



**CODE OF PRACTICE**  
for Packaging Design,  
Education and Procurement

**PACKAGING COUNCIL OF NEW ZEALAND (INC)**

## Disclaimer

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## Acknowledgements

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# FOREWORD

Whilst consumers make ever increasing demands on the type of packaging which best suits their lifestyles and packaging waste is an issue of consumer concern globally, New Zealand industry faces challenges on several fronts; delivery of goods to markets both in New Zealand and internationally, selecting materials which minimise the environmental impacts of production and disposal, an often limited recovery infrastructure, legislative requirements and producing packaged goods which are economically viable.

The bottom line however, is that New Zealanders expect the packaging industry to reduce the amount of post consumer packaging waste to landfill. Our challenge is to develop packaging which uses fewer resources and is recyclable in the New Zealand context.

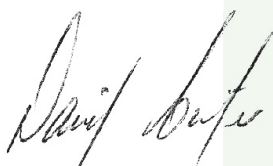
The Packaging Council of New Zealand has put forward recommendations for the scope and objectives for its Packaging Product Stewardship Scheme. We need to develop benchmarks for packaging consumption and then develop targets which can in time be submitted to the Ministry for the Environment for consideration as a voluntary product stewardship scheme under the Waste Minimisation Act 2008.

To assist we have developed this Code of Practice for Packaging Design, Education and Procurement.

The Code provides a guide to the evaluation of packaging systems and materials for their environmental impact, introduces legal obligations related to packaging and environmental claims, provides guidance on further research opportunities and suggests performance indicators for continual improvement. Some of these will be mandatory for scheme members.

The Code reflects the fact that local issues are increasingly global issues which drives the consequent need for global harmonisation of standards for packaging and packaging waste. This has been taken up by the International Organisation for Standardisation (ISO) which has established a new sub-committee with a mandate to develop global standards for packaging and the environment.

I would like to thank the members of the project team responsible for producing this new Code of Practice for Packaging Design, Education and Procurement who brought not only their own experience and expertise to the project, but also a level of commitment to engage across the supply chain.



**David Carter**

President

22nd April 2010

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# SCOPE OF THE CODE

The Code of Practice for Packaging Design, Education & Procurement (“the Code”) is underpinned by the fundamental principle that good packaging design prevents more waste than it creates. The objective of the Code is to assist stakeholders in the design, manufacture and end-of-life management of packaging to minimise its environmental impacts. The approach of the Code is to manage the sometimes conflicting demands of the market criteria for performance and cost, consumer protection and the environment while recognising the need for a sustainable society.

Responsibility for the environmental impacts of packaging is shared by all stakeholders in the packaging industry supply chain from raw material suppliers, packaging manufacturers and suppliers, brand owners and retailers, through to consumers, waste service providers and recyclers.

The Code outlines key principles and considerations for the evaluation of packaging systems and materials for their environmental impact with emphasis on reducing both the actual amount of packaging waste, in line with the objectives of the Waste Minimisation Act (2008), and the environmental effects of packaging waste. The Code includes the elements of best practice in packaging design, as it applies to all packaging and packaged goods in New Zealand, including imported goods. Goods which are produced for export will need to consider relevant overseas legislation and regulations and design to the requirements of those jurisdictions.

Businesses developing or reviewing packaging should consider the principles in this Code and document the development or review process to demonstrate it has given reasonable consideration to these principles. Similarly all claims made about packaging, especially environmental claims, must be able to be substantiated and proof that claims are accurate must be kept on file.

This Code includes an introduction to legal obligations to all industry stakeholders.

Methods for measuring the environmental impact of products such as Carbon Footprinting and Lifecycle Analysis continue to evolve. While some techniques and practices are discussed in this Code, it is not intended to prescribe a specific tool to be used by the packaging industry. Individual businesses are responsible for ensuring they use the most appropriate up-to-date performance indicators and associated measurement methods (metrics) in relation to their packaged products. In this way they can both identify and target areas for improvement and verify progress they make in achieving improvements. This is particularly important for businesses providing assurance to their customers of progress in areas such as water and energy efficiency.

For this Code the “whole-of-life” of packaging encompasses the people and businesses involved in the life of packaging from packaging material manufacture through to recovery and/or final disposal and where raw materials are accounted for from the gates of the packaging manufacturer not earlier.

Whole-of-Life defines the scope of the Code and should not be confused with Life Cycle Assessment (LCA) which is a scientific assessment of environmental impact.

## Using The Code

The Code is primarily intended for use when introducing new packaging and when reviewing existing packaging. However, it can further be used as:

- 📌 a general packaging education tool to build capacity within an organisation on some of the key issues surrounding packaging and packaging waste in New Zealand; and/or
- 📌 a procurement guide for companies wishing to introduce terms of trade around the four key principles of the Code

The four key principles of the Code are: 1. Packaging Functionality, 2. Resource Efficiency, 3. Low Impact Materials and 4. End-of-life Options. Under each key principle there are considerations which provide guidance on processes to ensure a thorough assessment of packaging materials and/or systems is undertaken. It is recommended that the section “Packaging, Environmental Claims and the Law” is read in conjunction with the key principles.

### Useful Performance Indicators

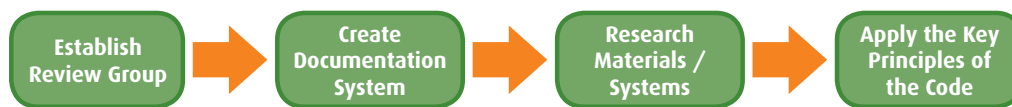
Throughout the “Key Principles” sections of the Code performance indicators are suggested, for example:



For businesses with no relevant internal measurement systems these indicators may provide a useful starting point for building measure and monitor systems. For businesses that have some reporting tools these indicators may help identify further areas with measure and monitor metrics. Appendix C provides a comprehensive list of performance indicators with a definition and suggested metrics against each.

