Strategic GM crop
3	**7.2** That the appropriate agencies develop a labelling regime to identify: a. genetically modified seed; b. nursery stock; and c. propagative material at point of sale.	Operational[3]
4	**7.3 (Bees)** That the Ministry of Agriculture and Forestry (MAF) develop a strategy to allow continued production of genetic modification-free honey and other bee products, and to avoid cross-pollination by bees between genetically modified and modification-free crops, that takes into account both geographical factors (in terms of crop separation strategies) and differences in crop flowering times.	Strategic GM crop
5	**7.4** That, in connection with any proposal to develop genetically modified forest trees, an ecological assessment be required to determine the effects of the modification on the soil and environmental ecology, including effects on soil micro-organisms, weediness, insect and animal life, and biodiversity.	Operational
6	**7.5** That, wherever possible, non-food animals, or animals less likely to find their way into the food chain, be used as bioreactors rather than animals that are a common source of food.	Operational
7	**7.6** That, wherever possible, synthetic genes or mammalian homologues of human genes be used in transgenic animals to avoid the use of genes derived directly from humans.	Operational

3 There are a number of recommendations that deal with labelling which have not been fully implemented – see recommendations 8.2 (Table 5) and 8.3 (Table 6).

Number	Recommendation	Type of recommendation
8	**7.7 (Separation distance)** That MAF develop an industry code of practice to ensure effective separation distances between genetically modified and unmodified crops (including those grown for seed production) such a code: • to be established on a crop-by-crop basis • to take into account: – existing separation distances for seed certification in New Zealand; – developments in international certification standards for organic farming; – emerging strategies for coexistence between genetically modified and unmodified crops in other countries • to identify how the costs of establishment and maintenance of buffer zones are to be borne.	Strategic GM crop
9	**8.2** That Government facilitate the development of a voluntary label indicating a food has: a. not been genetically modified; b. contains no genetically modified ingredients; and c. has not been manufactured using a process involving genetic modification.	Operational
10	**9.3** That products be clearly defined in legislation as medicines, pharmaco foods, functional foods or dietary supplements.	Operational
11	**10.4** That New Zealand be proactive in pursuing cultural and intellectual property rights for indigenous peoples internationally.	Operational
12	**10.5** That New Zealand pursue the amendment of the World Trade Organization Agreement on Trade-Related Aspects of Intellectual Property Rights and associated conventions to include a reference to the avoidance of cultural offence as a specific ground for exclusion or reservation.	Operational
13	**11.1** That section 8 of HSNO be amended to provide that effect is to be given to the principles of the Treaty of Waitangi.	Operational
14	**13.1 (Benefit assessment)** That the methodology for implementing HSNO s 6(e) be made more specific to: • Include an assessment of the economic impact the release of any genetically modified crop or organism would have on the proposed national strategy of preserving opportunities in genetically modified and unmodified agricultural systems. • Allow for specified categories of genetically modified crops to be excluded from districts where their presence would be a significant threat to an established non-genetically modified crop use.	Strategic GM crop

Number	Recommendation	Type of recommendation
15	**13.2 (First release)** That before the controlled or open release of the first genetically modified crop, the Minister exercise the call-in powers available under HSNO s 68 in order to assess the likely overall economic and environmental impact on the preserving opportunities strategy.	Strategic GM crop
16	**13.3 (Communication networks)** That MAF develop formalised local networks to encourage constructive dialogue and communication between farmers using different production methods, and to provide for mediation where necessary.	Strategic GM crop
17	**14.3** That Government establish the office of Parliamentary Commissioner on Biotechnology to undertake futurewatch, audit and educational functions with regard to the development and use of biotechnology in New Zealand.	Strategic Institutional

Table 6: Twelve recommendations of the Royal Commission partially implemented as at 2008

Source: SFI, 2008b: 117–118

Number	Recommendation	Type of recommendation
1	**6.13 (Research)** That public research funding be allocated to ensure organic and other sustainable agricultural systems are adequately supported.	Strategic GM crop
2	**6.14** That public research funding portfolios be resourced to include research on the socio-economic and ethical impacts of the release of genetically modified organisms.	Operational
3	**8.3** That, as a matter of priority, the Food Administration Authority disseminate information on: a. the labelling regime for genetically modified foods; and b. consumer rights in relation to foods made available for consumption at restaurants and take-away bars.	Operational
4	**9.4** That imported medicines and pharmaco foods that include live genetically modified organisms be approved for use by Medsafe without a requirement for additional approval from ERMA.	Operational
5	**9.5** That, in respect of applications for approval as Animal Remedies of genetically modified organisms or products manufactured by processes using genetic modification techniques, the specified information which the Director-General of Agriculture and Forestry requires to be contained in applications under the Agricultural Compounds and Veterinary Medicines Act 1997 (ACVM) include: a. full information on the efficacy and the form of the genetic modification used in manufacture; and b. that such information be included as one of the categories of relevant risks and benefits under section 19 of the Act.	Operational

Number	Recommendation	Type of recommendation
6	**9.6** That, as protocols identify useful therapeutics for serious disease control, approvals through ERMA and Medsafe be sought in advance for the importation of live genetically modified organisms in the form of vaccines.	Operational
7	**10.2** That the Patents Act 1953 be amended by adding a specific exclusion of the patentability of human beings and the biological processes for their generation, in line with section 18 of the Patents Act 1990 (Commonwealth).	Operational
8	**10.3** That a Māori Consultative Committee be established by the Intellectual Property Office of New Zealand to develop procedures for assessing applications, and to facilitate consultation with the Māori community where appropriate.	Operational
9	**10.6** That all parties concerned work to resolve the WAI 262 and WAI 740 claim currently before the Waitangi Tribunal as soon as possible.	Operational
10	**12.2** That for the time being there be no change in the liability system.	Operational[4]
11	**13.4 (Sterility Technology)** That sterility technologies be one tool in the strategy to preserve opportunities, especially in the case of those genetically modified crops most likely to cross-pollinate with non-genetically modified crops in the New Zealand context (e.g. brassicas, ryegrass, ornamentals).	Strategic GM crop
12	**14.2** That Government establish Toi Te Taiao: The Bioethics Council to: • Act as an advisory body on ethical, social and cultural matters in the use of biotechnology in New Zealand. • Assess and provide guidelines on biotechnological issues involving significant social, ethical and cultural dimensions. • Provide an open and transparent consultation process to enable public participation in the Council's activities.	Strategic Institutional

4 To our knowledge, no review has been undertaken of the liability system other than as discussed in the 2004 report *Community Management of GMOs* by Simon Terry Associates.

Appendix 5: Moratoria on genetically modified organisms

Table 7: Moratoria on GMOs

Source: See in-text references

No.	Type	Date	Moratorium Details
1	**Field Release Moratorium**	1978 to 1988	Moratorium on field release of genetically modified organisms established in 1978 and lifted in 1988 (see Section 2.1) (RCGM, 2001a: 105).
2	**Voluntary Moratorium**	2000 (June) to 2001 (October)	On 14 June 2000, a voluntary moratorium was placed on applications to field test or release genetically modified organisms (RCGM, 2001b: 104). This moratorium was agreed upon by the government and the scientific and commercial organisations involved in GM work. It continued until 31 October 2001.
3	**Mandatory Moratorium**	2001 (October) to 2003 (October)	On 29 October 2001, following the publication of the Commissioners' report, the moratorium on applications to release GM organisms was extended to 29 October 2003 (MfE, n.d.[e]). Under this moratorium there were exemptions if the application was for: • a medicine and the Minister of Health gave consent to the application; • the release of an organism involved in a clinical trial approved by the Director-General of Health; • the release of a veterinary medicine register under the Agricultural Compounds and Veterinary Medicines Act 1997 and the veterinary medicine was to be used for therapeutic or prophylactic purposes; • the release of a genetically modified organism in an emergency.

Appendix 6: Genetic modification legislation and standards

Below are a number of excerpts from the legislation and standards in date sequence. The aim is not to provide a complete summary but to show how the many components fit together to meet the purpose of the HSNO legislation. The excerpts are broken up into four parts: the HSNO Act 1996 and relevant amendments, associated orders and regulations, other relevant legislation, and containment standards.

1. The HSNO Act 1996 and amendments

(i) Hazardous Substances and New Organisms Act 1996

PART II – Purpose of Act

4. Purpose of Act – The purpose of this Act is to protect the environment, and the health and safety of people and communities, by preventing or managing the adverse effects of hazardous substances and new organisms.

5. Principles relevant to purpose of Act – All persons exercising functions, powers, and duties under this Act shall, to achieve the purpose of this Act, recognise and provide for the following principles:

a. The safeguarding of the life-supporting capacity of air, water, soil, and ecosystems:

b. The maintenance and enhancement of the capacity of people and communities to provide for their own economic, social, and cultural wellbeing and for the reasonably foreseeable needs of future generations.

6. Matters relevant to purpose of Act – All persons exercising functions, powers, and duties under this Act shall, to achieve the purpose of this Act, take into account the following matters:

a. The sustainability of all native and valued introduced flora and fauna:

b. The intrinsic value of ecosystems:

c. Public health:

d. The relationship of Māori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, valued flora and fauna, and other taonga:

e. The economic and related benefits to be derived from the use of a particular hazardous substance or new organism:

f. New Zealand's international obligations.

(ii) HSNO Amendment Act 1999

Clarification of the term 'New Organism'

(iii) HSNO Amendment Act 2000

Clarification of the application process
Also inserts section 67A (which came into operation 1 July 2001).

67A Minor or technical amendments to approvals
The Authority may, of its own motion, amend any approval given by it under this Part if it considers that the alteration is minor in effect or corrects a minor or technical error.

(iv) HSNO (GMO) Amendment Act 2002

4. The purpose of this Act is –

a. to require the Environmental Risk Management Authority (the Authority) to consider additional matters when considering certain applications in relation to genetically modified organisms and, if it approves the applications, to include particular controls for field tests and certain developments; and

b. to impose a restriction, from 29 October 2001 to the close of 29 October 2003, on the Authority considering or approving applications to import new organisms for release or to release new organisms from containment if the new organisms are genetically modified organisms; and

c. to provide exceptions to the restriction; and

d. to provide transitional provisions for approved applications relating to certain genetically modified organisms.

This amendment also introduced a definition called genetic element.
genetic element, in relation to a new organism, means –

- heritable material; and
- any genes, nucleic acids, or other molecules from the organism that can, without human intervention, replicate in a biological system and transfer a character or trait to another organism or to subsequent generations of the organism (s 5 HSNO [GMO] Amendment Act 2002)

(v) HSNO Amendment Act 2003

3. The purpose of this Act is –

a. to make certain changes to the Hazardous Substances and New Organisms Act 1996, including –

i. streamlining the approval of the genetic modification of new organisms in laboratories; and

ii. providing for the approval of the conditional release of new organisms; and

iii. clarifying enforcement responsibilities; and

b. to improve the operation of the Hazardous Substances and New Organisms Act 1996 for new organisms.

(vi) Hazardous Substances and New Organisms (Transitional Provisions and Controls) Amendment Act 2004

3. The purpose of this Act is –

a. to facilitate the smooth transfer of hazardous substances from transitional controls to the appropriate control regime under the principal Act; and

b. to enable the Authority to assign cost-effective controls to hazardous substances.

(vii) HSNO (Approvals and Enforcement) Amendment Act 2005

This Act amends the Hazardous Substances and New Organisms Act 1996 in the areas including:

- Regulation and controls regarding Hazardous Substances
- Enforcement of the Act
- Codes of Practice
- Approvals

(viii) HSNO Amendment Act 2007

This Act amends the Hazardous Substances and New Organisms Act 1996 in the areas of:

- Powers, functions, and duties of Authority (s 4 HSNO Amendment Act 2007)

(ix) Hazardous Substances and New Organisms Amendment Act 2008

Clarifications of the term 'develop' to mean:

a. In relation to organisms other than incidentally imported new organisms, –

   i. means –

      A. genetic modification of an organism:

      B. regeneration of a new organism from biological material of the organism that cannot, without human intervention, be used to reproduce the organism:

      C. fermentation of a micro-organism that is a new organism; but

   iii. does not include field testing; and

b. in relation to incidentally imported new organisms, –

   i. means –

      A. the activities referred to in paragraph (a)(i); and

      B. the deliberate isolation, aggregation, multiplication, or other use of the organism; but

   ii. does not include field testing (s 4 HSNO Amendment Act 2008).

(x) Hazardous Substances and New Organisms Amendment Act 2010

Clarification of the term 'conditional release approval':
Conditional **release approval** means an approval under section 38BA or 38C.

(xi) Hazardous Substances and New Organisms Amendment Act 2011

Clarification of the term 'Authority':
Authority or **EPA** means the Environmental Protection Authority established by section 7 of the Environmental Protection Authority Act 2011.

