Auckland Council, Far North District Council, Kaipara District Council and Whangarei District Council

Draft Proposed Plan Change to the District/Unitary Plan

Managing Risks Associated with the Outdoor Use of Genetically Modified Organisms

January 2013

1. GENETICALLY MODIFIED ORGANISMS

1.1 Introduction

Genetic modification (GM) refers to a set of techniques that alter genetic makeup by adding, deleting or moving genes (within or between species) to produce new and different organisms. Genetically modified organisms (GMOs) are products of genetic modification. Another term often used to refer to the same technique is genetic engineering (GE).

A wide range of GM products are being researched and developed for commercialisation. While the GMOs commercialised to date are, in general, directed at reducing harvest losses by combating pests and viruses, research into future varieties is attempting to considerably widen the scope of applications. This includes improved growth in plants, improved tolerance to environmental conditions, and creating entirely new products and sectors of economic activity in agriculture, horticulture, plantation forestry, dairying, aquaculture and medicine.

The absolute and relative benefits associated with the development and use of GMOs is continually being redefined as this and other forms of applied biotechnology advance. However there remains scientific uncertainty with respect to potential adverse effects of GMOs on natural resources and ecosystems. The risks could be substantial and certain consequences irreversible. Once released into the environment, most GMOs would be very difficult to eradicate even if the funding were available for this, irrespective of the consequences. If the GMO is related to a food product, the “GE Free” food producer status of a district or region would likely be permanently lost, along with any marketing advantages that status confers.

The relevant legislation which applies to the management of GMOs in New Zealand is the Hazardous Substances and New Organisms Act 1996 (HSNO Act). The HSNO Act establishes the legal framework for assessments by the national regulator, the Environmental Protection Authority (EPA). This Act sets minimum standards (section 36) and provides for the EPA to set additional conditions that are to apply to a particular GMO activity.

While the HSNO Act provides the means to set conditions on the management of GMOs within a specific geographic area or irrespective of location, councils have jurisdiction under sections 30 and 31 of the Resource Management Act 1991 (RMA) to control land and water use activities involving field trials and the release of GMOs, to promote sustainable management under the RMA.

Local regulation can address key gaps that have been identified in the national regulatory regime for the management of GMOs, in particular the absence of liability provisions and the lack of a mandatory precautionary approach. Benefits of local level regulation, in addition to the controls set by the EPA, include:

- Ensuring GM operators are financially accountable in the long-term through bonding and financial fitness provisions for the full costs associated with the GMO activity. This includes accidental or unintentional contamination, clean-up, monitoring and remediation.

- Adoption of a precautionary approach to manage potential risks (economic, environmental, social and cultural) associated with the outdoor use of GMOs.

- Protection of local/regional marketing advantages through reducing risks associated with market rejection and loss of income from GM contamination of non-GM crops, and negative effects on marketing, branding and tourism opportunities.

- Addressing cultural concerns of Maori, particularly given that Maori make up a considerably greater proportion of the population in Northland than is represented nationally.

Given a council's general duties of care for its financial position and that of its constituents, there is a ready justification for councils to enforce mandatory conditions to provide for both financial accountability and avoidance of economic damage. These controls would act in addition to those that may be set by the EPA under the HSNO Act, and are the focus of this Plan Change.

The Plan Change comprises the introduction of a Resource Management Issue, Objectives, Policies and Methods, including rules which will define how the outdoor use of GMOs are to be managed, including in the coastal marine area ("**CMA**").

The new provisions are to be inserted into the District / Unitary Plan(s) as a new chapter (or as a section within a chapter) and are district or regional wide in their application. A definition for GMOs, field trials and releases is to be inserted into the "Definitions" section/chapter of each respective plan.

1.2 Scope of the Plan Change

The Northern Peninsula, defined for the purposes of this Plan Change as the geographic area from the southern boundary of the Auckland Council to the northern tip of New Zealand, is an important agricultural production area with extensive dairy, forestry, and horticultural land use. It also contains ecological areas of significance and is geographically distinct.

The Northern Peninsula is within the territorial authority of the Far North District Council, Whangarei District Council, Kaipara District Council and Auckland Council (or their successors) ("**the Northern Councils**").

All use of GM in New Zealand is in contained environments, such as laboratories, and it is predominately used as a tool for research. At present there are no GM crops grown commercially in New Zealand. Therefore it is anticipated that GMO developers will consider the outdoor use of GMOs in the Northern Peninsula, and in particular field trials and releases. This includes GM food crops, trees, animals, and pharma crops, but excludes research within contained laboratories involving GMOs, medical applications involving the manufacture and use of non-viable GM products, and food containing GM products that are not viable. Field trials and releases are therefore the focus of this Plan Change. Under the RMA, and the focus of this Plan Change, the Northern Councils have jurisdiction to control land and water uses regarding field trials and releases to promote the sustainable management of natural and physical resources.

Sources of risk from the outdoor use of GMOs in the Northern Peninsula include:

- Economic risk - the risk that cultivation of GM crops will cause economic damage, in particular through accidental or unintentional migrations of GMOs resulting in GM contamination appearing in non-GM crops and associated

market rejection and loss of income, negative effects on marketing and branding opportunities, and costs associated with environmental damage.