### Systematic Product Development and Review Processes

When introducing new packaging (new product development – NPD) and when reviewing existing packaging it is important that a systematic approach is taken to ensure consistency in the review process. The following key steps are suggested as a guide:



- 1. Establish a review group** – Consider people with a range of relevant skills such as a packaging technologist, product or consumer specialist, marketing representative, procurement representative, distribution representative, packaging supplier and/or manufacturer, packaging engineer, environment manager or external consultant.
- 2. Create a documentation system** – Businesses that are a member of the Packaging Council of New Zealand’s Packaging Product Stewardship Scheme are required to have a suitable filing system to record decisions made at each stage of the review. Appendix D provides a checklist and Appendix E provides a template to assist in the development of systems that satisfy auditing requirements under the scheme.
- 3. Research packaging materials/systems** – There is a considerable amount of publicly available, non-confidential information which should be referenced in order to keep up with latest developments. Appendix B provides a sample of relevant references and further resources.
- 4. Undertake the review applying the key principles in this Code.** Because each business is unique, some parts of the Code will be more relevant than other parts. It is however, critical that a general awareness exists amongst the review group of the interconnectivity of packaging across a supply chain to ensure decisions are balanced in favour of a “whole-of-life” approach as much as possible.

### Members of the Packaging Council of New Zealand’s Packaging Product Stewardship Scheme

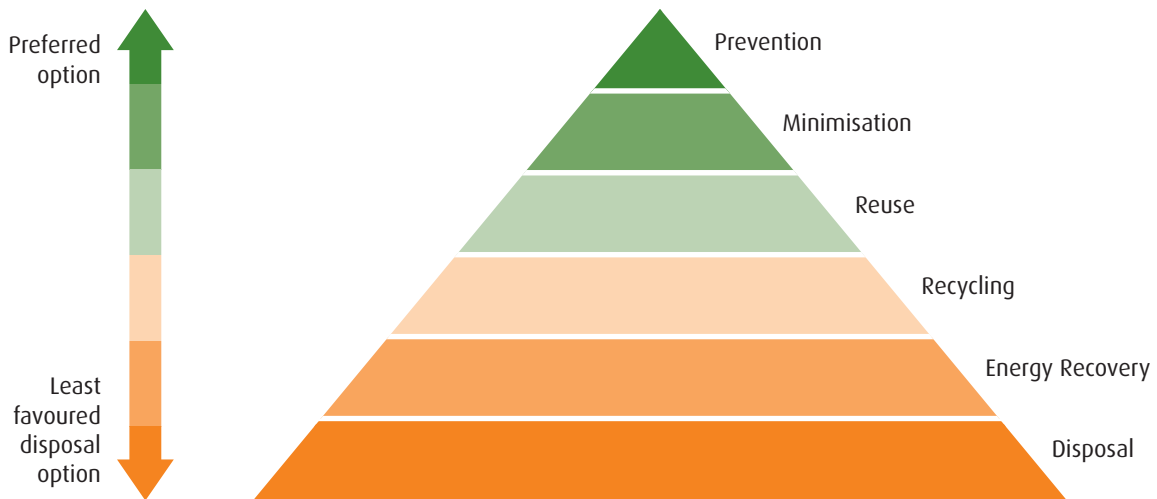
In line with the obligations set out in the Packaging Council of New Zealand’s Packaging Product Stewardship Scheme, all new packaging initiatives must be reviewed against the key principles and considerations in this Code to ensure the most sustainable alternatives are considered and all decisions must be documented, using the template provided (see Appendix E).

For existing packaging a schedule must be established to ensure all packaging is reviewed over time. The time frame for review of existing packaging should be in line with individual commitments made under the Packaging Council of New Zealand’s Packaging Product Stewardship Scheme. Similarly decisions need to be documented using the template provided (see Appendix E).

A review means that the principles and key considerations in the Code have been considered and applied to the packaging type or category or stock keeping unit (SKU) in question.

# KEY PRINCIPLES

The following key principles and considerations evaluate packaging systems and materials for their environmental impact with emphasis on reducing both the actual amount of packaging waste and the environmental effects of packaging. These principles align with the Waste Hierarchy following the framework of most preferable options through to final disposal being the least favoured option.



Key Principles	Considerations
<p><b>1. Packaging Functionality:</b> Packaging should be designed to meet market and consumer needs while minimising net environmental impact in a cost effective way</p>	<ul style="list-style-type: none"> <li>Meet technical performance requirements</li> <li>Meet consumer needs and expectations</li> <li>Use of appropriate materials</li> <li>Labelling and symbols to help re-use, recovery and recycling</li> </ul>
<p><b>2. Resource Efficiency:</b> Packaging should be designed to minimise the use of materials and other resources without compromising product quality, safety and economic viability</p>	<ul style="list-style-type: none"> <li>New product development (NPD) process</li> <li>Existing packaging review</li> <li>Minimise materials</li> <li>Transportation (supply chain) efficiencies</li> <li>Water and energy efficiencies</li> </ul>
<p><b>3. Low Impact Materials:</b> Packaging should be designed to minimise the environmental and social impact of materials and components. Materials should be selected incorporating a whole-of-life approach</p>	<ul style="list-style-type: none"> <li>Re-usable packaging</li> <li>Post consumer recycled materials</li> <li>Recyclable materials</li> <li>Materials from renewable sources</li> <li>Degradable materials</li> <li>Risks associated with hazardous materials</li> <li>Locally sourced materials</li> <li>Materials from responsible suppliers</li> </ul>
<p><b>4. End-of-Life Options:</b> Packaging should be designed to minimise the environmental and social impacts of its disposal</p>	<ul style="list-style-type: none"> <li>Recovery for recycling purposes</li> <li>Recovery for composting purposes</li> <li>Energy recovery</li> <li>Landfilling</li> </ul>