2. Associated orders and regulations

(i) Hazardous Substances and New Organisms (Methodology) Order 1998

Clarifies the methodology to be used by the Authority for making decisions under part 5 of the Act. Defines the role of the Authority, the role of departments, and the role of advisory committees. Provides guidance on: public notification, information used by the Authority, the evaluation of risks costs and benefits, submissions, experts, information produced for other bodies, decision-making, uncertainty, approach to risk, aggregation and comparison of risks costs and benefits, application of controls, and presentation of decisions.

(ii) Hazardous Substances and New Organisms (New Organisms Forms and Information Requirements) Regulations 1998

Clarification of the following terms: '*Benefit*' *to mean*:
The value of a particular positive effect expressed in monetary or non-monetary terms

'*Cost*' *to mean*:
The value of a particular adverse effect expressed in monetary or non-monetary terms

'*Risk*' *to mean*:
The combination of the magnitude of an adverse effect and the probability of its occurrence

(iii) Hazardous Substances and New Organisms (Low-Risk Genetic Modification) Regulations 2003

Clarification of the AS/NZ containment standards and the MAF Biosecurity Authority containment standards. Definition of the terms '*PC1*' *and* '*PC2*' *and* '*Low-risk genetic modification*'

AS/NZ containment standard means Australian and New Zealand containment standard
MAF Biosecurity Authority containment standard means Ministry of Agriculture and Forestry Biosecurity Authority containment standard

PC1 containment means –

a. the conditions for the physical containment of organisms described as Physical Containment Level 1 (PC1) in AS/NZ containment standard 2243.3:2002 (Safety in Laboratories Part 3: Microbiological Aspects and Containment Facilities); and
b. the modifications referred to in the following MAF Biosecurity Authority containment standards:
    i. 154.03.02 (31 October 2002) (containment facilities for micro-organisms):
    ii. 154.03.03 (31 October 2002) (containment facilities for vertebrate laboratory animals):
    iii. 154.02.08 (31 October 2002) (transitional and containment facilities for invertebrates):
    iv. 155.04.09 (24 March 2003) (containment facilities for new organisms, including genetically modified organisms, of plant species)

PC2 containment means –

a. the conditions for the physical containment of organisms described as Physical Containment Level 2 (PC2) in AS/NZ containment standard 2243.3:2002 (Safety in Laboratories Part 3: Microbiological Aspects and Containment Facilities); and

b. the modifications referred to in the following MAF Biosecurity Authority containment standards:

   i. 154.03.02 (31 October 2002) (containment facilities for micro-organisms):

   ii. 154.03.03 (31 October 2002) (containment facilities for vertebrate laboratory animals):

   iii. 154.02.08 (31 October 2002) (transitional and containment facilities for invertebrates):

   iv. 155.04.09 (24 March 2003) (containment facilities for new organisms, including genetically modified organisms, of plant species).

4. Low-risk genetic modification

Genetic modification of an organism is a low-risk genetic modification if the modification –

a. does not involve any of the developments specified in the Schedule; and

b. is either –

   i. a category A genetic modification, as defined in regulation 5(1); or

   ii. a category B genetic modification, as defined in regulation 5(2).

(iv) Hazardous Substances and New Organisms (Genetically Modified Organisms – Information Requirements for Segregation and Tracing) Regulations 2008

Clarification of the following terms:
'code of practice' means a code of practice approved under an Act or an industry code of practice
'standard' means a standard approved under an Act.

Explanatory note:
[This regulation] requires an application for a conditional release approval for a genetically modified organism under s 38A of HSNO to include information about any specific measures the applicant intends to take to keep the genetically modified organism separate from other organisms and to trace the genetically modified organism. If the applicant does not intend to take such measures, they must include their reasons for not doing so. The prescribed information may assist the Environmental Risk Management Authority in deciding whether to approve the conditional release of a genetically modified organism with controls relating to the segregation and tracing of genetically modified organisms, such as requiring separation distances between genetically modified and non-genetically modified organisms. If the Authority imposes such controls, they may help the producers of non-genetically modified organisms to satisfy their markets of the non-genetically modified status of their products.

3. Other relevant legislation

(i) Agricultural Compounds and Veterinary Medicines Act 1997

4. Purpose of Act

The purpose of this Act is to –

a. prevent or manage risks associated with the use of agricultural compounds, being –
   i. risks to public health; and
   ii. risks to trade in primary produce; and
   iii. risks to animal welfare; and
   iv. risks to agricultural security:

b. ensure that the use of agricultural compounds does not result in breaches of domestic food residue standards:

c. ensure the provision of sufficient consumer information about agricultural compounds.

(ii) Medicines Act 1981

The Medicines Act 1981 ('the Act') sets out controls on the manufacture, supply and advertising (promotion) of medicines and also defines the term 'medicine'.

5A Relationship with Hazardous Substances and New Organisms Act 1996
In relation to medicines that are or contain hazardous substances or new organisms, the requirements of this Act are additional to the requirements of the Hazardous Substances and New Organisms Act 1996.

(iii) Food Act 1981

MPI is responsible for administering the Food Act, which regulates domestic food produced or sold in New Zealand. Under the Act, there are regulations and standards which industry needs to comply with. There is currently a Food Bill 160-2 (2010) before the House. If passed the Bill would replace the Food Act 1981 and over time the Food Hygiene Regulations 1974 and the Food (Safety) Regulations 2002. The Bill was introduced to Parliament in May 2010 and is currently awaiting its second reading (NZ Parliament, n.d.)

(iv) Biosecurity Act 1993

MPI administers the Biosecurity Act. It provides a legal basis for excluding, eradicating and effectively managing pests and unwanted organisms, and its powers can be variously used by MPI, other government agencies, regional councils and pest management agencies. It is an enabling tool that provides a range of functions, powers and options for the management of risk organisms (MPI, n.d.[h])

(v) Human Assisted Reproductive Technology Act 2004

3. Purposes

This Act has the following purposes:

a. to secure the benefits of assisted reproductive procedures, established procedures, and human reproductive research for individuals and for society in general by taking appropriate measures for the protection and promotion of the health, safety, dignity, and rights of all individuals, but particularly those of women and children, in the use of these procedures and research:

b. to prohibit unacceptable assisted reproductive procedures and unacceptable human reproductive research:

c. to prohibit certain commercial transactions relating to human reproduction:

d. to provide a robust and flexible framework for regulating and guiding the performance of assisted reproductive procedures and the conduct of human reproductive research:

e. to prohibit the performance of assisted reproductive procedures (other than established procedures) or the conduct of human reproductive research without the continuing approval of the ethics committee:

f. to establish a comprehensive information-keeping regime to ensure that people born from donated embryos or donated cells can find out about their genetic origins.

4. Containment standards

(i) MPI/EPA Containment Standards for new organisms

In addition to both Standards above, there are six MPI/EPA containment standards for new organisms: Microorganisms, Vertebrates, Invertebrates, Plants, Field test of animals, and Zoos (EPA, n.d.[h]).

(ii) AS/NZ Standard 2243.3: 2002 Safety in laboratories: Microbiological aspects and containment facilities.

Embedded in the *Hazardous Substances and New Organisms (Low-Risk Genetic Modification) Regulations 2003* s 3 is a reference to the AS/NZ Standard 2243.3: 2002 Safety in laboratories: Microbiological aspects and containment facilities (Standards NZ, n.d.).

(iii) AS/NZ Standard 2243.3: 2010 Safety in laboratories: Microbiological aspects and containment facilities

A more recent standard, AS/NZ Standard 2243.3: 2010 Safety in laboratories: Microbiological aspects and containment facilities, has been produced; however, containment facilities are not required to comply with this updated standard (Standards NZ, n.d.).

Appendix 7: Significant legal judgements

Table 8: Significant legal judgements

Source: Brookers, n.d.[b]

	Date of Decision	Case	Court	Outcome
1	**2001 May 2**	Bleakley v Environmental Risk Management Authority [2001] 3 NZLR 213	High Court	Successful Appeal: The following is taken from the judgement at [325] (1) I consider there was error of law in failure to apply the methodology; and that such error was material except in relation to non-application of clauses 9 and 10 (which equate provisions of the Act which the Authority did apply) and clause 13(c) the provisions of which are shown to have been observed in fact. (2) I consider there was error of law in failure to state the criteria in the methodology relied upon in the decision, and that such error was material.
2	**2003 July 7**	Mothers Against Genetic Engineering Inc v Minister for the Environment 2005 9 NZJEL 123	High Court	Unsuccessful application by Mothers Against Genetic Engineering Inc for judicial review of decisions by the Minister for the Environment and ERMA. ERMA had approved the development in containment of a GMO by AgResearch subject to conditions. It was found that there was no failure to consider AgResearch's application nor did the Minister act unreasonably. The Court declined the application for judicial review.
3	**2004 December 14**	Bleakley v Environmental Risk Management Authority 2005 11 ELRNZ 289	High Court	Unsuccessful application by Bleakley for judicial review of decisions by ERMA, MAF, Minister for Environment and Whakamaru Farms Ltd. Bleakley claimed that ERMA and others failed to recognise risk of horizontal gene transfer in a field test by PPL Therapeutics. The Court held that there was no evidence that ERMA overlooked relevant facts or considerations, HSNO did not require ERMA to reassess the test, and MAF did not commit any reviewable errors.

	Date of Decision	Case	Court	Outcome
4	**2008 May 12**	GE Free New Zealand In Food and Environment Inc v Environmental Risk Management Authority 2008 BCL 611	High Court	Unsuccessful appeal by GE Free New Zealand against ERMA for approving a field test application by NZ Institute for Crop and Research Ltd to assess the performance of plants modified for resistance to caterpillars. GE Free New Zealand argued that ERMA erred when making the decision by not requiring 'adverse effects tests' as a condition for the field test. The Court held that ERMA's approach was correct under HSNO.
5	**2009 June 5**	GE Free New Zealand In Food and the Environment Inc v Environmental Risk Management Authority CIV-2008-485-2370	High Court	Successful application by GE Free New Zealand for judicial review of decisions by ERMA. GE Free claimed that ERMA erred in law by considering the applications and that they are too generic to constitute correct applications under HSNO. The Court held that the error was such that ERMA could not continue to treat the applications as if they were valid and could take no further steps in the hearing process.
6	**2010 March 23**	AgResearch Ltd v GE Free New Zealand in Food and the Environment Inc [2010] NZCA 89	Court Of Appeal	Successful appeal by AgResearch against the High Court decision for upholding an application for judicial review of the ERMA decision-making process by GE Free New Zealand. The Court of Appeal held that ERMA's decision to accept AgResearch's application was an inappropriate case for judicial review.
7	**2010 June 29**	GE Free New Zealand In Food and the Environment Inc v AgResearch Ltd [2010] NZSC 71	Supreme Court	Unsuccessful application by GE Free New Zealand for leave to appeal to the Supreme Court against the decision in favour of AgResearch by the Court of Appeal, meaning that GE Free New Zealand cannot appeal.
8	**2010 December 16**	GE Free New Zealand In Food and Environment Inc v Environmental Risk Management Authority [2011] NZRMA 45	High Court	Unsuccessful appeal by GE Free New Zealand against ERMA's decision to allow AgResearch to develop GMOs in containment with controls. The High Court dismissed the appeal.

Appendix 8: Indoor GMO decisions under the HSNO Act 1996 by financial year 1998–2012

Table 9 shows total indoor GMO decisions per financial year. The EPA (previously ERMA) has principle decisionmaking authority, but can delegate authority for low-risk GMO decisions to Institutional Biological Safety Committees (IBSCs). Low-risk GMOs are GMOs regulated under the Hazardous Substances and New Organisms (Low Risk Genetic Modification) Regulations 2003.

Column (i) shows the number of IBSCs in existence each year. Column (ii) shows the decisions they made each year and is taken from the ERMA/EPA annual reports. Columns (iii) and (iv) show the number of 'development in containment' and 'import into containment' decisions made by the EPA (previously ERMA). This data was taken from the EPA's (ERMA's) decisionmaking summaries at the end of their annual reports. Note that GMO developments can also be conducted outdoors, so the data shown in column (iii) is the total GMO development decisions minus outdoor development decisions (as shown in Table 11 of this report). Column (v) is the total of all indoor GMO decisions each financial year and is reached by adding the data from columns (ii), (iii) and (iv).

Table 9: Indoor GMO decisions by financial year 1998–2012

Source: ERMA, 1999c: 51; 2000c: 59; 2001b: 63; 2002e: 91; 2003c: 90; 2004: 86–87; 2005b: 108–110; 2006: 108–110; 2007: 78–79; 2008c: 79–80; 2009b: 81; 2010b: 87; 2011: 78; EPA, 2012a: 86

Year July – June	Low-risk GMO decisions made by IBSCs		GMO decisions made by EPA (previously ERMA)		Total
	Number of IBSCs	Decisions made by IBSCs	Importing GMOs into Containment	Developing GMOs in Containment	
	(i)	(ii)	(iii)	(iv)	(v)
1998/99	23	143	2	0	145
1999/00	23	137	13	6	156
2000/01	23	377	23	27[1]	427
2001/02	20	122	11	14	147
2002/03	17	128	7	14[2]	149
2003/04	10	132	3	15	150
2004/05	13	145	5	12	162
2005/06	12	89	3	27	119
2006/07	10	96	2	1	99
2007/08	10	106	4	10	120
2008/09	6	54	3	15	72
2009/10	4	45	2	25	72
2010/11	4	66	5	14	85
2011/12	4	39	5	13	57

1 Twenty one of the 27 were while IBSC delegations were suspended.

2 Eleven of the 14 were approved through rapid assessment. This process was introduced under the Hazardous Substances and New Organisms Amendment Act 2003, ss 42A Rapid assessment of projects for low-risk genetic modification and 42B Rapid assessment of adverse effects for importation of genetically modified organisms into containment.