- Environmental risk - including adverse effects on non-target species (e.g. birds and insects), GM plants becoming invasive and disrupting ecosystems, and altered genes transferring to other organisms.

- Cultural risk - concerns of Maori, such as mauri, whakapapa, tikanga, including the integrity of nature, the mixing of genes from unrelated species, and which parts of the community stand to benefit from the technology.

As the above risks are not constrained by jurisdictional boundaries, the Northern Councils have taken a unified approach to managing risk associated with outdoor GMO use through the development of generic District / Unitary Plan provisions. The effectiveness of the Plan Change provisions, insofar as anticipated environmental results are to be achieved, is significantly enhanced if all Northern Councils recognise and adopt the provisions. This will provide a consistent management framework across the area. However, individual Councils are able to tailor the generic provisions to their specific District / Unitary Plan.

When the EPA assesses an application for a GMO approval, the HSNO Act makes the exercise of precaution a matter for the EPA's discretion, i.e. precaution is an option, not a requirement, whereas under the RMA the courts have determined that a precautionary approach is inherent in the Act[1]. Given the potential for adverse effects and the uncertainties surrounding the extent of costs and benefits that could be expected from GMO activities, the Northern Councils have adopted a precautionary approach to manage the outdoor use of GMOs. This is to minimise the risk to the environment, economy and cultural resources, and to ensure a regime is in place that makes GMO operators liable for the costs arising from any unexpected adverse effects associated with their activities, including clean-up costs, and economic compensation/remediation.

The Northern Councils do not seek to foreclose potential opportunities associated with a particular GMO that could benefit the community or the area. However, the outdoor use of GMOs, without taking adequate precautions, can have irreversible adverse effects on the environment, including people and communities and their social, economic and cultural well being. To protect the community, it is important to allow for the desired benefits, while managing the risks and potential adverse effects.

The Northern Councils have assumed responsibility for managing the use of land and water to prevent or mitigate any adverse effects, including those associated with the outdoor use of GMOs. Because the emphasis of the RMA is on sustainable management and the avoidance, remediation and mitigation of environmental effects, this Plan Change focuses on the control mechanisms for the outdoor use of GMOs, and in particular on the activities generating the effect, rather than on the intrinsic properties of the GMOs themselves.

[1] *Shirley Primary School v Telecom Mobile Communications Ltd*, NZRMZ, 1999 and confirmed in *Clifford Bay Marine Farms Ltd v Marlborough District Council.*

1.3 Resource Management Issue

The following resource management issue has been identified regarding the outdoor use, storage, cultivation, harvesting, processing or transportation associated with GMOs in the district and/or region:

> The outdoor use of GMOs can adversely affect the environment, economy, and social and cultural resources and values, and significant costs can result from the release of a GMO.

Explanation

The potential adverse effects on people, the environment and the economy from the outdoor use or release of a GMO is identified as a resource management issue given that this is a risk associated with permitting the use, storage, cultivation, harvesting, processing or transportation of outdoor GMOs.

This issue must be addressed in assessing and permitting what outdoor GMO activities will be able to be undertaken within the district or region. To avoid or mitigate adverse effects, the outdoor use of GMOs needs to be managed correctly, designed and located appropriately and have processes, including a liability regime, in place for dealing with any adverse effects, such as unintentional GM contamination.

Council has adopted a precautionary approach to managing risks associated with the outdoor use of GMOs to address this resource management issue.

1.4 Objectives and Policies

Objectives

1.4.1 The environment, including people and communities and their social, economic and cultural well being and health and safety, is protected from potential adverse effects associated with the outdoor use, storage, cultivation, harvesting, processing or transportation of GMOs through the adoption of a precautionary approach, including adaptive responses, to manage uncertainty and lack of information.

1.4.2 The sustainable management of the natural and physical resources of the district/region with respect to the outdoor use of GMOs, a significant resource management issue identified by the community.

Policies

1.4.1.1 To adopt a precautionary approach by prohibiting the general release of a GMO, and by making outdoor field trialling of a GMO a discretionary activity.

1.4.1.2 To ensure that a resource consent granted for the outdoor field trialling of a GMO is subject to conditions that ensures that the consent holder is financially accountable (to the extent possible) for any adverse effects associated with the activity, including clean-up costs and remediation, including via the use of bonds.

1.4.1.3 To ensure that a resource consent granted for the outdoor field trialling of a GMO is subject to conditions that serve to avoid, as far as can reasonably be achieved, risk to the environment from the use, storage, cultivation, harvesting, processing or transportation of a GMO.

1.4.1.4 To ensure that a resource consent granted for the outdoor field trialling of a GMO is subject to a condition requiring that monitoring costs are met by the consent holder.

1.4.1.5 To require consent holders for a GMO activity to be liable (to the extent possible) for any adverse effects caused beyond the site for which consent has been granted for the activity.

1.4.1.6 To adopt an adaptive approach to the management of the outdoor use, storage, cultivation, harvesting, processing or transportation of a GMO in the district or region through periodic reviews of these plan provisions, particularly if new information on the benefits and/or adverse effects of a GMO activity becomes available.

Explanation

The outdoor use of GMOs has the potential to cause adverse effects on the environment, economy and social and cultural wellbeing. The objectives and policies seek to protect the community and receiving environment from risk associated with any GMO activity.