# 1. PACKAGING FUNCTIONALITY

## 1. Packaging Functionality:

Packaging should be designed to meet market and consumer needs while minimising net environmental impact in a cost effective way

Meet technical performance requirements

Meet consumer needs and expectations

Use of appropriate materials

Labelling and symbols to help re-use, recovery and recycling

Conflicting objectives need to be balanced to ensure adverse environmental impacts of packaging are minimised across the packaging and recovery chains without diminishing the ability of the packaging to perform its primary function to contain and protect the product. This section highlights some of the more common issues designers face when considering packaging functionality.

## 1.1 Meet Technical Performance Requirements

**Spoilage:** Packaging must be fit for purpose and protect the product contained. When considering the type of packaging system to be employed, it is not environmentally prudent to compromise the packaging's integrity through over reduction in packaging materials because the net result could be the packaged product's spoilage or damage.

Product spoilage or damage is regarded as a far greater environmental concern than reduction in packaging material, since the packaging component typically accounts for only a relatively small amount of the resources embedded in the product as a whole. Further information can be found on this subject in Appendix B.

**Theft:** Packaging designed to mitigate theft generally involves adding further layers of packaging, or making packaging considerably larger than the product itself to deter extracting or concealing the actual product. This creates a particularly difficult dilemma for developers of new packaging systems since superficially the product appears "over-packaged".

**Shelf Ready Packaging:** Shelf ready packaging is primarily designed to offer efficiency and convenience for retail staff as it avoids the practice of de-packing and re-stacking on shelves. However this type of packaging often requires a heavier gauge of packaging material to maintain its durability, demonstrating the conflict between the need for optimisation of material use and optimisation of shelf use.

**Technology Trends:** Advances in technology normally occur where significant volume exists to offset the substantial investment cost in the research and development. For example, package light weighting is possible with advances in package design/technology, package manufacturing machinery and new materials. Implementation of such solutions however, can involve an interim step of building the volumes required for full investment. In the case of light weighting this could involve substantial volumes of heavier gauge packaging being used until moving to a new lightweight version is economically viable.

Technological advancement provides for alternative materials and/or more efficient processing but the packaging lifecycle is multifaceted and in seeking a solution or improvement in one area could lead to a compromise in another. For example, Radio Frequency Identification ("RFID") tagging is becoming more common as advances in supply chain management mean ever more sophisticated operations. Embedding this technology in packaging could pose a challenge to the recycling industry if it introduces contaminants which compromise the recyclability of the packaging material.

## 1.2 Meet Consumer Needs and Expectations

**Smaller Portions:** Demographic and lifestyle changes in society have driven an increase in packaging formats. Changes such as more single person households and smaller family units have increased the demand for convenience foods. This trend is likely to continue as food wastage issues, further drives packaging into smaller formats. For more information on the issue of food wastage see: [www.wrap.org.uk](http://www.wrap.org.uk)

**Tamper Evidence/Hygiene:** Tamper evidence and hygiene requirements are firmly established consumer packaging necessities. There are legal requirements making additional layers mandatory for tamper evidence purposes for some products. This challenges packaging developers as they strive to meet the requirements of the consumers to open the package easily, whilst managing their expectations not to use materials excessively and to reduce the environmental impact of packaging.

**Special Needs Packaging:** Child resistant packaging has been in use across some product categories for years. Initially it was predominantly used in the pharmaceutical industry and represented a significant step forward in product safety. In recent years there has been a widening of the scope of products requiring child resistant packaging, for example household cleaning products.

Demographic changes such as the aging population have created consumer markets where packaging needs to be robust and easily handled, including open/close functionality, due to health related issues such as arthritis.

**Closed Loop Packaging:** This refers to situations where there is total integration between the packaging system and waste management system and typically falls into three broad categories:

- ➊ Re-use operations, for example returnable transit crates widely used in the grocery sector
- ➋ Refill operations, for example intermediate bulk containers (IBCs) widely used in the chemicals industries
- ➌ Specific material recovery operations, where the packaging can be limited or controlled to ensure that the packaging waste is captured for beneficial reuse or recycling, a technique widely used at public events where there is a focus on reducing the environmental impact of the event.

Currently these systems are mostly limited either geographically or used for special purposes such as events. With increasing pressure on manufacturers, brand owners and retailers to take responsibility for their products, closed loop systems are likely to become more widespread. As this happens, consideration needs to be given to labelling requirements to ensure consumers and users understand the appropriate re-use, refill, recovery systems.

**Role of Packaging in the Marketing Mix:** Packaging has a role in positioning products/brands in the market, i.e. premium, mid market or value segments. The challenge for packaging designers is to meet the market demands with the least environmental impacts.