Appendix 9: Outdoor experiments by application code 1988–June 2013

The considerable institutional change that has taken place in recent years means numbering systems and terminology are often inconsistent over time and are not always easy to comprehend. Table 10 provides contextual information to inform Table 11. Table 11 lists to the best of our knowledge all applications for outdoor experiments in New Zealand since 1988 when the IAG came into existence and the first field test was approved.[1]

Note: We contacted the CRIs AgResearch, Plant & Food Research and Scion to confirm the accuracy of the data in this table. Scion responded by confirming that to the best of their knowledge the data about Scion field tests was correct (Elspeth MacRae, Scion, personal communication, 14 May 2013). Plant & Food Research replied but they were unable to review the data due to resource issues and the relatively short timeframe (Roger Bourne, Plant & Food Research, personal communication, 15 May 2013). AgResearch replied and confirmed that to the best of their knowledge the information in this table is correct (Lisa Blaney, AgResearch, personal communication, 12 September 2013).

1 IAG applications are for genetically modified animal and crop field tests and do not include glasshouse tests, taste testing, fermentations, vaccine testing, microorganisms or imports.

Table 10: Types of GMO application

Source: See EPA, n.d.[k–l] for further definitions

	Type 1	Type 2	Type 3	Type 4
Location	Indoor	Outdoor	Outdoor	Outdoor
Type of application	Import or develop in indoor containment facilities[1]	Import or develop in outdoor containment facilities	Conditional release of imported or developed GMOs	Full release (no controls)
Type of organism	New organism	New organism	New organism	No longer regulated under HSNO
Purpose	Mainly research	Can be research or commercial[2]	Mainly commercial	Mainly commercial
Application numbers used	IAGXX (1988–1998)	IAGXX (1988–1998)	One application received to date (GMR07001) was approved in 2008 but has never been used[5]	No applications received to date
	GMDXXXXX[3] [development] (1998–2010)	GMDXXXXX [development], GMFXXXXX [field test] (1998–2010)		
	ERMAXXXXXX (2010–2012)[4]	ERMAXXXXXX (2010–2012)		
Current status	Figures are not available[6]	Two experiments in operation[7]	No applications received to date	One inquiry received[8]
Publicly notified	No	Yes	Yes	Yes
Enforcement	MPI	MPI	MPI	MPI/DOC/ MoH[9]

1 In New Zealand we do not have physical containment laboratories of a PC4 level; instead our 94 physical containment structures are only of a PC1, PC2 or PC3 standard.

2 For example, we understand that AgResearch could apply to ERMA for milk from GM cows (created under a GMD or GMF) to be exported for commercial use.

3 An application licence number (e.g. GMF98001) represents the application type (e.g. GMF), the year of application (98) and the application number (001). This system was used between 1998 and 2010.

4 There have been no new outdoor applications received since the establishment of the EPA. Therefore we do not know what numbering system they will employ.

5 GMR07001 was for an equine (horse) influenza vaccination.

6 This information is not collected by a central agency at this time, so obtaining this figure would require requesting this information directly from each of 135 containment facilities. However, looking at Table 8 does provide an indication of the number of applications approved each year by ERMA and IBSCs.

7 See ERMA200223 (AgResearch) and ERMA2004797 (Scion) in Table 11 (overleaf).

8 In 1998, Monsanto made inquiries to ERMA and was designated an application number but they decided not to proceed with the application. See GMR98001 in Table 11 (overleaf).

9 Once released the GMO is released it is treated as any other organism and is no longer regulated by the EPA. At this point the Biosecurity Act 1993, Conservation Act 1987 or the Health Act 1956 would apply. Any subsequent issues that arise are managed by MPI, DOC and the MoH.

Table 11 key:

Not known – refers to information not known by the EPA.

Not applicable – indicates where an application was not publicly notified and therefore no submissions were received.

Did not commence – indicates that the experiment was approved but the applicant did not commence any work under the approval.

Not transferred under the HSNO Act – refers to an experiment that had been completed by July 1998. Those that continued after this date were transferred to become approvals under the HSNO Act (EPA, n.d.[m]).

Table 11: Outdoor experiments by application code as at June 2013

Source: EPA, n.d.[j, n–s];[1] NZ Gazette, 1998: 2399–2428

	Application Code	Entity	Type of entity	GMO	Year decision made	Date approval expires	Submissions received	Application status	Status of outdoor experiment (as at April 2013)
1	**IAG 2**	Department of Scientific and Industrial Research[2]	Government department	Potatoes	1988	Not known	Not applicable[3]	Approved	Not transferred under the HSNO Act[4]
2	**IAG 3**	Department of Scientific and Industrial Research	Government department	Potatoes	1988	Not known	Not applicable	Approved	Not transferred under the HSNO Act
3	**IAG 4**	Department of Scientific and Industrial Research	Government department	Potatoes	1988	Not known	Not applicable	Approved	Not transferred under the HSNO Act

1 Documents relating to each application can be found by typing the application code into the EPA's HSNO register. For IAG applications, see NZ Gazette, 1998.

2 The Department of Scientific and Industrial Research (DSIR) was dissolved in 1992 with the formation of CRIs under the Crown Research Institute Act 1992.

3 IAG was the body that assessed applications before the establishment of ERMA. Under the IAG public submissions were not called for.

4 IAG field tests in operation after July 1998 were transferred to become approvals under the HSNO Act 1996.

	Application Code	Entity	Type of entity	GMO	Year decision made	Date approval expires	Submissions received	Application status	Status of outdoor experiment (as at April 2013)
4	**IAG 5**	Department of Scientific and Industrial Research	Government department	Asparagus	1988	Not known	Not applicable	Approved	Not transferred under the HSNO Act
5	**IAG 12**	Department of Scientific and Industrial Research	Government department	Potatoes	1989	Not known	Not applicable	Approved	Not transferred under the HSNO Act
6	**IAG 13**	Department of Scientific and Industrial Research	Government department	Potatoes	1989	Not known	Not applicable	Approved	Not transferred under the HSNO Act
7	**IAG 14**	Department of Scientific and Industrial Research	Government department	Potatoes	1989	Not known	Not applicable	Approved	Not transferred under the HSNO Act
8	**IAG 16**	Department of Scientific and Industrial Research	Government department	Potatoes	1989	Not known	Not applicable	Approved	Not transferred under the HSNO Act
9	**IAG 21**	Department of Scientific and Industrial Research	Government department	Broccoli	1989	Not known	Not applicable	Approved	Not transferred under the HSNO Act

	Application Code	Entity	Type of entity	GMO	Year decision made	Date approval expires	Submissions received	Application status	Status of outdoor experiment (as at April 2013)
10	**IAG 23**	Department of Scientific and Industrial Research	Government department	Potatoes	1990	Not known	Not applicable	Approved	Not transferred under the HSNO Act
11	**IAG 24**	Department of Scientific and Industrial Research	Government department	Potatoes	1990	Not known	Not applicable	Approved	Not transferred under the HSNO Act
12	**IAG 25**	Department of Scientific and Industrial Research	Government department	Kiwifruit	1991	Not known	Not applicable	Approved	Not transferred under the HSNO Act
13	**IAG 26**	Not known	Not known	Kale and rape	1991	Not known	Not applicable	Not approved	-
14	**IAG 27**	Lincoln University	University	Progeny testing	1992	Not known	Not applicable	Approved	Not transferred under the HSNO Act
15	**IAG 28**	Plant & Food Research (formerly Crop & Food)*	CRI	Potatoes	1992	Not known	Not applicable	Approved	Not transferred under the HSNO Act
16	**IAG 29**	Corson Grain Ltd	NZ owned company	Maize	1992	Not known	Not applicable	Approved	Not transferred under the HSNO Act
17	**IAG 30**	Corson Grain Ltd	NZ owned company	Maize	1993	Not known	Not applicable	Approved	Not transferred under the HSNO Act

	Application Code	Entity	Type of entity	GMO	Year decision made	Date approval expires	Submissions received	Application status	Status of outdoor experiment (as at April 2013)
18	**IAG 31**	Genzyme Corporation	Foreign owned company[5]	Goats	1993	Not known	Not applicable	Approved	Not transferred under the HSNO Act
19	**IAG 32**	Genzyme Corporation	Foreign owned company	Goats	1993	Not known	Not applicable	Approved	Not transferred under the HSNO Act
20	**IAG 33**	Plant & Food Research (formerly Crop & Food)*	CRI	Potatoes	1993	Not known	Not applicable	Approved	Not transferred under the HSNO Act
21	**IAG 35**	AgResearch	CRI	White clover	Nov 1995	Nov 1996	Not applicable	Approved	Transferred under the HSNO Act Completed
22	**IAG 36**	Lincoln University	University	Progeny testing	1995	Not known	Not applicable	Approved	Not transferred under the HSNO Act
23	**IAG 38**	Corson Grain Ltd	NZ owned company	Maize	Nov 1995	April 1998	Not applicable	Approved	Transferred under the HSNO Act Completed
24	**IAG 39**	Corson Grain Ltd	NZ owned company	Maize	Nov 1995	Feb 1998	Not applicable	Approved	Transferred under the HSNO Act Completed

5 For the purposes of this table foreign owned is defined as at least 51% owned by offshore interests.

	Application Code	Entity	Type of entity	GMO	Year decision made	Date approval expires	Submissions received	Application status	Status of outdoor experiment (as at April 2013)
25	**IAG 40**	Mitchell Partners – PPL Therapeutics	Foreign owned company	Sheep	Oct 1996	May 2001	Not applicable	Approved	Transferred under the HSNO Act Completed
26	**IAG 41**	Mitchell Partners – PPL Therapeutics	CRI	Brassicas	1996	Not known	Not applicable	Approved	Not transferred under the HSNO Act
27	**IAG 42**	Zeneca Seeds Inc	Foreign owned private company	Round up Ready canola	Nov 1996	Nov 1997	Not applicable	Approved	Transferred under the HSNO Act Completed
28	**IAG 43**	Plant Genetic Systems (PGS)[6]	Foreign owned private company	Canola	Nov 1996	Nov 1997	Not applicable	Approved	Transferred under the HSNO Act Completed
29	**IAG 45**	Scion[7]	CRI	Radiata pine	Dec 1997	Jan 2003	Not applicable	Approved	Transferred under the HSNO Act Completed
30	**IAG 46**	Pioneer Hi-Bred International	Foreign owned company	Maize	Nov 1997	Nov 1998	Not applicable	Approved	Transferred under the HSNO Act Completed
31	**IAG 47**	Pioneer Hi-Bred International	Foreign owned company	Maize	Oct 1997	Oct 1998	Not applicable	Approved	Transferred under the HSNO Act Completed

6 Completed by Crop & Food (now Plant & Food Research) on behalf of Belgian owned Plant Genetic Systems (PGS).

7 Formerly New Zealand Forest Research Institute.

	Application Code	Entity	Type of entity	GMO	Year decision made	Date approval expires	Submissions received	Application status	Status of outdoor experiment (as at April 2013)
32	**IAG 48**	Lincoln University	University	Sheep	March 1998	March 2001	Not applicable	Approved	Transferred under the HSNO Act Completed
33	**IAG 49**	Massey University	University	Lisianthus	Nov 1997	Nov 1998	Not applicable	Approved	Transferred under the HSNO Act Completed
34	**IAG 50**	Plant & Food Research (formerly Crop & Food)*	CRI	Peas	Nov 1997	Sept 1999	Not applicable	Approved	Transferred under the HSNO Act Completed
35	**IAG 51**	Plant & Food Research (formerly HortResearch)*	CRI	Tamarillo	Jan 1998	Jan 2001	Not applicable	Approved	Transferred under the HSNO Act Completed
36	**IAG 52**	Plant & Food Research (formerly Crop & Food)*	CRI	Apples	Dec 1997	Dec 1998	Not applicable	Approved	Transferred under the HSNO Act Completed
37	**IAG 53**	Plant & Food Research (formerly Crop & Food)*	CRI	Broccoli	Nov 1997	Nov 1998	Not applicable	Approved	Transferred under the HSNO Act Completed
38	**IAG 54**	Plant & Food Research (formerly Crop & Food)*	CRI	Kale and rape	Nov 1997	Nov 1998	Not applicable	Approved	Transferred under the HSNO Act Completed

	Application Code	Entity	Type of entity	GMO	Year decision made	Date approval expires	Submissions received	Application status	Status of outdoor experiment (as at April 2013)
39	**IAG 55**	Plant & Food Research (formerly Crop & Food)*	CRI	Potatoes	Nov 1997	Nov 1998	Not applicable	Approved	Transferred under the HSNO Act Completed
40	**IAG 56**	Plant & Food Research (formerly Crop & Food)*	CRI	Potatoes	Nov 1997	Nov 1998	Not applicable	Approved	Transferred under the HSNO Act Completed
41	**IAG 57**	Plant & Food Research (formerly Crop & Food)*	CRI	Potatoes	Nov 1997	Nov 1998	Not applicable	Approved	Transferred under the HSNO Act Completed
42	**IAG 58**	Washington State University[8]	Foreign university	Barley	Nov 1997	Nov 1998	Not applicable	Approved	Transferred under the HSNO Act Completed
43	**IAG 59**	Betaseed Inc[9]	Foreign owned company	Sugarbeet	Nov 1997	Nov 1998	Not applicable	Approved	Transferred under the HSNO Act Completed
44	**IAG 60**	Zeneca Seeds Inc	Foreign owned company	Round up Ready canola	Nov 1997	Nov 1998	Not applicable	Approved	Transferred under the HSNO Act Completed

8 Completed by Southern Seeds Technology, Canterbury on behalf of Dr Diter von Wettstein from Washington State University, USA.