The application of a precautionary approach to the outdoor use, storage, cultivation, harvesting, processing or transportation of GMOs in the district shall mean that:

- *The release of a GMO is prohibited (this is to avoid the risk that significant adverse environmental effects will arise, including adverse effects on the economy, community and/or tangata whenua resources and values); and*

- *Outdoor field trialling of a GMO (where the proponents of such activities have prior approval of the EPA) shall be a discretionary activity.*

Pastoral farming, dairying, horticulture and forestry are important land uses in the Northern Peninsula and are major contributors to the local and regional economy. Therefore there are a range of outdoor GMOs that GMO developers could consider using in the district or region, including GM food crops, trees, animals, and pharma crops. The potential for adverse effects, including accidental contamination, resulting from the outdoor use of GMOs poses a "risk" to the community and environment. By specifying classes of GMOs and applying standards to the outdoor use of GMOs, the risks associated with their use, storage, cultivation, harvesting, processing or transportation can be reduced.

Within the Northern Peninsula, this will involve managing and limiting the outdoor use of GMOs. Further, performance standards will be used to mitigate any adverse effects associated with contamination of GMOs beyond the subject site, thereby reducing the risks to the community, environment and economy.

Accidental or unintentional migration of GMOs that result in GMO contamination and subsequent clean-up and remediation can be expensive. Council therefore requires a GMO operator to meet all potential costs associated with the activity and will secure

long-term financial accountability through appropriate standards and bonding provisions.

The EPA is not obligated to set monitoring requirements as a part of its approval process, and can only require monitoring where it is relevant to assessing environmental risk. Under section 35 of the RMA, a council has a duty to monitor, which can be expensive. Requiring a GMO operator to meet the costs of monitoring, via consent conditions, ensures the costs are meet by the activity operator.

To avoid foreclosure of potential opportunities associated with a GMO development that could benefit the district or region, there is the ability to review a particular GMO activity if it were to become evident during the field trial stage or in light of other new information that a particular GMO activity would be of net benefit to the district or region and that potential risks can be managed to the satisfaction of Council. A council or a GMO developer can initiate a plan change to change the status of a GMO activity.

1.5 Methods

The approach of this Plan Change is to avoid adverse effects associated with the outdoor use of GMOs by dealing with classes of GMO activities, rather than with individual GMOs themselves. This recognises in particular that the HSNO Act imposes certain minimum conditions on field trial activities.

The activities list includes specific GMO activities requiring a particular type of land use consent in the district or region.

The Plan Change permits GMOs not specifically provided for as a discretionary activity or defined as a prohibited activity. Veterinary vaccines are specifically provided for as a permitted activity.

The Plan Change establishes a rule that provides for GMO field trials to be a discretionary activity. The planning framework also provides a range of minimum performance standards which must be adhered to by operators of GMO field trials.

Rules require GMO operators to bear the cost of all adverse effects, including ongoing monitoring, eradication and environmental clean-up, and remediation/compensation for financial losses resulting from any release or GM contamination by setting performance standards and/or imposing performance bonds as a condition of resource consent. The upfront financial requirements on the GMO operator associated with this activity (as opposed to any compensation payments that may arise), are reasonable and justifiable in the circumstance given the environmental and economic damage which could be suffered from any release or contamination associated with the use, storage, cultivation, harvesting, processing or transportation of a GMO.

The Plan Change establishes a rule for GMO management that prohibits the outdoor release of all GMOs (food and non-food related) on the basis that these activities pose significant risks to the natural environment, the physical resources of the Northern Peninsula, the local and regional economy, and social and cultural values and resources. No application can be made for a prohibited activity.

The potential benefits and adverse effects associated with GMO activities is constantly evolving with changes in techniques and the underlying science, and changes in consumer markets. Therefore, classes of GMOs will be periodically reviewed at the discretion of the respective council that will make use of this additional information. At

the point a class or set of GMOs demonstrates potential to provide net benefits to the district or region, a plan change can then be made under section 73(1) of the Act to make these subject to the discretionary provisions. Alternatively, a proponent of a GMO release is able to request a private plan change under section 73(2) of the Act.

1.6 Environmental Results Anticipated

It is anticipated that the objectives, policies and methods of this Plan Change will achieve the following results:

1. Manage risk and avoid adverse effects on people, communities, tangata whenua, the economy and the environment associated with the outdoor use of GMOs.

2. Provide the framework for a unified approach to the management of the outdoor use of GMOs in the Northern Peninsula to address cross-boundary effects.

3. Ensure accountability by GMO operators for the full costs related to the monitoring of GMO activities, and any migration of GMOs beyond specified areas, including unintentional GM contamination.

4. Ensure accountability by GMO operators for compensation via performance bonds in the event that the activity under their operation results in adverse effects to third parties or the environment.

1.7 Activity Rules

Different GMOs and their uses pose different levels of risk. However similar GMOs can be classed together as 'like organisms' which could be expected to have similar types of effects. While the very wide scope of research into GMOs means a large number of types of potential activities have to be considered, classes often share similarities with respect to key potential effects. Therefore very similar controls can be used to regulate not just classes of GMOs but groups of such classes.

The rules in this chapter apply to the outdoor use of GMOs in all zones in the district or region.