**End-of-Life Options:** Inconsistent and insufficient information can lead to consumer confusion about the end-of-life options for packaging. The package should include, if necessary, a recommendation to the consumer on how to prepare the package prior to collection if it is to be recovered, for example, “rinse packaging, remove or separate caps or sleeves”. It is not always possible to provide information which relates to disposal options by individual geographical areas, but nevertheless the information should be as comprehensive as practically possible with the ultimate aim being to advance waste minimisation and resource recovery objectives.

Businesses should also be cautious in making claims about end-of-life benefits – see “Not the Full Picture” in the Packaging, Environmental Claims and the Law section.

**Litter:** Whilst litter is a consumer behaviour issue rather than the result of poor packaging design, it is recognised that good packaging design should take account of the likelihood that the packaging may become litter. Consideration should be given to the use of materials which minimise the harm to the environment if the packaging is discarded recklessly. Consideration should also include how many additional separate or easily separated components the packaging item has, for example screw cap lids, peel off seals etc., that could end up as litter.

## 1.3 Use of Appropriate Materials

**Material Sourced from Renewable Resources:** Care should be taken to understand the source and process-ability of renewable packaging materials. Because each business and its products are different, each business must assess the environmental benefit of using renewable resources in packaging for its own products. Using renewable materials may not be sustainable if those materials compete with uses such as food production, or if the resources required for processing are in excess of those required for comparable, non-renewable materials. See section 3.4.

**Degradable Materials:** As packaging material technology develops, care should be taken to understand the impacts of these materials across their whole-of-life. Caution is also required if the use of these materials is purely for the purpose of making “environmental” marketing claims since misleading claims, or “greenwashing”, carries legal implications under the Fair Trading Act in New Zealand and similar legislation in other jurisdictions. There is the additional risk of reputational damage to the brand and/or business if those claims are found to be lacking in substance. See the Packaging, Environmental Claims and the Law section and section 3.5.

**Modified Atmosphere Packs:** The shelf-life of fresh produce can be significantly enhanced with the use of modified atmosphere packaging, which extends the life of some produce without adding artificial preservatives. Given that product spoilage has significant environmental impacts, there is a balance between wastage of product and the use of extra packaging, including packaging which may not be recyclable.

## 1.4 Labelling and Symbols to Help Re-use, Recovery and Recycling

**Labelling:** Successful resource re-use, recovery and recycling can be greatly enhanced by providing relevant on-pack information to help consumers decide on the most appropriate method for disposing of the packaging.

Consumer information relating to material identification, and/or appropriate disposal methods, is usually written on product “labels”, or by the use of decoration, or widely accepted symbols directly on-pack.

Displaying information on-pack can have a significant environmental advantage if it avoids the introduction of a label which not only adds an additional layer of material but potentially contaminates the package by introducing another material type.

All information, claims and symbols on-label/pack must be accurate without readers having to refer to fine print or a website. Businesses cannot rely on a reference to a website to correct misleading information on-label/pack. The information must be complete, legible and accurate by itself. However, a website could be used to provide additional detailed information on the materials used and/or disposal options.

Any limitations should also be made clear. For example, if plastic packaging cannot be recycled because of residues from contents, this should be stated on the label. Not only is this a Fair Trading Act issue, but there may be occupational safety and health issues for workers in recycling plants.

Care should be exercised to ensure that all re-use, recovery and recycling claims or symbols are valid in the context of the country where the products are sold. There could be legal implications if claims are only “technically” correct not “practically” possible (for example, no recycling plant in the market country versus the country of origin), which could be viewed as an intention to mislead the consumer under the New Zealand Fair Trading Act, or equivalent international legislation. See Packaging, Environmental Claims and the Law section.

**Symbols:** The New Zealand government has produced a directory to improve the availability of information about ecolabels and other sustainability indicators. It provides summary information about each label, and users are encouraged to access further detail from ecolabel owner websites using the links provided.

Go to [http://www.med.govt.nz/templates/ContentTopicSummary\\_\\_\\_37890.aspx](http://www.med.govt.nz/templates/ContentTopicSummary___37890.aspx)

Some of the more commonly used symbols are set out below.

**Plastic Resin Codes:** Due to the wide range of plastic resin types used in packaging, all businesses in the packaging industry are encouraged to use the plastics identification code.



PET



HDPE



PVC



LDPE



PP



PS



OTHER

This international coding system was developed to provide manufacturers and recyclers with a uniform identification system. Using this resin identification code enables recyclers to sort plastic into the same resin type thereby producing a high quality recycle commodity. It also helps consumers to correctly identify which plastics to send to recycling and which to send to landfill. For more information go to [www.plastics.org.nz](http://www.plastics.org.nz)



**Steel:** New Zealand’s steel can manufacturers recommend using the recyclable steel symbol on all steel cans, including steel aerosols.



**Compostable:** The seedling logo is used to identify certified compostable packaging materials. The Australasian Bioplastics Association (ABA) has licensed use of the logo from the European Bioplastics Association for use in Australia and New Zealand. Successful applicants to ABA will be licensed to use the logo along with their unique certification number. Use of the seedling logo is available to both packaging material producers and their customers. For more information go to [www.bioplastics.org.au](http://www.bioplastics.org.au)

**Mobius Loop:** The Mobius Loop indicates that a product has recycled content and/or is able to be recycled. It’s use is governed by ISO 14021 which recommends that the symbol should be qualified to clarify the intended meaning. For example:



Recyclable  
Aluminium



X% recycled  
content



**Green Dot:** The green dot is not a recycling symbol and should not be used as a recycling symbol. It is actually a trademark displayed on packaging in many European countries and signifies that the manufacturer has joined a compliance organisation established under the European Packaging & Packaging Waste Directive and has paid a licence fee to use the green dot.