9 Completed by Kimihia Research Centre in Christchurch on behalf of US owned Betaseed Inc.

	Application Code	Entity	Type of entity	GMO	Year decision made	Date approval expires	Submissions received	Application status	Status of outdoor experiment (as at April 2013)
45	**GMR98001**[10]	Monsanto	Foreign owned private company	Canola	Withdrawn	-	-	Withdrawn	-
46	**GMF98001**	PPL Therapeutics (NZ) Ltd	Foreign owned private company	Sheep	March 1999	Not specified in controls	30	Approved with controls	Completed. Controls still apply
47	**GMF98002**	Plant & Food Research (formerly Crop & Food)*	CRI	Petunia	Nov 1998	Feb 2000	8	Approved with controls	Completed. No controls apply
48	**GMF98003**	Plant & Food Research (formerly HortResearch)*	CRI	Royal Gala apples	Withdrawn Dec 1999	-	-	Withdrawn	-
49	**GMF98004**	Betaseed Inc[11]	Foreign owned private company	Sugarbeet	March 1999	Dec 2000	9	Approved with controls	Completed. No controls apply
50	**GMF98005**	Pioneer New Zealand Limited	Foreign owned private company	Maize	Oct 1999	Not specified in controls	16	Approved with controls	Did not commence

10 Application to import for GM release canola with resistance to Round up herbicide. Although an application number was given, a formal application was never received by ERMA.

11 Completed by Kimihia Research Centre in Christchurch on behalf of US owned Betaseed Inc.

	Application Code	Entity	Type of entity	GMO	Year decision made	Date approval expires	Submissions received	Application status	Status of outdoor experiment (as at April 2013)
51	**GMF98006**	Pioneer New Zealand Limited	Foreign owned private company	Maize	Oct 1999	Not specified in controls	16	Approved with controls	Did not commence
52	**GMF98007**	Plant & Food Research (formerly Crop & Food)*	CRI	Potatoes	Dec 1998	June 2003	17	Approved with controls	Completed. No controls apply
53	**GMF98008**	Plant & Food Research (formerly Crop & Food)*	CRI	Potatoes	Dec 1998	June 2003	15	Approved with controls	Completed. No controls apply
54	**GMF98009(i), (ii) and (iii)**	AgResearch	CRI	Cattle	Nov 1999 and May 2001	Nov 2008 and May 2010	30	Approved with controls	Completed Since 2010 all research has been conducted under the approval for ERMA200223 (below)
55	**GMF98010**	AgResearch	CRI	*E. coli* bacteria	June 1999	Not specified in controls	2	Approved with controls	Did not commence

	Application Code	Entity	Type of entity	GMO	Year decision made	Date approval expires	Submissions received	Application status	Status of outdoor experiment (as at April 2013)
56	**GMF98011**	Carter Holt Harvey Ltd	New Zealand owned company	Radiata pine	Dec 1998	July 2003	13	Approved with controls	Did not commence[12]
57	**GMF99001**	Scion	CRI	Radiata pine	Dec 2000	Dec 2020	735 (GMF99001 and GMF99005)	Approved with controls	No activity is occurring under this approval
58	**GMD99003**	NZ King Salmon Company Ltd	Foreign owned private company	Chinook salmon	Feb 2000	Not specified in controls	The public were not invited to make submissions	Approved with controls	Completed[13]
59	**GMF99003**	Monsanto	Foreign owned private company	Roundup Ready wheat	Withdrawn Feb 2000	-	1411	Withdrawn	-
60	**GMF99004**	AgResearch	CRI	Sheep	Oct 2000	Oct 2005	80	Approved with controls	Did not commence
61	**GMF99005**	Scion	CRI	Radiata pine and Norway spruce	Dec 2000	Dec 2019	735 (GMF99001 and GMF99005)	Approved with controls	No activity is occurring under this approval
62	**GMD01194**	AgResearch	CRI	Cattle	Withdrawn April 2002	-	383	Withdrawn	-

12 However, the shade house part of the experiment continued.

13 Development stopped but frozen semen remains. In 2013 NZ King Salmon aquaculture general manager Mark Preece stated that the company intended to dispose of the material: 'There is a long and involved process to dispose of it requiring public notification which we plan to apply for in due course.' (Bell, 2013)

	Application Code	Entity	Type of entity	GMO	Year decision made	Date approval expires	Submissions received	Application status	Status of outdoor experiment (as at April 2013)
63	**GMD02028**	AgResearch	CRI	Cattle	Sept 2002	September 2012	863	Approved with controls	Completed Since 2010 all research has been conducted under the approval for ERMA200223 (below)
64	**GMF03001**	Plant & Food Research (formerly Crop & Food)*	CRI	Onions	Dec 2003	Dec 2013	1933	Approved with controls	Completed
65	**GMF06001**	Plant & Food Research (formerly Crop & Food)*	CRI	Brassicas (cabbages, cauliflower, broccoli and forage kale)	May 2007	February 2013	959	Approved with controls	Completed[14]
66	**GMF06002**	Plant & Food Research (formerly Crop & Food)*	CRI	Allium (onion, spring onion garlic and leek)	Nov 2008	Nov 2018	124	Approved with controls	Did not commence
67	**GMF07001**	AgResearch	CRI	'GM animals'	Withdrawn Dec 2010	-	-	Withdrawn	-

14 In December 2008 a breach of controls was identified (see Appendix 14). Plant & Food Research formally ceased work on the test. The test site now lies fallow and is being monitored monthly (Plant & Food Research, 2012).

	Application Code	Entity	Type of entity	GMO	Year decision made	Date approval expires	Submissions received	Application status	Status of outdoor experiment (as at April 2013)
68	**GMD07074**	AgResearch	CRI	'GM animals'	Withdrawn Dec 2010	-	-	Withdrawn	-
69	**ERMA200223**	AgResearch	CRI	Cattle, sheep or goats (E. coli and mammalian cells; human and mouse used in the indoor component)	April 2010	April 2030	1545	Approved with controls	Currently operating (Includes GMOs initially approved under GMF98009(i), (ii) and (iii) and GMD02028)
70	**ERMA200479**	Scion	CRI	Radiata pine	December 2010	December 2035	234	Approved with controls	Currently operating

* HortResearch and Crop & Food merged to become Plant & Food in 2008. The entity shown in brackets is the entity that undertook the experiment.

Note: Of the 70 outdoor experiments applied for, only one experiment was declined by the Interim Assessment Group (IAG) in 1991. Further, of those 69 experiments, six were withdrawn by the applicant before being decided by ERMA. Of the 63 remaining, six (although approved) were never implemented (three of those were CRI approved experiments). This is how the figure of 57 approved and commenced outdoor experiments shown on page 6 was generated. In terms of CRIs, 24 of the 57 (42%), represents the percentage of outdoor research experiments implemented by CRIs in New Zealand since 1988. In addition to these 24 CRI experiments, 12 experiments were completed by the former Department of Scientific and Industrial Research (DSIR) and four by universities, meaning about 70% of approved and commenced outdoor experiments have received some form of public funding.

Appendix 10: Approved outdoor experiments under the HSNO Act 1996 by entity 1998–June 2013

Table 12: Approved outdoor experiments under the HSNO Act 1996 by entity 1998–June 2013

Source: See Appendix 9

Crown Research Institutes (CRIs)			
Name of CRI	**Application code**	**Current status**	**Controls**
AgResearch	GMF98009(i), (ii) and (iii)	Since 2010 all research has been conducted under the approval for ERMA200223 (below)	See ERMA200223 (below)
	GMF98010	Did not commence	No controls apply
	GMF99004	Did not commence	No controls apply
	GMD02028	Since 2010 all research has been conducted under the approval for ERMA200223 (below)	See ERMA200223 (below)
	ERMA200223	**Currently operating**	Controls apply
Plant & Food Research (formerly Crop & Food)	GMF98002	Completed	No controls apply
	GMF98007	Completed	No controls apply
	GMF98008	Completed	No controls apply
	GMF03001	Completed	No controls apply
	GMF06001	Cancelled	Controls apply
	GMF06002	Did not commence	No controls apply
Scion (formerly New Zealand Forest Research Limited)	GMF99001	No activity is occurring under this approval	Controls apply
	GMF99005	No activity is occurring under this approval	Controls apply
	ERMA200479	**Currently operating**	Controls apply
New Zealand owned companies (51% NZ interests)			
Name of company	**Application code**	**Current status**	**Controls**
Carter Holt Harvey Ltd	GMF98011	Did not commence	No controls apply
Foreign owned companies (51% foreign interests)			
Name of company	**Application code**	**Current status**	**Controls**
Betaseed Inc	GMF98004	Completed	No controls apply

Foreign owned companies (51% foreign interests) (continued)			
Name of company	**Application code**	**Current status**	**Controls**
NZ King Salmon Company Ltd	GMD99003	Completed. Remaining GM material in storage. Company intends to dispose of it	Controls apply
Pioneer New Zealand Limited	GMF98005	Did not commence	No controls apply
	GMF98006	Did not commence	No controls apply
PPL Therapeutics (NZ) Ltd	GMF98001	Completed	Controls apply

Note: No applications made to ERMA for GM outdoor experiments have been declined.

Appendix 11: Amendments to controls under Section 67A of the HSNO Act 1996 as at June 2013

This appendix provides details of field tests and developments which are: (i) currently operating in the outdoors and (ii) ERMA has approved amendments under section 67A of the HSNO Act 1996.

> **s 67A Minor or technical amendments to approvals**
> The Authority may, of its own motion, amend any approval given by it under this Part if it considers that the alteration is minor in effect or corrects a minor or technical error.

Table 13: Amendments to controls under section 67A of the HSNO Act 1996 as at June 2013
Source: Decision documents can be sourced via the HSNO application search on the EPA website (EPA, n.d.[j])

1. GMF98009 Part I & II – Cattle (subsumed into ERMA200223 in April 2000)

Approval holder: New Zealand Pastoral Agricultural Research Institute Ltd (AgResearch)

Purpose of application: (i) To field test, in Waikato, genetically modified cattle with extra bovine genes, and (ii) the deletion of the bovine beta-lactoglobulin gene. Genes will be expressed in the milk of the cattle.

Date of initial approval: 18 November 1999

Date of amendment request(s): 16 November 2004, 18 November 2005, 30 August 2007, 12 November 2008, 11 March 2010

Purpose of amendment(s):

Amendment November 2004:
- To extend the duration of the approval for a period of 12 months

Amendment November 2005:
- To extend the duration of the approval for a period of three years

Amendment August 2007:
- Addition of footnotes to the containment facility references and the Australian/New Zealand containment facility references to 'future proof' the decision
- Standardise the wording of the breach of containment control
- Replacement of the control regarding inspection of facilities by the Authority, its agent or enforcement officers with the standard control

Amendment November 2008:
- Addition of control 1.17 to clarify the handling and disposal requirements for genetically modified cattle and/or derived biological material at the end of the approval period
- Amendment of control 6.4 to clarify when the final report must be provided to ERMA New Zealand as a consequence of the addition of control 1.17

Amendment March 2010:
- Amendment of control 1.17 to clarify the holding requirements of the genetically modified cattle and derived biological material at the end of the approval period. The Committee noted that in the future, animals and derived biological material held under this approval may be regulated under new approval(s)

Amendment of control 6.4 to clarify when the final report must be provided to ERMA New Zealand.

2. GMF98009 Part III – Cattle (subsumed into ERMA200223 in April 2010)

Approval holder: New Zealand Pastoral Agricultural Research Institute Ltd (AgResearch)

Purpose of application: To field test, in Waikato, genetically modified cattle with (iii) the insertion of the human myelin basic protein gene.