Rule 1.7.1 Activity Table

In the following table:

P Permitted Activity
D Discretionary Activity
PRO Prohibited Activity

ACTIVITY	STATUS
All other GMO activities not specifically provided for or prohibited in this Plan Change	P
Veterinary Vaccines	P
GMO Field Trials	D
GMO Releases – Food-Related	PRO
GMO Releases – Non Food-Related	PRO

Explanation

The resource consent status indicates the levels of risk considered acceptable by the community for that particular GMO activity and class.

Veterinary vaccines are exempt from the need to obtain resource consent or comply with the performance standards applicable to discretionary activities. This is because they tend not to persist in the environment, appear to be low risk and are difficult to monitor, making control by the District / Unitary Plan less appropriate.

A relevant EPA approval is required as a precondition for all applications for resource consent. The duration of any consent granted will be aligned with EPA approval terms.

Rule 1.7.2 Permitted Activities

GMOs that are not specifically provided for in Rules 1.7.3 and 1.7.4 are a permitted activity. These include (but are not limited to):

(a) Research within contained laboratories involving GMOs.

(b) Medical applications involving the manufacture and use of non-viable GM products.

Such activities may require consents and / or permits under other legislation / plans.

Rule 1.7.3 Discretionary Activities

The following are discretionary activities throughout the district or region:

(a) GMO field trials.

Applications are to provide:

(i) Evidence of approval from the EPA for the specific GMO for which consent is sought.

(ii) Details of proposed containment measures for the commencement, duration and completion of the proposed activity.

(iii) Details of the species, its characteristics and lifecycle, to which the GMO activities will relate.

(iv) Research on adverse effects to the environment and economy associated with the activity should GMOs escape from the activity area, and measures that will be taken to avoid, remedy or mitigate such effects.

(v) Evidence of research undertaken that characterises and tests the GMO, and the certainty associated with the accuracy of that information.

(vi) A management plan outlining ongoing research and how monitoring will be undertaken during, and potentially beyond, the duration of consent.

(vii) Details of areas in which the activity is to be confined.

(viii) Description of contingency and risk management plans and measures.

Rule 1.7.4 General Development and Performance Standards

Discretionary activities are to comply with the following general development and performance standards in order to establish in the district or region. The general development and performance standards are in addition to any controls/conditions imposed by the EPA.

1.7.4.1 Approvals

All GMO discretionary activities shall:

(a) Have the relevant approval from the EPA.

(b) Be undertaken in accordance with EPA approval conditions for the activity.

1.7.4.2 Bond Requirements

Council requires the applicant for the resource consent to provide a performance bond (akin to a bank guarantee) in respect of the performance of any one or more conditions of the consent, including conditions relating to monitoring required of the GMO activity (prior to, during and after the activity), and that this be available for payment to redress any adverse environmental effects and any other adverse effects to third parties (including economic effects) that become apparent during or after the expiry of the consent.

The exact time and manner of implementing and discharging the bond shall be decided by, and be executed to the satisfaction of Council.

Method for determining the amount and type of bond required

Matters that will be considered when determining the amount of the bond are:

- What adverse effects could occur and the potential significance, scale and nature of those effects, notwithstanding any measures taken to avoid those effects.
- The degree to which the operator of the activity has sought to avoid those adverse effects, and the certainty associated with whether the measures taken will avoid those effects.
- The level of risk associated with any unexpected adverse effects from the activity.
- The likely scale of costs associated with remediating any adverse effects that may occur.
- The timescale over which effects are likely to occur or arise.

- The extent of monitoring that may be required in order to establish whether an adverse effect has occurred or whether any adverse effect has been appropriately remedied.

1.7.4.3 Monitoring Costs

All costs associated with monitoring required for discretionary activities will be borne by the consent holder. This includes any monitoring that is required to be undertaken beyond the consent duration, as required by a resource consent condition.

1.7.4.4 Assessment of Applications and Conditions

Where necessary, more stringent measures than those required under the provisions of the HSNO Act may be imposed to manage potential risks. A review clause (pursuant to Section 128 RMA) may be included in the conditions, where deemed necessary, to address any future changes in technology, and the scope of environmental, economic and cultural effects.

An application for a discretionary activity may be granted with or without conditions, or be declined by the Council having regard to the relevance of the following matters:

Site Design, Construction and Management

Site design conditions should ensure GMO sites are designed and managed in a manner that avoids or minimises risks of adverse effects from activities carried out on the site. This shall include provisions to prevent the migration of GMOs beyond the area designated for the activity.

Transport

Ensure the transportation of GMOs is carried out in a manner that minimises the risk of adverse effects by preventing the escape of GMOs from the transporting vehicles. Appropriate procedures must be in place to ensure that any vehicle visiting the site is thoroughly cleaned and checked prior to leaving the site to avoid unintentional GMO transportation.

Monitoring

A GMO discretionary activity may require monitoring during, and beyond the duration of consent. Monitoring is to be carried out by either the Council or consent holder with appropriate reporting procedures to the relevant regulatory authority.

A monitoring strategy for a GMO discretionary activity can include the following matters:

- Inspection schedules for the site, storage areas and equipment (daily, weekly, monthly, events based).

- Testing of procedures (e.g. accidental release response).

- Training programmes for new staff, updates for existing staff.

- Audits of sites and site management systems.