**Signage:** The above symbols, which are designed to be used on-label/pack, should not be confused with symbols designed to be used on signage. The Recyclers of New Zealand (RONZ) have developed a suite of symbols for use on signage, for example signage on public recycling bins, resource recovery stations, workplace signage (i.e. office recycling systems), household recycling bins, etc. For more information go to [www.ronz.org.nz](http://www.ronz.org.nz)

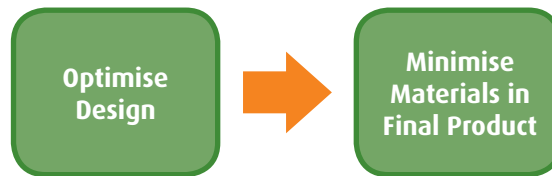
# 2. RESOURCE EFFICIENCY

## 2. Resource Efficiency:

Packaging should be designed to minimise the use of materials and other resources without compromising product quality, safety and economic viability

- New product development (NPD) process
- Existing packaging review
- Minimise materials
- Transportation (supply chain) efficiencies
- Water and energy efficiencies

Appropriate package design can substantially reduce packaging material and packaging use. New product development and existing packaging review should adopt a two stage process which first looks at optimising the packaging design, and then secondly looks at minimising both the amount of packaging material and the resources used to produce the final packaging.



Under each of the considerations in this section some best practice performance indicators have been identified. For businesses with no relevant internal measurement systems these indicators may provide a useful starting point for building measure and monitor systems. For businesses that have some reporting tools these indicators may help identify further areas with measure and monitor metrics. Appendix C lists all the performance indicators with a definition and suggested metrics against each.

## 2.1 New Product Development (NPD) Process

It is at the initial design stage where the greatest impact can be achieved in terms of realising the objectives of this Code. The following points contain the elements of packaging design best practice in the modern supply chain environment. Each part of the supply chain is interlinked with the next part but not all considerations necessarily apply to every part. A balance must be struck between optimal design and practical design.

Considerations:

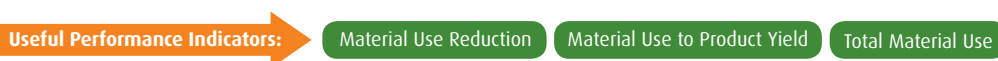
Packaging which is not essential to the distribution, sale, storage use or safety of the product should be avoided. To ensure that a net reduction is achieved, it is important to ensure that the reduction or elimination of one packaging component does not require the use of additional materials of a different type that may compromise the overall benefit being achieved.



The container geometry should be evaluated to determine whether:

- ⊕ Lower material surface-area to volume/weight ratios can be achieved; and/or
- ⊕ Volumetric capacity of the container is optimised with the volume of the contents

Significant material reductions can be achieved by avoiding excessive space within a package and significant supply chain efficiencies can be realised from the resulting smaller package. Software is available to model container geometry. See Appendix B for more information.



Trial runs and material efficacy issues etc. can lead to excessive use of materials or “over packaging” in the short-term. Where this is unavoidable it is important to include a review of the trial to specifically address these issues.

Investigate complementing a new container range with a “refill” option to determine if there would be a net reduction in packaging, for example liquid hand soap.



Storage conditions need to be fully understood and evaluated. The whole packaging system should be designed to ensure that no part of the system is unduly compromised by materials which are not robust enough to withstand storage and handling requirements thereby risking the packaging or product's integrity, safety or shelf life.

**Useful Performance Indicator:**

Product Safety

Packaged Product Wastage

The packaging system should be evaluated for the suitability of using reusable secondary/tertiary packaging. It is possible to realise significant material and cost savings by eliminating the requirement for either single use secondary or tertiary packaging or the introduction of re-usable secondary or tertiary packaging, for example returnable transit packaging. Additionally, this could lead to opportunities for supply chain efficiencies.

**Useful Performance Indicator:**

Re-Use of Packaging

Packaging systems should ensure a balance between the need to produce a product with minimal packaging and the need to avoid compromising the product's shelf life, marketability or saleability as well as efficient retail shelf utilisation and/or presentation.

**Useful Performance Indicator:**

Packaged Product Shelf Life

Packaging Service Value

## 2.2 Existing Packaging Review

An existing packaging review incorporates all the NPD design considerations and re-visits the design elements of the original packaging.

Is it possible to down gauge material (light weighting)?

Is it possible to optimise the package design to reduce material use?

**Useful Performance Indicators:**

Material Use Reduction

Material Use to Product Yield

Total Cost of Packaging

Selling Unit Cube Efficiency

Can product redesign or re-formulation, for example concentrated laundry detergent, lead to the packaging being redesigned to use less material? The feasibility of redesigning the product so that less packaging is required should be evaluated provided that the modified products are environmentally appropriate and their quality and efficacy remains.

**Useful Performance Indicators:**

Material Use Reduction

Material Use to Product Yield

Selling Unit Cube Efficiency

Is it feasible to replace several smaller packages with one larger packaging format? The possibility of replacing two or more smaller packages with a single large package should be considered provided it does not increase the amount of waste in other areas, for example resulting in an increase in food spoiled and thrown away, and also heeds other legislative requirements such as weight restrictions under Health and Safety legislation.

**Useful Performance Indicator:**

Material Use Reduction

Selling Unit Cube Efficiency

Consulting with suppliers and customers may identify ways to minimise packaging and ensure recovery/recycling of packaging materials. Changes in packaging formats should not be considered without first ensuring that the supply chain partners fully understand the changes and have the systems in place to maximise the benefits derived from the new packaging format.