Date of approval: 23 May 2001

Date of amendment request(s): 18 May 2006, 30 August 2007, 12 November 2008, 11 March 2010

Purpose of amendment(s):

Amendment May 2006:
- To extend the duration of the approval by four years

Amendment August 2007:
- Addition of footnotes to the containment facility references and the Australian/New Zealand containment facility references to 'future proof' the decision
- Standardise the wording of the breach of containment control
- Replacement of the control regarding inspection of facilities by the Authority, its agent or enforcement officers with the standard control

Amendment November 2008:
- Addition of control 1.20 to clarify the disposal requirements for genetically modified cattle and derived biological material at the end of the approval period

Amendment March 2010:
- Amendment of control 1.20 to clarify the holding requirements of the genetically modified cattle and derived biological material at the end of the approval period. The Committee noted that in the future, animals and derived biological material held under this approval may be regulated under new approval(s)
- Amendment of control 6.4 to clarify when the final report must be provided to ERMA New Zealand.

3. GMF99001 – Pine Trees (not currently operating, see ERMA200479)

Approval holder: Scion (previously New Zealand Forest Research Institute)

Purpose of application: To field test, in the Bay of Plenty (Rotorua), over a period of 20 years, *Pinus radiata* plants with genetic modifications to the genes controlling reproductive development. The total duration of this project including a post-trial monitoring phase is 22 years.

Date of approval: 20 December 2000

Date of amendment request(s): 22 February 2001, 8 April 2002, 23 August 2007, 28 May 2008

Purpose of amendment(s):

Amendment April 2002:
- To correct standard numbers in the decision and to name the standards
- To include the full title of the Act in control 2.1
- To add 'transport in an enclosed vehicle' to control 2.7
- To add control 3.2 to define the trial site
- Add control 7.4.1 to require end of trial report

Amendment August 2007:
- Addition of footnotes to the containment facility references and the Australian/New Zealand containment facility references to 'future proof' the decision

- Standardise the wording of the breach of containment control
- Replacement of the control regarding inspection of facilities by the Authority, its agent or enforcement officers with the standard control

Amendment May 2008:
- The following control replaces Control 2.15 of decision dated 20 December 2000.
  2.15 All living vegetative *Pinus radiata* material not retained for research purposes shall be killed by composting, incineration, autoclaving or another scientifically validated method

4. GMD99003 – Salmon (completed)

Approval holder: Bas Walker, Chief Executive, ERMA New Zealand

The Chief Executive of ERMA New Zealand prepared the application for the Authority's consideration on the reassessment of an existing approval for the development of genetically modified salmon in containment.

Purpose of application: To detail and assess controls to ensure all matters of the Third Schedule of the HSNO Act are addressed in terms of containing genetically modified salmon at The New Zealand King Salmon Company Limited's Kaituna Hatchery and grow-out facility.

Date of approval: 21 February 2000

Date of amendment request(s): 23 August 2007

Purpose of amendment(s):

Changes to controls:
- Addition of footnotes to the containment facility references and the Australian/New Zealand containment facility references to 'future proof' the decision
- Standardise the wording of the breach of containment control
- Removal of the control regarding inspection of facilities by the Authority, its agent or enforcement officers

5. GMF99005 – Pine Trees (not currently operating, see ERMA200479)

Approval holder: Scion (previously New Zealand Forest Research Institute)

Purpose of application: To field test, in the Bay of Plenty (Rotorua), over a period of 9 years, *Pinus radiata* and *Picea abies* plants genetically engineered for herbicide resistance. The total duration of this project is 11 years.

Date of approval: 20 December 2000

Date of amendment request(s): 8 April 2002, 23 August 2007, 28 May 2008, 18 December 2009

Purpose of amendment(s):

Amendment April 2002:
- To correct standard numbers in the decision and to name the standards
- To include the full title of the Act in control 2.1
- To add 'transport in an enclosed vehicle' to control 2.7
- Add control 7.4.1 to require end of test report

Amendment August 2007:
Changes to controls:
- Addition of footnotes to the containment facility references and the Australian/New Zealand containment facility references to 'future proof' the decision

- Standardise the wording of the breach of containment control
- Replacement of the control regarding inspection of facilities by the Authority, its agent or enforcement officers with the standard control

Amendment May 2008:
- The following control replaces Control 2.12 of decision dated 23 August 2007
  2.12 All living vegetative *Pinus radiata* and *Picea abies* material approval not retained for research purposes shall be killed by composting, incineration, autoclaving or another scientifically validated method

Amendment December 2009:
- The duration of the field test was extended for a further eight years. The approval will expire on 17 January 2018. The original two year post-harvest monitoring is to begin after this time

6. GMD02028 – Cattle (subsumed into ERMA 200223 in April 2010)

Approval holder: New Zealand Pastoral Agricultural Research Institute Ltd (AgResearch)

Purpose of application: Development in containment by AgResearch of genetically modified *Bos taurus* (cattle) cells and animals that can express functional therapeutic foreign proteins in their milk, and to develop genetically modified cattle to study gene function and genetic performance.

Date of approval: 30 September 2002

Date of amendment request(s): 18 November 2005, 22 August 2007, 14 December 2007, 11 March 2010

Purpose of amendment(s):

Amendments November 2005:
- Amended to clarify that this Approval allows the development of cattle from previously developed sperm or embryos from transgenic animals and the use of artificial insemination, in vitro and in vivo fertilisation to generate live offspring. This clarification is made through the following changes:
  1. Decision amended by inserting clause 9, on page 50
  2. Control 1.1: Amended by inserting the words – or in vitro fertilisation if it occurs in New Zealand after the words – Steps (a) to (d) as specified in the application
  3. Control 1.3: Amended by inserting the words – and artificial insemination or embryo transfer or in vivo fertilisation
     after the words – Steps (e) and (f), as specified in the application
  4. Controls 1.6 and 1.8: Amended by inserting the words – mothers or before the words – surrogate mothers
  5. Control 9.2: Amended by inserting the words – artifical insemination or transfer of embryos or before the word – nuclear transplantation
  6. Decision amended to allow the use of a selectable marker gene coding for puromycin resistance derived from the bacterium *Streptomyces alboniger*. The organism description is amended by inserting the words 'for a selctable marker gene for resistance for puromycin derived from *Streptomyces alboniger* and selectable marker genes derived from' after the word 'except' in the specification of selectable marker genes in Annex 1 on page 53

Amendments August 2007:
Changes to controls:

- Addition of footnotes to the containment facility references and the Australian/New Zealand containment facility references to future proof the decision
- Standardise the wording of the breach of containment control
- Removal of the control regarding inspection of facilities by the Authority, its agent or enforcement officers

Amendments December 2007:

- Decision amended to allow for the use of LoxP sites derived from the bacteriophage P1 and a polyadenylation signal derived from Simian Virus 40. The Organism description is amended by inserting the words LoxP sites (minus the sequence encoding the Cre protein) derived from the bacteriophage P1 and a polyadenylation signal derived from Simian Virus 40 after the word *E. coli* in the specification of features associated with the insertion or removal of foreign genetic material in Annex 1 on page 53

Amendment March 2010

- Decision amended to extend the approval period from 7.5 to 10 years (now ERMA200223 expires April 2030). The wording in control 9.6 was updated

7. GMF03001 – Onions (completed)

Approval holder: New Zealand Institute for Crop & Food Research Limited

Purpose of application: To field-test onions modified for tolerance to the herbicide glyphosate, and to evaluate their environmental impact; herbicide tolerance; agronomic performance; development as cultivars and equivalency to non-genetically modified onions.

Date of approval: 18 December 2003

Date of amendment request(s): 12 September 2005, 23 August 2007

Purpose of amendment(s):

Amendments September 2005:

- Control 7.5 amended to remove the restriction on the use of onion seed by omitting the words 'seed or' and adding the words 'Genetically modified onion seeds used must be securely fastened inside lengths of seed tape greater than 1m in length.' Controls 1.12, 1.13, 1.14, 1.17 and 6.4 amended accordingly to clarify that references to 'seedlings' now also includes seeds
- Control 4.1 amended to change requirement to clean all visible soil off equipment and footwear used on the field test site by omitting the words 'residual soil and onion material' and substituting the words 'traces of onion material, and soil potentially harbouring onion material'
- Control 6.4 amended to remove requirement to record the fate of those onion seeds or seedlings sown that do not establish by adding the words 'A record of non-established material shall be kept and;' 'established (fourth true leaf stage);' and '(This means the Operator will record the numbers planted out, the numbers that do not establish and the fate of only those that are established)'
- Control 7.6 amended to allow the use of alternative species in buffer rows by adding the words 'or non Allium plant material may be planted as an alternative buffer row' and 'other plant material can be removed and composted or ploughed back into the soil'
- Controls 7.8 and 7.9 amended to remove the requirement for the Operator to provide reports to the proposed Māori consultative group by omitting the words 'and to the proposed Māori consultative group referred to in control 7.2'

Amendment August 2007:
Changes to controls:

- Addition of footnotes to the containment facility references and the Australian/New Zealand containment facility references to 'future proof' the decision
- Standardise the wording of the breach of containment control
- Replacement of the control regarding inspection of facilities by the Authority, its agent or enforcement officers with the standard control

Appendix 12: Funding for outdoor experiments by application as at June 2013

As discussed in Section 7, it is difficult to understand the relationship between the application process used by the EPA (then ERMA) and the funding allocation process used by MBIE (earlier FRST, then MSI). The numbering systems do not correspond between the government departments, significantly limiting traceability. It is also difficult to determine how much government money was spent on any one GM experiment, as funding contracts often apply to multiple experiments.

A further limitation is that MBIE does not have information available on its website relating to historic contracts. We have some of this information in our own archive, however we cannot be sure that it is complete.

Table 14 (overleaf) shows the funding for outdoor experiments to the best of our knowledge.

Note: We contacted the CRIs AgResearch, Plant & Food Research and Scion to confirm the accuracy of the data in this table. Scion responded by confirming that to the best of their knowledge the data about Scion field tests was correct (Elspeth MacRae, Scion, personal communication, 14 May 2013). Plant & Food Research replied but they were unable to review the data due to resource issues and the relatively short timeframe (Roger Bourne, Plant & Food Research, personal communication, 15 May 2013). AgResearch replied and confirmed that to the best of their knowledge the information in this table is correct (Lisa Blaney, AgResearch, personal communication, 12 September 2013).

Table 14 key:
Unknown – refers to information not known by the McGuinness Institute.
Information not available – refers to information not known by the entity.
Not requested – has been used to indicate where an applicant did not seek FRST/MBIE funding for their experiment.

Table 14: Funding for outdoor experiments by application as at June 2013

Source: ERMA, personal communication, 13 March 2007; FRST, n.d.[a–c]; MBIE, n.d.[h]

	Application Code (a)	Entity (b)	Cost to Applicants[1] (c)	Funding from MBIE (formerly FRST)[2] (d)	MBIE (formerly FRST) contract number (e)	Funding allocated to experiment[3] (f)	Total value of contract from which funds were derived for this application[4] (g)	Year of contract (h)
1	**GMR98001**[5]	Monsanto	Unknown	Not requested	-	-	-	-
2	**GMF98001**	PPL Therapeutics (NZ) Ltd	$10,627.25	Not requested	-	-	-	-
3	**GMF98002**	Plant & Food Research (formerly Crop & Food)	$2,563.78	Not requested	-	-	-	-
4	**GMF98003**	Plant & Food Research (formerly HortResearch)	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
5	**GMF98004**	Wrightson Seeds	$6,364.86	Not requested	-	-	-	-

1 Cost to applicants figures were requested via OIA by the Institute in 2007 (ERMA, personal communication, 13 March 2007).
2 The Institute only made requests to AgResearch, Scion and Crop & Food for confirmation of funding received from FRST (see FRST, n.d.[a–c]).
3 The funding shown in this table is the complete total of each contract. However, each contract may fund multiple experiments, therefore each application may only be funded from part of a total contract (see FRST, n.d.[a–c]).
4 The sum of funds shown in this column is not the total funding allocated as some contracts fund multiple experiments.
5 Application to import for GM release canola with resistance to Round up herbicide. Although an application number was given, a formal application was never received by ERMA.