- Sample testing of plants and soils in neighbouring properties for the presence of migrated GMOs.

Reporting

Reporting requirements by the consent holder will be stipulated in the consent conditions.

Explanation and Reasons

Field trials of GMOs under New Zealand law are designed with the objective of ensuring that no altered genetic material leaves the test site during the trial and that all heritable material is removed upon its conclusion. While this greatly reduces the prospect for adverse effects arising, breaches of trial conditions that could lead to GMOs escaping the trial site have already occurred internationally, and breaches of field trial conditions have occurred in New Zealand. These breaches illustrate the potential for field trials to result in unintended consequences that could impose costs on the community and/or adversely affect the environment. The requirement for monitoring at the operator's cost and trigger conditions for financial liability and bonds are important additional safeguards for the community.

Bonds will be performance based, in that a consent holder must meet the performance standards set out above. All discretionary GMO activities in the district or region shall meet these criteria.

Rule 1.7.5 Prohibited Activities

The following is a prohibited activity in the district or region for which no resource consent shall be granted:

(a) Outdoor GMO releases (food-related and non-food-related) not otherwise provided for by Rules 1.7.2 and 1.7.3.

Explanation and Reasons

Given the potential risks and the uncertainties surrounding the extent of costs and benefits that could be expected, Council has taken a precautionary approach to make GMO releases a prohibited activity.

Food-related GMOs have a well-demonstrated ability to cause economic harm far beyond the entities that undertake the original land use. A major source of such "spillover" effects is cultivation of GM crops leading to economic damage through trace GM contamination appearing in non-GM crops. Such contamination may be physical and measurable, and have potentially irreversible and enduring environmental effects. However economic effects can also arise from perceived contamination - through retail gatekeepers losing confidence that a country, region or individual product line is free of altered genetic material to the level that meets their standards. Which markets will exhibit intolerance to trace contamination and to what threshold levels is an unfolding picture and the total cost of the potential harm can vary considerably depending on the produce in question.

There are also a great many GMOs in development that are not food-related, but globally they are relatively rare in the outdoors at present. While the risk of economic damage from some of these GMOs is expected to be lower than for food-related GMOs, in many cases little is known about their environmental risks, and some pose unknown risks. The scale of damage to the environment that can result from a single organism being introduced and then found to have unexpected consequences is well understood through past experience in New Zealand, and the cost of programmes to eradicate or control unwanted organisms has been clearly demonstrated.

To avoid foreclosure of potential opportunities associated with a GMO development that could benefit the district or region, Council will periodically review classes of GMOs as new information becomes available, to allow adequate assessment of the potential benefits to the district or region. If a class or set of GMOs demonstrates potential to provide net benefits, a plan change can then be made under section 73(1) of the Act to make these subject to the discretionary provisions. Should Council not bring forward proposed amendments in a timely manner, the proponent of a GMO release is able to request a private plan change under section 73(2) of the Act.

2. GENETICALLY MODIFIED ORGANISMS IN THE COASTAL MARINE AREA

2.1 Introduction

Aquaculture is a rapidly growing primary industry in New Zealand, and provides economic benefits such as employment, as well as social and cultural benefits. The Northern Peninsula accounted for 73% of the nation's total production of Pacific oysters in 2008[2]. Due to the area's extensive coastline, isolation from heavily populated and polluted areas (particularly north of the urban Auckland area), temperate climate and high water quality, the Northern Peninsula is an ideal area for growing seafood, and further development of the aquaculture industry is expected in the future.

GM products are currently being researched and developed to provide opportunities for more efficient and effective aquaculture development across a wide range of species, in addition to the use of GM salmon that is well established in North America. Applications of GMOs in aquaculture include, use of hormones for enhanced growth and better production, improved feed conversion efficiencies; development of genetically superior broodstocks; improved disease resistance; and, increased tolerance to low temperatures and oxygen levels.

Risks associated with the use of GMOs in aquaculture are similar to those for land-based outdoor GMO use, and include:

- Biodiversity risks at the population and ecosystem level through escapes of genetically distinct farmed fish or plants.
- Animal welfare issues in fish species, for example changes in colouration, cranial deformities and opercula overgrowth, and lower jaw deformation.
- Economic risk through GM contamination appearing in non-GM farmed species.
- Cultural risk (concerns of Maori) of preserving the integrity of nature, the mixing of genes from unrelated species, and which parts of the community stand to the benefit from the technology.

If appropriate containment measures (physical and biological) are adopted, general risks, for example to biodiversity and the economy, from GMOs if contained are likely to be small. However, the risks and consequences of release are potentially large and irreversible in the environment. Therefore, similar to the outdoor use of GMOs on the land, the Northern Councils have adopted a precautionary approach to the management of GMOs in the coastal marine area ("**CMA**").

2.2 Resource Management Issue

The following resource management issue has been identified regarding the outdoor use, storage, cultivation, harvesting, processing or transportation associated with GMOs in the CMA:

[2] *New Zealand Aquaculture - Farm Facts*. Aquaculture New Zealand, June 2009.

The use of GMOs in the CMA can adversely affect the environment, economy and social and cultural resources and values, and significant costs can result from the release of a GMO.

Explanation

The potential adverse effects on people, the environment and the economy from the use of GMOs is identified as a resource management issue given that this is a risk associated with permitting the use, storage, cultivation, harvesting, processing or transportation of GMOs in the CMA.