Can a re-designed packaging format eliminate the requirement for single use secondary/tertiary packaging, or introduce re-usable secondary or tertiary packaging? This could mean the primary packaging has to be "re-engineered" but ultimately eliminates the requirements for single use secondary and/or tertiary packaging.

**Useful Performance Indicators:**

Material Use Reduction

Re-Use of Packaging

Selling Unit Cube Efficiency

Is the product suited to a bulk re-usable transit packaging system? These systems are commonly used in fresh fruit and vegetable delivery where produce goes from field to store in a re-usable crate. Empty crates are then returned to the field for re-use, eliminating the requirement for single use secondary packaging.

**Useful Performance Indicator:**

Re-Use of Packaging

## 2.3 Minimise Materials

Good packaging design requires using only as much material as is necessary to perform the task of delivering a product in perfect condition. The combination of primary, secondary and tertiary packaging should be optimised to eliminate unnecessary materials, reduce size, weight or thickness of materials and minimise void space within the design. This can have a significant impact on end-of-life waste, since optimising material use for the packaging's whole-of-life should ensure minimum material is destined for final disposal.



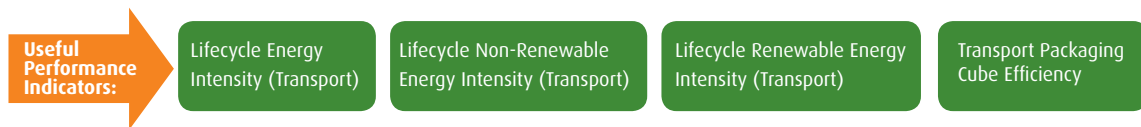
Consideration should be given to the balance between the reduction in packaging material and the compromising effect this could have at another point in the supply chain (product/quality loss).

## 2.4 Transportation (Supply Chain) Efficiencies

Packaging should be designed to maximise the efficiency of the transport and distribution system. Improvements may be possible from raw material delivery through to delivery to the end user.

Transport and distribution considerations:

- ⊕ Backloading re-usable transit packaging
- ⊕ Backloading with recovered recyclable material
- ⊕ Consolidation of volume of recyclable material to facilitate waste minimisation
- ⊕ Collaboration with other companies to increase the utilisation of the transport network
- ⊕ Footprint efficiency, for example, replace pallets with slip sheets to maximise space utilisation
- ⊕ Pallet stacking efficiency
- ⊕ Warehousing constraints i.e. racking heights
- ⊕ Maximise shipping space otherwise known as “cubing out”
- ⊕ Truck/container constraints
- ⊕ Product weight, for example container could be “weighted” out before it is “cubed” out
- ⊕ Method of transportation i.e. road haulage weight restraints versus rail



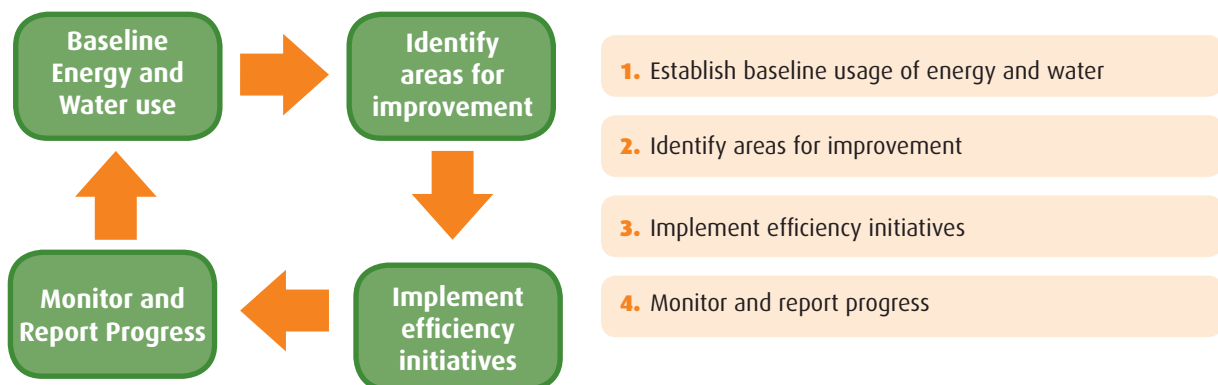
Alternative distribution systems and their potential for packaging reduction and supply chain efficiencies should be evaluated. For example online purchasing and direct-to-home delivery systems may maximise point-to-point efficiencies.

## 2.5 Water and Energy Efficiency

Water and energy efficiency should account for the:

- ⊕ manufacture of the packaging materials
- ⊕ impact of the chosen packaging material on the production and distribution process of the finished packaged product
- ⊕ potential of alternative materials, container shape, packaging technology to reduce the amount of energy and water in the production process and packaging filling operation.

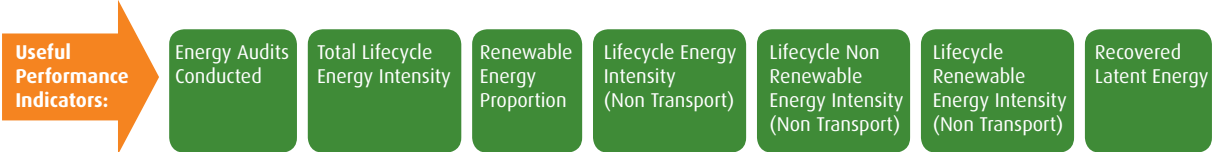
To improve the environmental performance in these areas requires a four step continuous process to measure, monitor and improve environmental performance:



It should be noted that the useful performance indicators detailed in this section are intended for use at the packaging material level. Therefore these indicators will currently be of most use to the packaging manufacturers.