	Application Code (a)	Entity (b)	Cost to Applicants (c)	Funding from MBIE (formerly FRST) (d)	MBIE (formerly FRST) contract number (e)	Funding allocated to experiment (f)	Total value of contract from which funds were derived for this application (g)	Year of contract (h)
6	**GMF98005**	Pioneer New Zealand Limited	$3,275.87	Not requested	-	-	-	-
7	**GMF98006**	Pioneer New Zealand Limited	$3,250.47	Not requested	-	-		-
8	**GMF98007**	Plant & Food Research (formerly Crop & Food)	$3,167.77	Yes	CO2X0017 CO2X0212	$542,900 (Output Class 7.1) $112,449 (Output Class 2.0) $230,627 (Output Class 2.0) $ 58,534 (Output Class 7.1)	$1,085,800 $292,670	2001/02 2003/04
9	**GMF98008**	Plant & Food Research (formerly Crop & Food)	$3,212.77	Yes	CO2X0017 CO2X0212	$542,900 (Output Class 7.1) $112,449 (Output Class 2.0) $230,627 (Output Class 2.0) $ 58,534 (Output Class 7.1)	$1,085,800 $292,670	2001/02 2002/03

	Application Code (a)	Entity (b)	Cost to Applicants (c)	Funding from MBIE (formerly FRST) (d)	MBIE (formerly FRST) contract number (e)	Funding allocated to experiment (f)	Total value of contract from which funds were derived for this application (g)	Year of contract (h)
10	**GMF98009(i), (ii) and (iii)**	AgResearch	$15,892.02	Yes	C10X0010	$303,000 (Output Class 6.0) $3,196,000 (Output Class 7.1) $440,500 (Output Class 2.0)	$6,998,000	2001/02
					C10X0305	$470,000 (Output Class 2.0) $718,057 (Output Class 6.0)	$5,590,285	2003/04
						$1,259,720	$5,631,948	2004/05
11	**GMF98010**	AgResearch	$2,513.32	No	-	-	-	-
12	**GMF98011**	Carter Holt Harvey Ltd	$3,994.36	Not requested	-	-	-	-
13	**GMF99001**	Scion	$74,384.72	Yes	CO4X0207	$410,625 (Output Class 2.0) $2,700,000 (Output Class 7.1)	$13,500,000	2002/03
14	**GMD99003**	NZ King Salmon Company Ltd	$1,153.46	Not requested	-	-	-	-
15	**GMF99003**	Monsanto	$96,524.12	Not requested	-	-	-	-

	Application Code (a)	Entity (b)	Cost to Applicants (c)	Funding from MBIE (formerly FRST) (d)	MBIE (formerly FRST) contract number (e)	Funding allocated to experiment (f)	Total value of contract from which funds were derived for this application (g)	Year of contract (h)
16	**GMF99004**	AgResearch	$84,978.60	No	-	-	-	-
17	**GMF99005**	Scion	$67,582.45	Yes	CO4X0207	$2,700,000	$13,500,000	2004/05
18	**GMD01194**	AgResearch	$58,921.40	No	-	-	-	-
19	**GMD02028**	AgResearch	$107,043.13	Yes	C10X0305	$470,000 (Output Class 2.0) $718,057 (Output Class 6.0) $1,259,720	$5,590,285 $5,631,948	2003/04 2004/05
20	**GMF03001**	Plant & Food Research (formerly Crop & Food)	$110,000 (approx)	No	-	-	-	-
21	**GMF06001**	Plant & Food Research (formerly Crop & Food)	$39,375	No	-	-	-	-
22	**GMF06002**	Plant & Food Research (formerly Crop & Food)	Unknown	Not requested	-	-	-	-

	Application Code (a)	Entity (b)	Cost to Applicants (c)	Funding from MBIE (formerly FRST) (d)	MBIE (formerly FRST) contract number (e)	Funding allocated to experiment (f)	Total value of contract from which funds were derived for this application (g)	Year of contract (h)
23	**GMF07001**	AgResearch	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
24	**GMD07074**	AgResearch	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
25	**ERMA200223**	AgResearch	Information not available	Yes	C10X0805	$3,753,000	$3,753,000	2008–2011
26	**ERMA200479**	Scion	Unknown	Yes	CO4X0703	$2,700,000[6]	$10,170,000	2007–2011

6 Scion, personal communication, 11 April 2013.

Appendix 13: Crown funding, expenditure and application fees by financial year 1998–2012

Table 15: Crown funding, expenditure and application fees by financial year 1998–2012

Source: EPA, 2012a; EPA, personal communication, 27 May 2013; ERMA, 1999c, 2000c, 2001b, 2002e, 2003d, 2004, 2005b, 2006, 2007, 2008c, 2009b, 2010b, 2011

Year (ended 30 June)	Total Crown funding	Total fees collected from applicants[1]	New organism expenditure[2]	Application fees from outdoor experiments	Number of outdoor experiments
	(a)	(b)	(c)	(d)	(e)
1998	$2,435,556	Nil	Nil[3]	Nil	1
1999	$4,000,000	$175,474[4]	$1,062,000	Not available[5]	6
2000	$4,325,278	$183,072	$1,321,000	Nil	5
2001	$4,373,333	$459,038	$1,296,482	Nil	4
2002	$5,111,111	$556,406	$690,771	Not available	0
2003	$5,311,111	$609,050	$864,883	(approx) $110,000[6]	1
2004	$10,326,000	$719,000	$1,086,000	Nil	1
2005	$11,733,000	$451,000	$1,301,000[7]	Nil	0
2006	$11,699,000	$678,000	$1,615,000	$2,250[8]	0
2007	$9,397,000	$802,000	$1,982,000	$117,000	1
2008	$9,012,000	$744,000	$2,113,000	$113,000	0
2009	$10,012,000	$684,000	$2,469,000	$111,000	1
2010	$10,170,000	$908,000	$2,357,000	$186,000	0
2011	$10,170,000	$718,000	$2,329,000	$133,000	2
2012[9]	$18,947,000	$4,771,000[10]	$1,528,000	$89,000	0

1 Includes: Hazardous Substances Part 5 application fees, New Organisms Part 5 application fees, Hazardous Substances Part 6 application fees, Resource Management Act cost recovery fees, other fees and revenue.

2 Being the true cost of decisionmaking for new organisms (see definition of 'new organism' in glossary).

3 No applications were received or considered because the HSNO Act 1996 did not become operational until 1998.

4 In 1999 and 2000 the fees collected from applicants only include new organisms not hazardous substances.

5 This information was not available at time of print.

6 Being the application fee for GMF03001 (Onion field test).

7 From 2005 forward, the amount spent on new organism decisionmaking includes oversight of compliance systems.

8 Minor or technical amendments under section 67A of the HSNO Act.

9 ERMA was merged with the EPA in 2012.

10 This figure includes $3,919,000 of RMA cost recovery fees. This figure is significantly higher than previous years because 2011/2012 was the first year in which the EPA processed RMA applications of 'national significance' (EPA, personal communication, 9 August 2013).

Appendix 14: GMO Incidents

Understanding what is meant by incidents is critical for interpreting the data in the tables below. Importantly, the EPA (formerly ERMA) is responsible for making decisions under the HSNO Act on applications to introduce, develop or release new organisms (including GMOs). In contrast, MPI (formerly MAF) is responsible for enforcing the new organisms provisions of the HSNO Act and ensuring compliance with containment structures (see Appendix 6 for a list of MPI/EPA containment standards and related regulations, and Section 5.2.9 for further explanation of MPI's biosecurity role).

GMOs are covered under the standard *Facilities for Microorganisms and Cell Cultures: 2007* (MPI, 2007). This is a joint standard between MPI and the EPA. It was developed to set specific standards for holding new organisms in containment facilities in New Zealand and for the inspection, storage, treatment, quarantine, holding or destruction of new organisms in transitional facilities, in order to meet the requirements of the HSNO Act and the Biosecurity Act 1993. It works in conjunction with the standard *AS/NZS 2243.3: 2002* which specifies standards of physical containment (PC1-4) (see Appendix 6 and the glossary for further definition). Non-compliance with *Facilities for Microorganisms and Cell Cultures: 2007* falls into the categories 'critical non-compliance', 'major non-compliance' and 'minor non-compliance'. These are set out at section 8.12.1 of the standard; see the glossary for explanations of compliance.

The three tables in this appendix report incidents that have occurred in indoor experiments, outdoor experiments and incidents as a result of breaches of border security.

Table 16: Incidents relating to indoor experiments by financial year 2004–2012
The data in this table shows 35 incidents that have occurred in indoor experiments by year; the information is adapted from reports on the EPA website. ERMA started reporting breaches in a consistent style from 2004, and in June 2011 the EPA changed how it categorised incidents. Previously there was no ranking system, but any identified effects on the environment and health and safety were listed in the incident report. Under the current system there are five levels of incident, which are assessed based on tangible effects on public health and safety and damage to property:

Level 1 (minimal)
Level 2 (minor)
Level 3 (moderate)
Level 4 (major)
Level 5 (massive)

A Level 1 incident results in little discernible effect on people or the environment, minor effect on property, or some social disruption. The HSNO Act controls on the organisms involved are considered to be adequate. A Level 5 incident is one that results in major damage to property, communities and the ecosystem, including species loss, multiple deaths and significant economic effects. Substantial system and/or HSNO Act control failure is likely (EPA, 2012b).

While there were incidents prior to 2004, there is no comprehensive list available on the EPA website.

Lastly, as at 26 August 2013 we are aware of an incident involving a GM fungi *Beauveria bassiana*, which possibly breached containment from an indoor experiment in March 2013 at Lincoln University (Bayer, 2013). This is not included in Table 16 as it is yet to be reported by the EPA.

Table 17: Incidents relating to outdoor experiments by application code 1999–2013

This table shows 11 incidents that have occurred on outdoor experiments, the earliest occurring in 1999. Outdoor experiments before this date were approved by the IAG (before ERMA existed) and little information on these experiments is available. The information in this table was provided by the EPA via an Official Information Act request, but is not available on its website. The Institute has categorised seven incidents by trespass and/or vandalism depending on how they were described by the EPA.

Table 18: Incidents relating to breaches of border security that have been inquired into by MPI from 2000

This table shows 6 border security incidents as reported by MAF (now MPI). Unlike the EPA, MPI does not release a yearly incident report, but the ministry does undertake inquiries into significant incidents. The findings are available on its website, but we cannot be sure if these represent a comprehensive list of all GM border incidents inquired into by MPI from 2000.

Table 16: Incidents relating to indoor experiments by financial year 2004–2012

Source: EPA, personal communication, 27 March 2013; EPA, n.d.[i]

	Date	Organisation	EPA Incident Level (applicable to events after 2011 only)	Incident details	Incident management
1	**2005 March**	HortResearch, Palmerston North	n/a	Non-compliance with controls of an approval for genetically modified Arabidopsis plants, *Arabidopsis thaliana*, in a plant containment facility. The plants were flowering with no screening to prevent pollen or seed dispersal within the facility.	The facility operator rectified the problems as soon as they were identified, in consultation with MAF. MAF concluded that the breach occurred inadvertently. An inquiry was conducted in accordance with ERMA New Zealand policy for incidents involving GMOs (INQ04006). The inquiry recommendations included the need to inform facility operators of the relevant controls associated with new organisms transferred between facilities. MAF introduced a new transfer process requiring the receiving facility operator to sign the transfer form, effective August 2005. The operator must verify that the facility is suitable to receive the new organism and that it will comply with any HSNO Act approval controls associated with the new organism. A copy of any controls relating to the transferred new organism must also accompany the transfer request. The inquiry also identified the need to review the frequency of plant containment facility inspections.

	Date	Organisation	EPA Incident Level (applicable to events after 2011 only)	Incident details	Incident management
2	**2006 February**	The Institute of Food, Nutrition and Human Health	n/a	The Institute imported a human cell line which it subsequently discovered to be genetically modified. The unapproved importation was inadvertent.	The Institute transferred the human cell line to a registered containment facility on the campus where the cell line was subsequently destroyed. As the result of an inquiry (INQ05001) MAF amended the import permit process. It now requires more information from importers, which reduces the likelihood of similar incidents.
3	**2006 September**	AgResearch, Wallaceville	n/a	Freezers containing genetically modified organisms were broken into.	Additional security measures were put in place by AgResearch.
4	**2006 October**	University of Otago, Dunedin	n/a	A researcher inadvertently developed a genetically modified organism without approval by the University's Institutional Safety Committee.	The organism was promptly destroyed.
5	**2006 November**	Allan Wilson Centre, Palmerston North	n/a	The centre transferred genetically modified microorganisms to Massey University without MAF approval.	The facility undertook staff training in the correct transfer protocols.
6	**2007 May**	Scion	n/a	Structural fault at GM planthouse identified during daily maintenance.	No plant material was released. The glass roof pane was repaired and all other panes checked.
7	**2007 June**	Massey University, Palmerston North	n/a	Structural fault at the GM plant house identified.	There was no evidence to support the release of plant material. The glass pane was repaired and a routine inspection and maintenance programme established. Monitoring of the area surrounding the facility is in place.