This issue must be addressed in assessing and permitting what GMO activities will be able to be undertaken within the CMA. To avoid, remedy or mitigate adverse effects, the use of GMOs in the CMA needs to be managed correctly, designed and located appropriately and have processes, including a liability regime, in place for dealing with any adverse effects, such as unintentional GM contamination.

Council has adopted a precautionary approach to managing risks associated with the use of GMOs in the CMA to address this resource management issue.

2.3 Objectives and Policies

Objectives

2.3.1 The environment, including people and communities and their social, economic and cultural well being and health and safety, is protected from potential adverse effects associated with the use, storage, cultivation, harvesting, processing or transportation of GMOs in the CMA through the adoption of a precautionary approach, including adaptive responses, to manage uncertainty and lack of information.

2.3.2 The sustainable management of the natural and physical resources of the district/region with respect to the outdoor use of GMOs, a significant resource management issue identified by the community.

Policies

2.3.1.1 To adopt a precautionary approach by prohibiting the general release of a GMO, and by making outdoor field trialling of a GMO in the CMA a discretionary activity.

2.3.1.2 To ensure that a resource consent granted for the outdoor field trialling of a GMO in the CMA is subject to conditions that ensures that the consent holder is financially accountable (to the extent possible) for any adverse effects associated with the activity, including clean-up costs and remediation, including via the use of bonds.

2.3.1.3 To ensure that resource consent granted for the outdoor field trialling of a GMO in the CMA is subject to conditions that serve to avoid, as far as can reasonably be achieved, risk to the environment from the use, storage, cultivation, harvesting, processing or transportation of a GMO.

2.3.1.4 To ensure that resource consent granted for the outdoor field trialling of a GMO in the CMA is subject to a condition requiring that monitoring costs are met by the consent holder.

2.3.1.5 To require consent holders for a GMO activity in the CMA to be liable (to the extent possible) for any adverse effects caused beyond the site for which consent has been granted for the activity.

2.3.1.6 To adopt an adaptive approach to the management of the outdoor use, storage, cultivation, harvesting, processing or transportation of a GMO in the CMA through periodic reviews of these plan provisions, particularly if new information on the benefits and/or adverse effects of a GMO activity becomes available.

Explanation

The use of GMOs in the CMA has the potential to cause adverse effects on the environment, economy and social and cultural wellbeing. The objectives and policies seek to protect the community and receiving environment from risk associated with any GMO activity.

The application of a precautionary approach to the outdoor use, storage, cultivation, harvesting, processing or transportation of GMOs in the CMA shall mean that:

- *The release of a GMO is prohibited (this is to avoid the risk that significant adverse environmental effects will arise, including adverse effects on the economy, community and/or tangata whenua resources and values); and*

- *Outdoor field trialling of a GMO (where the proponents of such activities have prior approval of the EPA) shall be a discretionary activity.*

Aquaculture in the Northern Peninsula has the potential to make a significant contribution to the economy, especially in the more remote parts with limited opportunities for economic growth. There are a range of GMOs that GMO developers could consider using in the CMA and the potential for adverse effects, including accidental contamination, resulting from the use of GMOs in the CMA poses a "risk" to the community and environment. By specifying classes of GMOs and applying standards to the use of GMOs in the CMA, the risks associated with their use, storage, cultivation, harvesting, processing or transportation can be reduced.

Within the Northern Peninsula, this will involve managing and limiting the use of GMOs in the CMA. Further, performance standards will be used to mitigate any adverse effects associated with contamination by GMOs beyond the subject site, thereby reducing the risks to the community, environment and economy.

Accidental or unintentional migration of GMOs that result in GMO contamination and subsequent clean-up and remediation can be expensive. Council therefore requires a GMO operator to meet all potential costs associated with the activity and will secure long-term financial accountability through appropriate standards and bonding provisions.

The EPA is not required to set monitoring requirements as a part of its approval process, and can only require monitoring where it is relevant to assessing environmental risk. Under section 35 of the RMA, a council has a duty to monitor,

which can be expensive. Requiring a GMO operator to meet the costs of monitoring, via consent conditions, ensures the costs are met by the activity operator.

To avoid foreclosure of potential opportunities associated with a GMO development in the CMA that could benefit the region, there is the ability to review a particular GMO activity if it were to become evident during the field trial stage or in light of other new information that a particular GMO activity would be of net benefit to the region. A council or a GMO developer can initiate a plan change to change the status of a GMO activity.

2.4 Methods

The approach of this Plan Change is to avoid adverse effects associated with the use of GMOs in the CMA by dealing with classes of GMO activities, rather than with individual GMOs themselves. This recognises in particular that the HSNO Act imposes certain minimum conditions on field trial activities.

The activities list includes specific GMO activities requiring a particular type of coastal consent in the CMA.

The Plan Change permits GMOs not specifically provided for as a discretionary activity or defined as a prohibited activity.

The Plan Change establishes a rule that provides for GMO field trials in the CMA to be a discretionary activity. The planning framework also provides a range of minimum performance standards which must be adhered to by operators of GMO field trials.