It is anticipated that over time, as sustainable procurement, carbon footprinting and life cycle analysis requirements become more prevalent, other parts of the packaging supply chain will be required to provide this type of information.



Understanding the scope of your operation in relation to the overall supply chain will be critical in order to select the appropriate performance indicators and metrics and provide the context on how and where to establish measurement boundaries if and when you are required to provide this type of information to other parties in the packaging supply chain. See External Environmental Reporting and Sustainable Procurement section for more information.



The Sustainable Packaging Coalition's Sustainable Packaging Indicators and Metrics Framework document will provide clear guidance on what should and should not be included in establishing measurement systems.

Where any of this type of information is to be used to provide third party assurance and/or be for advertising purposes then all efficiency claims about products, packaging or their production (whether in advertising or on-pack) must be proved and documented. See Packaging, Environmental Claims and the Law section.

# 3. LOW IMPACT MATERIALS

## 3. Low Impact Materials:

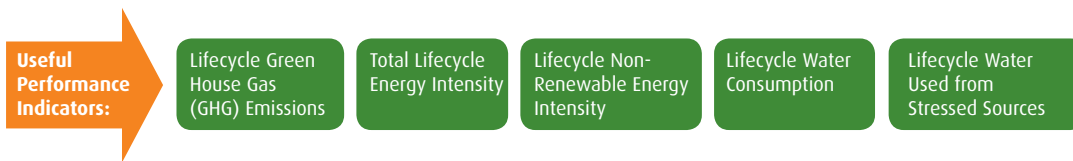
Packaging should be designed to minimise the environmental and social impact of materials and components. Materials should be selected incorporating a whole-of-life approach

- Re-usable packaging
- Post consumer recycled materials
- Recyclable materials
- Materials from renewable sources
- Degradable materials
- Risks associated with hazardous materials
- Locally sourced materials
- Materials from responsible suppliers

The use of low impact materials is usually associated with claims and/or properties around the environmental impact of the materials used, the processes used in manufacture, the use of the product and the disposal of it. Techniques such as Carbon Footprinting or Lifecycle Assessment (LCA) are used to quantify these properties.

The actual environmental “impact” of using a type of material in packaging can vary considerably depending on the assessment methodology adopted. For example a “cradle to grave” assessment where the “grave” represents final disposal to landfill compared with a “cradle to cradle” approach, where the “cradle” represents re-use back into the original product type.

Accordingly there are no particular properties or material characteristics which clearly define “low impact materials”. The packaging system as a whole, including end-of-life options, should be considered when selecting the most appropriate materials.



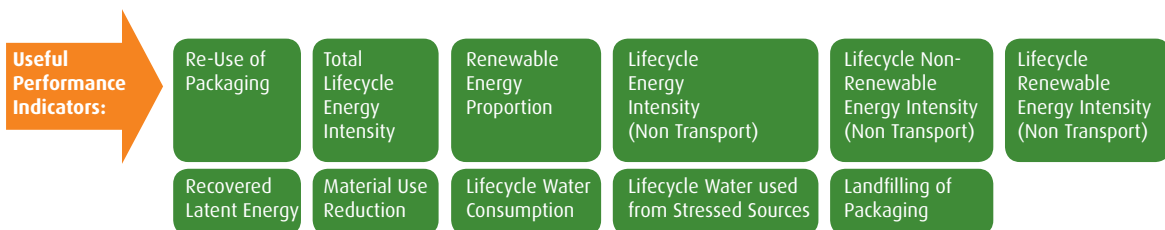
## 3.1 Re-usable Packaging

Re-using a package increases the packaging material’s useful life. This environmentally positive design strategy gives a greater “return” from the energy, materials and water used to manufacture the packaging.

Avoiding the need to manufacture single-use packaging conserves resources such as energy and water, reduces pollution and the need to recover or dispose of single-use packaging at end-of-life. Common examples include milk crates and fresh produce crates.

Considerations:

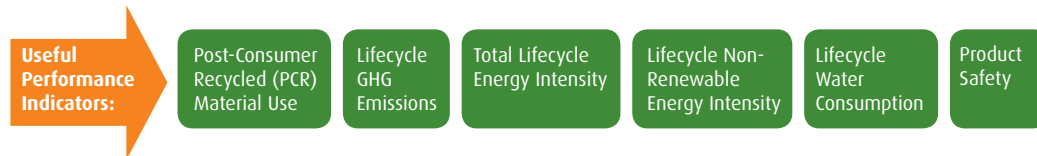
- ⊕ Does the necessary infrastructure exist to support collection and re-use?
- ⊕ Will this system comply with all relevant hygiene and Health and Safety regulations including weight restrictions and cleanliness?
- ⊕ Is the environmental benefit of re-usable packaging justified when other environmental impacts are considered such as transportation and cleaning processes?
- ⊕ Is there potential for the package to be re-used or refilled with products that were not the original use?



## 3.2 Post Consumer Recycled Materials

The use of post consumer recycled materials helps to create sustainable markets for recovered packaging, as well as potentially being less energy and water intensive than using virgin materials of the same type. However, availability, quality and technical specifications of recycled materials vary by material type so generalisations across materials can not be made.