	Date	Organisation	EPA Incident Level (applicable to events after 2011 only)	Incident details	Incident management
8	**2007 June**	Massey University, Palmerston North	n/a	Genetically modified microorganisms were transferred to the University of Otago without MAF approval.	Massey University ran a training course for staff on the transfer process and reviewed transfer procedure.
9*	**2007 June**	Unidentified Christchurch pet shops	n/a	Investigation by MAF into the importation of GM zebra fish for sale in pet shops around New Zealand.	The fish were recovered from pet shops and destroyed by MAF.
10	**2007 August**	Invitrogen, Auckland	n/a	Invitrogen, a provider of biotech products, imported and transferred low-risk GMOs without MAF approval.	Invitrogen was required to review its inventory of GMOs and import permit processes.
11	**2008 February**	University of Auckland, Auckland	n/a	A researcher transfer low-risk GMOs without MAF approval.	The university has processes in place for staff training. The researcher at the university submitted a letter of admission of action and apology to MAF.
12	**2008 March**	Landcare Research, Lincoln	n/a	Landcare Research notified MAF that due to an oversight one of several items exported to Australia, a low-risk GMO, had required MAF approval prior to transfer.	The facility implemented staff training and amended dispatch procedures.
13	**2008 April**	Invitrogen, Auckland	n/a	Invitrogen failed to meet MAF requirements for the importation and transfer of low-risk GMOs.	Invitrogen was required to undertake training to assist staff to identify new catalogue products and in ordering/ dispatching procedures. The company will submit a new import permit application to MAF to cover all its GMO imports.

* This incident was not part of an indoor experiment but has been included in this table because it was included in the EPAs incident report for 2007.

	Date	Organisation	EPA Incident Level (applicable to events after 2011 only)	Incident details	Incident management
14	**2009 February**	AgResearch and Massey University	n/a	GM mouse tissue transferred on an expired MAF transfer approval.	Both facilities reviewed their procedures and undertook staff training.
15	**2009 June**	Plant & Food Research, Mt Albert	n/a	A bird was found in a plant house containing GM plants.	A gap identified in the structure of the plant house was sealed.
16	**2009 July**	Massey University, Palmerston North	n/a	Massey University advised MAF of GM plant research being conducted in an area of the university not approved as a containment facility.	Research ceased in the unapproved area and the university conducted a review to ensure that all work on new organisms was being conducted in containment.
17	**2009 September**	Plant & Food Research, Palmerston North	n/a	Four panes of glass were broken at the GM plant house. It is thought that the damage was caused by students en route to student accommodation. There was no attempt to enter the plant house and no plant material was disturbed.	The damaged panes were replaced with new glass.
18	**2009 October**	AgResearch, Palmerston North	n/a	Cracks were found in the external structure at the small-animal containment facility. The faults were found when the facility was being fumigated. No new organisms were released into the environment.	All work at the facility ceased until the necessary repairs were completed.

	Date	Organisation	EPA Incident Level (applicable to events after 2011 only)	Incident details	Incident management
19	**2009 November**	Plant & Food Research, Lincoln	n/a	Two *Arabidopsis thaliana* plants found outside a GM plant house had been found positive for GM constructs. Additional testing found no further potential GM plants.	MAF undertook an incursion response on the basis that the plants were GM. The surrounds of the plant house were laid with gravel, and footpaths treated. Soil treatments were used to mitigate the low risk that other seeds could germinate. The interior of the plant house was sterilised and a review of site procedures initiated by Plant & Food Research.
20	**2009 November**	AgResearch, Wallaceville	n/a	A containment facility laboratory was broken into and a microfuge removed. No new organisms were released into the environment.	AgResearch reviewed its security measures.
21	**2009 December**	Massey University, Albany	n/a	A waste disposal company inadvertently removed agar plates containing GM *Pseudomonas fluorescens* from a containment facility at Massey University, Albany. No new organisms were released into the environment.	The university contacted the company and was advised that the plates had been incinerated along with other waste. The university reiterated to staff the correct procedures for the segregation of waste and samples, and supervision of external personnel collecting waste for disposal.
22	**2010 January**	Arborgen, Rotorua	n/a	A petri dish containing GM *Pinus radiata* somatic embryonic tissue was found in a stack of trays in a non-containment area at Arborgen Rotorua. The petri dish remained sealed and no new organisms were released into the environment.	Arborgen put in place additional identification procedures for trays that hold plant cultures.

	Date	Organisation	EPA Incident Level (applicable to events after 2011 only)	Incident details	Incident management
23	**2011 February**	University of Otago, Dunedin	n/a	A MAF inspection of an invertebrate facility in February 2011 identified a number of holes in the walls and pipes leading to the ceiling space. The facility houses GM fruit flies which are contained in small receptacles.	The structural faults were repaired immediately.
24	**2011 February**	Waikato Institute of Technology, Hamilton	n/a	Low-risk GM *E. coli* strains were discovered stored outside of containment by staff of a microorganism facility.	The organisms were destroyed.
25	**2011 March**	Plant & Food Research, Auckland	n/a	A number of wasps were found in a GM plant house containing strawberries in March. They had gained entry to the facility by a small hole behind a service pipe. The wasps were dead as the room is regularly sprayed with insecticide.	The hole was immediately sealed.
26	**2011 May**	Massey University, Palmerston North	n/a	A microorganism facility transferred a low-risk genetically modified cell line out of containment without MAF approval.	The university undertook staff refresher training and obtained MAF approval to move the cell line.

	Date	Organisation	EPA Incident Level (applicable to events after 2011 only)	Incident details	Incident management
27	**2011 June**	Massey University, Palmerston North	Level 2	Because of inadequate labelling a pine plant infected with GM fungi instead of a pine plant infected with wild type fungi (not a new organism) was moved out of a containment facility to another facility. As a result MPI approval was not sought for transfer of the material.	Staff received training in the correct procedure for the labelling and movement of organisms. There was no escape of new organisms as the plant was contained during transport between the facilities.
28	**2011 September**	Invitrogen, Auckland	Level 1	Following an inventory check a microorganism facility notified MPI that it had transferred a low-risk genetically modified cell line to another containment facility without MPI approval.	The facility reviewed its systems to ensure records were up to date.
29	**2011 November**	Scion, Rotorua	Level 2	A staff member tipped untreated low-risk GM waste down a drain. It is unlikely that viable cells were present in the waste.	The staff member was reminded of treatment requirements and the drain was treated with bleach.
30	**2012 March**	University of Otago, Dunedin	Level 2	GM mice were held in an area not approved for containment by MPI.	MPI gave approval to hold the mice in the area as it met structural requirements.
31	**2012 May**	AgResearch Grasslands, Palmerston North	Level 2	A non-compliance with controls which require flowering structures to be bagged for GM glasshouse research was detected.	The plants were cut back and procedures put in place to prevent a recurrence. The risk of escape of the GM plants outside of containment was extremely low.
32	**2012 May**	Millennium Science, Wellington	Level 2	Low-risk GM commercial products were imported into New Zealand without HSNO Act approval.	There was no risk to the environment as the products were secure and sent to MPI-approved containment facilities. An MPI investigation is continuing.

	Date	Organisation	EPA Incident Level (applicable to events after 2011 only)	Incident details	Incident management
33	**2012 July**	Lincoln University, Lincoln	Level 2	A hose fitting became detached from a water tap resulting in the flooding of two floors of a plant house. One of the rooms contained GM plants.	The chance of any seeds flowing out of the building in flood water was very unlikely. No water came in contact with the plants. The plants are fitted with seed collection tubes and held in secondary containers up on tables. At the time seed pods were green. As a precautionary measure the area outside the building where water seeped will be monitored and sprayed with herbicide for 12 months.
34	**2012 July**	Massey University, Palmerston North	Level 1	A microorganism facility transferred two low-risk genetically modified samples to another containment facility without MPI approval.	The facility undertook staff refresher training on the movement of goods, and undertook an audit to ensure no other goods had been removed without approval. The new organisms were contained.
35	**2012 November**	AgResearch Grasslands, Palmerston North	Level 2	Non-compliance with controls which required flowering structures to be bagged for GM glasshouse research was detected.	Flowers were removed. The risk of escape of GM pollen outside of containment is extremely low as the facility had vents to remove any pollen that may be present in the internal to external airstream.

Table 17: Incidents relating to outdoor experiments by application code 1999–2013

Source: EPA, personal communication, 8 July 2013

	Application code	Entity	Organism	Incident	Incident details
1	**GMF98007/08**	Crop & Food Research	GM potatoes	Unauthorised entry to field site and plants destroyed, 11 March 1999 [trespass and vandalism]	Incident first reported in the media by the protest group Wild Greens (direct-action wing of the Green Party). A number of GM and non-GM buffer row plants were torn up and scattered on the ground. Crop & Food believed that no GM material left the field test site as those involved in the raid purposely left behind clothing to ensure that no material was accidentally carried off-site.
2				Unexplained appearance of volunteer potato plants, 14 May 2002	During a MAF audit on 14 May, Crop & Food informed the MAF inspector that potatoes of a different variety to those being trialled had been found growing at the field test site in early 2002. Crop & Food testing confirmed the plants were not GM.
3				GM potatoes identified outside the field test site, 21 April 2004	MAF inspected two post-harvest monitoring plots to ascertain if they could be released from trial management. MAF found three potato plants in a barley crop sown adjacent to the boundary of the field test site. Crop & Food subsequently determined that the plants were non-GM buffer plants.
4	**GMF98009/ GMD02028**	AgResearch	GM cattle	Unsuccessful attempt to enter field test site, 26 March 2001 [vandalism]	Top wires were cut, a sign stolen and netting wire partially removed from a gate.
5				Transgenic embryos implanted into transgenic cows, 2006	ERMA New Zealand review of 2006 annual report from AgResearch identified that transgenic embryos under GMD02028 were implanted in transgenic cows held under GMF98009 in contravention of that stated in the original application (only non-transgenic cows were to be used).
6				Unauthorised access to field trial site, 4 May 2009 [trespass]	An inebriated member of the public jumped the field test site boundary fence as a short-cut to a local business.

	Application code	Entity	Organism	Incident	Incident details
7	**GMF99001/ GMF99005**	Scion	GM pines and spruce	Hole discovered in field test site boundary fence, 7 May 2003 [trespass]	Concluded to be a break-in by a supposed collector of hallucinogenic fungus 'magic mushrooms'. Scion fixed the fence within 24 hours.
8				Unauthorised entry to field test site and trees felled, 15 January 2008 [trespass and vandalism]	A hole was dug under the fence to 1.5 m below the ground and a spade was left sticking out of the hole with a GE-Free NZ sticker on it. 17 GM and two non-GM control pines trees were cut down 100 mm above the ground. No sign of removal of plant material. A security guard was put in place and the breach fixed within 24 hours.
9	**GMF06001**	Plant & Food Research (formerly Crop & Food Research)	*Brassica*	Flowering GM *Brassica* plant identified 21 December 2008	GE Free New Zealand and the Soil & Health Association notified MAF alleging that GM *Brassica* plants were flowering at the field test site. Plant & Food Research confirmed that a stem removed from a GM *Brassica* plant on 22 December 2008 had flowered. A MAF investigation found that *Brassica* plants were growing in a compost heap in December 2008, and that a GM *Brassica* plant had also flowered in February 2008.

	Application code	Entity	Organism	Incident	Incident details
10	**GMF06001 (continued)**	Plant & Food Research (formerly Crop & Food Research)	*Brassica*	Unauthorised entry into field test site [trespass]	*The Press* (Christchurch) ran an article on 24 December 2008 concerning allegations of a flowering GM *Brassica* plant at the Plant & Food GM *Brassica* field test site. Accompanying the article was a photograph of the flowering plant taken by a representative of the Soil and Health Association. **Note:** Plant & Food Research was in non-compliance with HSNO Act controls by allowing GM *brassica* to flower at a field test site at Lincoln. Notified January 2009. A MAF investigation into the risks of flowering GM *Brassica* concluded that GM material was unlikely to have escaped the field test site. Plant & Food Research is required to carry out a programme of surveillance and soil management confined to the site to detect and remove any volunteer plants which might contain GM heritable material. This programme will continue until September 2013. Plant & Food Research removed and killed all *Brassica* material and undertook an internal review of its management systems. The field test was discontinued. An ERMA New Zealand inquiry (INQ08001) carried out by an ad hoc committee of the Authority found that the controls (if complied with) were adequate to manage risk for both the GM *Brassica* and GM *Alliums* field tests. The report identified some relatively minor areas for improvement in both ERMA and MAF's systems.
11	**ERMA200479**	Scion	GM pines	Unauthorised entry to field test site and trees felled, April 2012 [trespass and vandalism]	The fence surrounding a GM pine field test was breached and all field test trees were pulled out or cut down by unknown persons.