Rules require GMO operators to bear the cost of all adverse effects, including ongoing monitoring, eradication and environmental clean-up, and remediation/compensation for financial losses resulting from any release or GM contamination by setting performance standards and imposing performance bonds as a condition of resource consent. The upfront financial requirements on the GMO operator associated with this activity (as opposed to any compensation payments that may arise), are reasonable and justifiable in the circumstance given the environmental and economic damage which could be suffered from any release or contamination associated with the use, storage, cultivation, harvesting, processing or transportation of GMOs in the CMA.

The Plan Change establishes a rule for GMO management that prohibits the outdoor release of all GMOs in the CMA on the basis that these activities pose risks to the natural environment, the physical resources of the Northern Peninsula, the local and regional economy, and social and cultural values and resources. No application can be made for a prohibited activity.

The potential benefits and adverse effects associated with GMO activities in the CMA are constantly evolving with changes in techniques and the underlying science, and changes in consumer markets. Therefore, classes of GMOs will be periodically reviewed at the discretion of the respective council that will make use of this additional information. At the point a class or set of GMOs demonstrates potential to provide net benefits to the region, a plan change can then be made under section 73(1) of the Act to make these subject to the discretionary provisions. Alternatively, a proponent of a GMO release is able to request a private plan change under section 73(2) of the Act.

2.5 Environmental Results Anticipated

It is anticipated that the objectives, policies and methods of this Plan Change will achieve the following results:

1. Manage risk and avoid adverse effects on people, communities, tangata whenua, the economy and the environment associated with the use of GMOs in the CMA.

2. Provide the framework for a unified approach to the management of GMOs in the CMA in the Northern Peninsula to address cross-boundary effects.

3. Ensure accountability by GMO operators for the full costs related to the monitoring of GMO activities, and any migration of GMOs beyond specified areas, including unintentional GM contamination.

4. Ensure accountability by GMO operators for compensation via performance bonds in the event that the activity under their operation results in adverse effects to third parties or the environment.

2.6 Activity Rules

Different GMOs and their uses pose different levels of risk. However similar GMOs can be classed together as 'like organisms' which could be expected to have similar types of effects. While the very wide scope of research into GMOs means a large number of types of potential activities have to be considered, classes often share similarities with respect to key potential effects. Therefore very similar controls can be used to regulate not just classes of GMOs but groups of such classes.

Rules in this section apply to activities and structures in terms of sections 12(1)(b), 12(2), 12(3) and 14(1) of the RMA, and to discharges of contaminants in terms of section 15 of the RMA.

Activities in this section must be read in conjunction with rules with respect to aquaculture activities in the CMA.

Rule 2.6.1 Activity Table

In the following table:

P Permitted Activity
D Discretionary Activity
PRO Prohibited Activity

ACTIVITY	STATUS
All other GMO activities not specifically provided for or prohibited in this Plan Change	P
GMO Field Trials	D
GMO Releases	PRO

Explanation

The resource consent status indicates the levels of risk considered acceptable by the community for that particular GMO activity and class.

A relevant EPA approval is required as a precondition for all applications for resource consent. The duration of any consent granted will be aligned with EPA approval terms.

Rule 2.6.2 Permitted Activities

GMOs that are not specifically provided for in Rules 2.6.3 and 2.6.4 are a permitted activity in the CMA. These include (but are not limited to):

(a) Research within contained laboratories involving GMOs.

(b) Medical applications involving the manufacture and use of non-viable GM products.

Such activities may require consents and / or permits under other legislation / plans.

Rule 2.6.3 Discretionary Activities

The following are discretionary activities in the CMA:

(a) GMO field trials and any structure intended to house or otherwise contain plants and animals which are associated with the conducting of GMO field trials in the CMA.

Applications are to provide:

(i) Evidence of approval from the EPA for the specific GMO for which consent is sought.

(ii) Details of proposed containment measures for the commencement, duration and completion of the proposed activity.

(iii) Details of the species, its characteristics and lifecycle, for which the GMO activities will relate.

(iv) Research on adverse effects to the environment and economy associated with the activity should GMOs escape from the activity area and measures that will be taken to avoid, remedy or mitigate such effects.

(v) Evidence of research undertaken that characterises and tests the GMO, and the certainty associated with the accuracy of that information.

(vi) A management plan outlining ongoing research and how monitoring will be undertaken during the consent duration.

(vii) Details of areas in which the activity is to be confined.

(viii) Description of contingency and risk management plans and measures.

Rule 2.6.3 General Development and Performance Standards

Discretionary activities are to comply with the following general development and performance standards in order to establish in the CMA. The general development and performance standards are in addition to any controls/conditions imposed by the EPA.

2.6.3.1 Approvals

All GMO discretionary activities shall:

(a) Have the relevant approval from the EPA.

(b) Be undertaken in accordance with EPA approval conditions for the activity.

2.6.3.2 Bond Requirements

Council requires the applicant for the resource consent to provide a performance bond (akin to a bank guarantee) in respect of the performance of any one or more conditions of the consent, including conditions relating to monitoring required of the GMO activity (prior to, during and after the activity), and that this be available for payment to redress any adverse environmental effects and any other adverse effects to third parties (including economic effects) that become apparent during or after the expiry of the consent.

The exact time and manner of implementing and discharging the bond shall be decided by and be executed to the satisfaction of Council.

Method for determining the amount and type of bond required

Matters that will be considered when determining the amount of bond are:

- What adverse effects could occur and the potential significance, scale and nature of those effects, notwithstanding any measures taken to avoid those effects.
- The degree to which the operator of the activity has sought to avoid those adverse effects, and the certainty associated with whether the measures taken will avoid those effects.
- The level of risk associated with any unexpected adverse effects from the activity.
- The likely scale of costs associated with remediating any adverse effects that may occur.
- The timescale over which effects are likely to occur or arise.
- The extent of monitoring that may be required in order to establish whether an adverse effect has occurred or whether any adverse effect has been appropriately remedied.

2.6.3.3 Monitoring Costs

All costs associated with monitoring required for discretionary activities will be borne by the GMO operator. This includes any monitoring that is required to be undertaken beyond the consent duration, as required by a resource consent condition.

2.6.3.4 Assessment of Applications and Conditions

Where necessary, more stringent measures than those required under the provisions of the HSNO Act may be imposed to manage potential risks. A review clause (pursuant to section 128 RMA) may be included in the conditions, where deemed necessary, to address any future changes in technology, and the scope of environmental, economic and cultural effects.

An application for a discretionary activity may be granted with or without conditions, or be declined by the Council having regard to the relevance of the following matters:

Site Design, Construction and Management

Site design conditions should ensure GMO sites are designed and managed in a manner that avoids or minimises risks of adverse effects from activities carried out in the CMA. This shall include provisions to prevent the migration of GMOs beyond the area designated for the activity.

Transport

Ensure the transportation of GMOs is carried out in a manner that minimises the risk of adverse effects by preventing the escape of GMOs from the transporting vehicles or vessels. Appropriate procedures must be in place to ensure that any vehicle or vessel visiting the site is thoroughly cleaned and checked prior to leaving the site to avoid unintentional GMO transportation.

Monitoring

A GMO discretionary activity may require monitoring during, and beyond the duration of consent. Monitoring is to be carried out by either the Council or consent holder with appropriate reporting procedures to the relevant regulatory authority.

A monitoring strategy for a GMO discretionary activity can include the following matters:

- Inspection schedules for the site, storage areas and equipment (daily, weekly, monthly, events based).
- Testing of procedures (e.g. accidental release response).
- Training programmes for new staff, updates for existing staff.
- Audits of sites and site management systems.
- Sample testing in the CMA for the presence of migrated GMOs.

Reporting

Reporting requirements by the consent holder will be stipulated in the consent conditions.

Explanation and Reasons

Field trials of GMOs under New Zealand law are designed with the objective of ensuring that no altered genetic material leaves the test site during the trial and that all heritable material is removed upon its conclusion. While this greatly reduces the prospect for adverse effects arising, breaches of trial conditions that could lead to GMOs escaping the trial site have already occurred internationally with respect to land based trials. These breaches illustrate the potential for field trials to result in unintended consequences that could impose costs on the community and/or adversely affect the environment. The requirement for monitoring at the operator's cost and trigger conditions for financial liability and bonds are important additional safeguards for the community.

Bonds will be performance based, in that a consent holder must meet the performance standards set out above. All discretionary GMO activities in the region shall meet these criteria.

2.6.4 Prohibited Activities

The following is a prohibited activity for which no resource consent shall be granted:

(a) Outdoor GMO releases and any structure intended to house or otherwise contain plants and animals which are associated with outdoor GMO releases within the CMA.

Explanation and Reasons

Aquaculture can have economic, social and cultural benefits, however the use of GMOs in the CMA could result in irreversible adverse effects on the environment and economy. Given the potential risk and the uncertainties surrounding the extent of costs and benefits that could be expected, Council has taken a precautionary approach to make GMO releases within the CMA a prohibited activity.

To avoid foreclosure of potential opportunities associated with a GMO development that could benefit the region, Council will periodically review classes of GMOs as new information becomes available, to allow adequate assessment of the potential benefits to the region. If a class or set of GMOs demonstrates potential to provide net benefits, a plan change can then be made under section 73(1) of the Act to make these subject to the discretionary provisions.

Should council not bring forward proposed amendments in a timely manner, the proponent of a GMO release is able to request a private plan change under section 73(2) of the Act.

3. DEFINITIONS

The following definitions shall be inserted into the appropriate definitions/interpretation section of each respective plan.

Field trials (tests) - in relation to a genetically modified organism, the carrying on of outdoor trials, on the effects of the organism under conditions similar to those of the environment into which the organism is likely to be released, but from which the organism, or any heritable material arising from it, could be retrieved or destroyed at the end of the trials.

Genetically Modified Organism[3] – unless expressly provided otherwise by regulations, any organism in which any of the genes or other genetic material:

(a) have been modified by *in vitro* techniques; or

(b) are inherited or otherwise derived, through any number of replications, from any genes or other genetic material which has been modified by *in vitro* techniques.

Release - to allow the organism to move within New Zealand free of any restrictions other than those imposed in accordance with the Biosecurity Act 1993 or the Conservation Act 1987[4].

[3] For the absence of doubt, this does not apply to GM products that are not viable (and are thus no longer GM organisms), or products that are dominantly non-GM but contain non-viable GM ingredients (such as processed foods).

[4] A release may be without conditions (s34, HSNO Act) or subject to conditions set out s38A of the HSNO Act.