Table 18: Incidents relating to a breach of border security that have been inquired into by MPI from 2000

Source: MPI, n.d.[g]

	Date	Organisation	Incident details	Incident management
1	**2000 November**	Not specified	In 2000 a seed importing company informed the government that it suspected a shipment of seed from the United States may have been contaminated with GM seed. Tests confirmed that low levels of GM contamination were present. By the time the government was informed of the incident some seeds had already been planted.	The government considered the risks to human health to be negligible and the risks to the environment to be very low. No further action was taken in this case. This incident was widely reported in the media and was referred to as the 'corngate' incident (see section 4.5).
2	**2002 August**	Pacific Seeds Corson Grain, Garst, Monsanto	Maize seeds from two crops grown in Gisborne and Pukekohe tested positive for GM material.	Contaminated seeds were contained and destroyed.
3	**2003 July**	Not specified	GM presence was discovered in a sweet corn product exported to Japan from New Zealand.	The review team, consisting of MAF and FSANZ, concluded that none of the product was released on the New Zealand market. The product was isolated and recalled from the market in Japan.
4	**2004 May**	Biogenetic Service Ltd	MAF audited a GM testing laboratory and identified deficiencies, including methods for interpreting and reporting test results. MAF tests revealed low-level presence of GM in two consignments of seed.	MAF testing of international laboratories is to ensure imported material meets New Zealand's standards. The consignments were seized by MAF.
5	**2005 July**	Not specified	A consignment of maize tested positive for GM in the upper North Island.	MAF quarantined the grain, and undertook further testing.
6	**2006 November**	Not specified	Sweet corn consignments imported into New Zealand tested positive for GM material. Biosecurity clearance was mistakenly approved by MAF.	All planted corn and remaining seeds were destroyed by MAF. A review into the circumstances associated with the importation of GM corn seeds was released by MAF in February 2006. The report recommended a number of improvements to MAF Quarantine Service (MAFQS) systems and processes, which were undertaken by MAF.

Appendix 15: Genetically modified foods approved by FSANZ 2000–June 2013

All GM foods in New Zealand must undergo a safety evaluation by FSANZ to ensure they are safe to eat. Safety assessments are undertaken in accordance with internationally established scientific principles and guidelines, developed through the work of the Organisation for Economic Cooperation and Development (OECD), the Food and Agriculture Organization (FAO) of the United Nations, the World Health Organization (WHO) and the Codex Alimentarius Commission (FSANZ, n.d.[c]).

The safety assessment process used by FSANZ is described in detail in the guidance document *Safety Assessment of Genetically Modified Foods*, which is available from its website (FSANZ, n.d.[c]).

Of the 62 applications that have reached the final stage of the approval process since 2000, 56 have been approved, three have been withdrawn and three have been accepted but not gazetted – none have been declined (FSANZ, n.d.[d]).

The data in the following table is adapted from one on the FSANZ website dated May 2013. Table 19 includes the three approvals that were decided in 2013 but are not shown on the table on the FSANZ website. They are applications A1085, A1081 and A1080, which have all been accepted but not yet gazetted (officially publicly notified).

Table 19: Genetically modified foods approved by FSANZ as at June 2013

Source: FSANZ, n.d.[d]

	Product type	Product name	Application number	Applicant (Proponent)	Status as at February 2013
1	**Canola**	Glyphosate-tolerant canola GT73	A363	Monsanto Australia	Approved 2000
2		Glufosinate-ammonium-tolerant canola Topaz 19/2 & T45 and glufosinate-ammonium tolerant and pollination-controlled lines Ms1, Ms8, Rf1, Rf2 and Rf3	A372	Aventis CropScience	Approved 2002
3		Canola resistant to bromoxynil line Westar Oxy-235	A388	Aventis CropScience	Approved 2002
4		Herbicide-tolerant canola line MON88302	A1071	Monsanto	Approved 2013
5	**Corn**	Insect-protected corn MON810	A346	Monsanto Australia	Approved 2000
6		Glyphosate-tolerant corn line GA21	A362	Monsanto Australia	Approved 2000
7		Glufosinate ammonium-tolerant corn T25	A375	Aventis CropScience	Approved 2002
8		Insect-resistant, glufosinate ammonium corn DBT418	A380	Monsanto Australia	Approved 2002
9		Glufosinate ammonium-tolerant DLL25 corn	A381	Monsanto Australia	Withdrawn [year unknown]
10		Insect-protected corn (Bt-176)	A385	Syngenta Seeds	Approved 2001
11		Insect-protected, glufosinate ammonium-tolerant corn line (Bt-11)	A386	Syngenta Seeds	Approved 2001
12		Glyphosate-tolerant corn line NK603	A416	Monsanto Australia	Approved 2002
13		Insect-resistant, glufosinate ammonium corn line 1507	A446	Dow AgroSciences	Approved 2003
14		Insect-resistant corn MON863	A484	Monsanto Australia	Approved 2003
15		Insect-protected glufosinate ammonium-tolerant corn line DAS-59122-7	A543	Dow AgroSciences	Approved 2005
16		Insect-protected and glyphosate-tolerant corn line MON88017	A548	Monsanto Australia	Approved 2006

	Product type	Product name	Application number	Applicant (Proponent)	Status as at February 2013
17	**Corn (cont.)**	High-lysine corn LY038	A549	Monsanto Australia	Approved 2007
18		Insect-protected corn line MIR604	A564	Syngenta	Approved 2006
19		Amylase-modified corn line 3272	A580	Syngenta	Approved 2008
20		Insect-protected corn line MON89034	A595	Monsanto	Approved 2008
21		Insect-protected corn line MIR162	A1001	Syngenta	Approved 2009
22		Herbicide-tolerant corn line DP-098140-6	A1021	Pioneer Hi-Bred International Inc via Du Pont	Approved 2010
23		Drought-tolerant corn line MON87460	A1029	Monsanto Australia	Approved 2010
24		Herbicide-tolerant corn line DAS-40278-9	A1042	Dow AgroSciences	Approved 2011
25		Insect-protected corn line 5307	A1060	Syngenta	Approved 2012
26		Herbicide-tolerant corn line MON87427	A1066	Monsanto	Approved 2012
27	**Cotton**	Insect-resistant cotton lines 531, 757 and 1076	A341	Monsanto Australia	Approved 2000
28		Glyphosate-tolerant cotton line 1445	A355	Monsanto Australia	Approved 2000
29		Bromoxynil-tolerant cotton transformation events 10211 and 10222	A379	Stoneville Pedigreed Seed Company and Aventis CropScience	Approved 2002
30		Insect-protected cotton event 15985	A436	Monsanto Australia	Approved 2002
31		Insect-protected cotton line COT102	A509	Syngenta	Approved 2005
32		Insect-protected, glufosinate ammonium-tolerant cotton line MXB-13	A518	Dow Agro Sciences	Approved 2005
33		Glufosinate-ammonium-tolerant cotton line LL25	A533	Bayer CropScience	Approved 2006
34		Glyphosate-tolerant cotton line MON88913	A553	Monsanto Australia	Approved 2006
35		Glyphosate-tolerant cotton line GHB614	A614	Bayer CropScience	Approved 2009

	Product type	Product name	Application number	Applicant (Proponent)	Status as at February 2013
36	**Cotton (cont.)**	Insect-protected cotton line COT67B	A615	Syngenta	Approved 2009
37		Insect-resistant and herbicide-resistant cotton line T304-40	A1028	Bayer Crop Science	Approved 2010
38		Herbicide-tolerant cotton line MON85701	A1080	Unknown	Application accepted 2013
39	**Lucerne**	Glyphosate-tolerant lucerne lines J101 &J163	A575	Monsanto	Approved 2007
40		Reduced-lignin lucerne line KK179	A1085	Monsanto Australia	Application accepted May 2013
41	**Potato**	Insect-protected potato lines BT-06, ATBT04-06, ATBT04-31, ATBT04-36, SPBT02-05	A382	Monsanto Australia	Approved 2001
42		Insect- and potato leafroll virus-protected potato lines RBMT21-129, RBMT21-350 and RBMT22-82	A383	Monsanto Australia	Approved 2001
43		Insect- and potato virus Y-protected potato lines RBMT15-101, SEMT15-02 and SEMT15-15	A384	Monsanto Australia	Approved 2001
44	**Rice**	Glufosinate ammonium-tolerant rice LLRICE62	A589	Bayer Cropscience	Approved 2008
45	**Soybean**	Glyphosate-tolerant soybean line 40-3-2	A338	Monsanto Australia	Approved 2000
46		High oleic acid soybeans G94-1,G94-19 and G168	A387	Du Pont	Approved 2000 Withdrawn from Standard 1.5.2 in 2011 because never commercialised
47		Glufosinate ammonium-tolerant soy lines A2704-12 and A5547-127	A481	Bayer Crop Science	Approved 2004
48		Glyphosate-tolerant soybean line MON 89788	A592	Monsanto Australia	Approved 2008

	Product type	Product name	Application number	Applicant (Proponent)	Status as at February 2013
49	**Soybean (cont.)**	Herbicide-tolerant soybean line DP-356043-5	A1006	Pioneer Hi-Bred International Inc via SGA Solutions	Approved 2010
50		High oleic acid soybean line DP-305423-1	A1018	Pioneer Hi-Bred International Inc via Du Pont	Approved 2010
51		Insect-protected soybean line MON87701	A1035	Monsanto Australia	Approved 2010
52		Stearidonic acid containing soybean line MON87769	A1041	Monsanto Australia	Approved 2011
53		Herbicide-tolerant soybean line DAS-68416-4	A1046	Dow AgroSciences	Approved 2011
54		Herbicide-tolerant, high oleic acid soybean line MON87705	A1049	Monsanto Australia	Approved 2011
55		Herbicide-tolerant soybean line FG72	A1051	Bayer CropScience	Approved 2012
56		Herbicide-tolerant soybean line MON87708	A1063	Monsanto Australia	Approved 2012
57		Herbicide-tolerant soybean line BPS-CV127-9 (CV127)	A1064	BASF Plant Science Company GmbH	Approved 2012
58		Herbicide-tolerant soybean line DAS-44406-6	A1073	Dow Agrosciences	Application in progress
59		Herbicide-tolerant Soybean line SYHTOH2	A1081	Bayer Crop Science and Syngenta Seeds	Application February 2013
60	**Sugarbeet**	Glyphosate-tolerant sugarbeet GTSB77	A378	Monsanto Australia	Approved 2002
61		Glyphosate-tolerant sugarbeet event H7-1	A525	Monsanto Australia	Approved 2005
62	**Wheat**	Glyphosate-tolerant wheat MON 71800	A524	Monsanto Australia	Withdrawn 2004

Appendix 16: Memoranda of Understanding between EPA (previously ERMA) and other entities 1998–June 2013

Under s 35 of the Environmental Protection Authority Act 2011 agreements to which ERMA was a party to were transferred to the EPA.

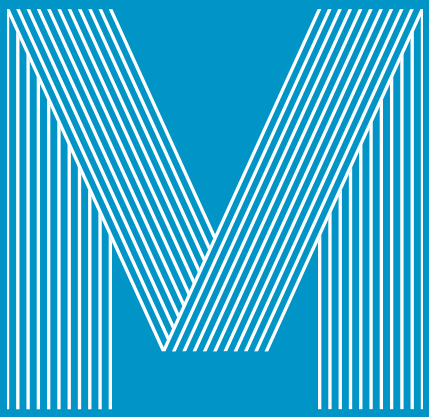
> Unless the context otherwise requires, in any enactment, agreement, deed, instrument, application, notice, or other document in force immediately before the commencement of section 26, every reference to the Environmental Risk Management Authority or ERMA is, on and from that commencement, to be read as a reference to the EPA.

Note: For each EPA Board of Inquiry there are separate MoUs for remuneration and related support services – e.g. venues and transcription services.

Table 20: Memoranda of Understanding currently held between EPA and other entities 1998–June 2013

Source: EPA, personal communication, 9 August, 2013

	Date	Entity (as signed)	Entity (as at June 2013)
1	**1998, 2003**	Ministry of Agriculture and Fisheries	Ministry for Primary Industries
2	**1999**	Food Standards Australia New Zealand	Food Standards Australia New Zealand
3	**2002**	National Occupational Health and Safety Commission Australia	Safe Work Australia
4	**2004**	New Zealand Institute for Crop and Food Research	New Zealand Institute for Plant and Food Research
5	**2005**	New Zealand Customs Service	New Zealand Customs Service
6	**2005**	Department of Labour	Ministry of Business, Innovation and Employment
7	**2006**	New Zealand Food Safety Authority	Ministry for Primary Industries
8	**From 2007**	Ministry of Justice	Ministry of Justice
9	**2008**	Ministry of Health and Ministry of Consumer Affairs	Ministry of Health and Ministry of Consumer Affairs
10	**2009**	Ministry of Health	Ministry of Health
11	**2009**	Department of Conservation	Department of Conservation
12	**2010**	National Industrial Chemicals Notification and Assessments Scheme Australia (NICNAS)	National Industrial Chemicals Notification and Assessments Scheme Australia (NICNAS)
13	**2011**	Ministry for the Environment, Ministry for Primary Industries, the Treasury	Ministry for the Environment, Ministry for Primary Industries, the Treasury
14	**2011, 2012**	Ministry of Economic Development	Ministry of Business, Innovation and Employment
15	**2011**	New Zealand Police	New Zealand Police
16	**2011, 2013**	Ministry for Business, Innovation and Employment	Ministry for Business, Innovation and Employment
17	**2013**	Customs, New Zealand Transport Agency, Ministry for the Environment	Customs, New Zealand Transport Agency, Ministry for the Environment
18	**2013**	Ministry for the Environment	Ministry for the Environment
19	**2013**	Ministry for Business, Innovation and Employment (Health and Safety group)	Ministry for Business, Innovation and Employment (Health and Safety group)



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