The primary purpose of packaging is to ensure product integrity. The use of post consumer recyclates (PCR) back into primary food grade packaging is currently very limited. The use of PCR in secondary packaging products (i.e. non-food contact) is more widespread. However, potential quality issues with the recyclates risks “tainting” characters in the secondary packaging which could permeate through into the primary packaging thereby spoiling the product and/or causing food safety issues.



## 3.3 Recyclable Materials

To recycle a product means to recover the product and use it as a raw material to produce another product. The ability of a package to be readily recycled is firmly embedded in consumer perceptions as a means to reducing packaging waste.

However, in selecting a packaging material there are many criteria to consider:

- ⊕ Product protection
- ⊕ Product containment
- ⊕ Packaging optimisation
- ⊕ Efficient product delivery
- ⊕ Efficient water and energy usage
- ⊕ End-of-life destination

These are all important considerations which could have a greater net environmental benefit than recyclability. Packaging should not be designed or specified solely based on recyclability. See Appendix B for further information.

Whilst businesses must not make claims that a product can be recycled unless this is true, there may be benefits in starting to use a recyclable material before recycling services become available so that at a later date the business can promote the packaging as recyclable.

Equally the use of recyclable material should not be discounted entirely because of current limitations with infrastructure. Infrastructure development is often directly linked to the economics of volume and capacity which change over time.

Considerations:

- ⊕ Where possible, the package should consist of a single material, or materials, which can be readily separated and sorted for recycling
- ⊕ Suitability of the selected materials for recycling using existing collection and recycling facilities.  
For more information: [www.packaging.org.nz](http://www.packaging.org.nz)
- ⊕ The effect that any additives, adhesives, coatings or inks, etc. may have on the recycling process  
i.e. contaminated single material base
- ⊕ The effect any components such as closures, labels, sleeves, carry handles may have on the recycling process.  
Do these need to be removed prior to recycling?



### 3.4 Materials from Renewable Sources

Materials which typically fall into this category are:

- ⊕ Materials derived from wood such as paper and paperboard
- ⊕ Materials derived from bio-based polymers

Paper based packaging derived from wood is currently the most readily renewable packaging material. It is also the most highly recovered material in New Zealand currently. Paperboard packaging materials come in many forms with significantly different characteristics that could impact on the options for recyclability and/or final disposal.

Materials from other renewable sources, for example some bio-based polymers, often have limited environmental benefits when a whole-of-life approach is taken because these materials can involve resource and energy intensive production processes. Also for some of these materials there are only limited options for final disposal and/or processing at the present time. For specific information on these materials refer to Plastics New Zealand “Managing the Transition – Degradable Plastics in New Zealand An industry Guide and Commitment” –

[http://www.plastics.org.nz/\\_attachments/docs/pnz-degradables-guide-signed-1.pdf](http://www.plastics.org.nz/_attachments/docs/pnz-degradables-guide-signed-1.pdf)

It is prudent to consider the type of material and whether diverting natural materials from other uses such as food production to packaging is the most sustainable use for that material. However, this is a fast moving area of development with new materials being developed from non-food resources. Understanding of renewability continues to evolve so businesses should continue to monitor their practices and industry standards. A key step in new product development or existing packaging review is to research opportunities available for each packaging type which should capture new developments in this area.

Claims that materials have been sourced from renewable sources should be verifiable or independently certified.

For all “organic” material, end-of-life considerations need to be taken into account since this could be a significant issue in lifecycle measurement systems.

Legal requirements relevant to green marketing in New Zealand, including claims that materials are renewable, are discussed in Packaging, Environmental Claims and the Law section.



### 3.5 Degradable Materials

While paper and paperboard packaging are derived from wood – a natural organic source making it an inherently degradable product in its basic form, consideration also needs to be given to any other materials bonded to the paper, for example inks and glues, to ensure these minimise environmental harm when the paper or paperboard product degrades.

Degradable plastics are a specialised area and the technical description of these materials is widely misunderstood. Plastics New Zealand has developed a guide which details the different types of degradable plastic materials, their technical characteristics and limitations in terms of final disposal. This guide, “Managing the Transition – Degradable Plastics in New Zealand An Industry Guide and Commitment”, should be referred to if these materials are being considered for use. See [http://www.plastics.org.nz/\\_attachments/docs/pnz-degradables-guide-signed-1.pdf](http://www.plastics.org.nz/_attachments/docs/pnz-degradables-guide-signed-1.pdf)

Care should be taken to ensure claims on products or in advertising materials about any degradable materials are not misleading and can be substantiated. Misleading claims risk breaching the Fair Trading Act and may also lead to reputational damage to the business and/or brand. See Packaging, Environmental Claims and the Law section.

### 3.6 Risks Associated with Hazardous Materials

Businesses should consider their liabilities governing the use of hazardous materials, including chemicals that may migrate from the packaging in low levels to the surrounding environment. General guidance on legal requirements in domestic and international markets is covered in Packaging, Environmental Claims and the Law section.

Where there are no country-specific regulations it is important to apply conventional and conservative risk management principles in the selection of substances for packaging applications such as inks, pigments, stabilisers and adhesives. This includes, where possible, elimination of all hazardous substances or minimisation of these substances where their use is necessary.

### 3.7 Locally Sourced Materials

When considering environmental impacts using a whole-of-life approach consideration should be given to whether materials can be sourced, recovered and recycled locally. This can have significant benefits where measurements give weighting to embodied resources for the purposes of lifecycle assessment or carbon footprinting. It also serves to drive and grow local markets and could also facilitate “closed loop” systems whereby the finally disposed packaging waste is captured for re-use into new packaging.



### 3.8 Materials from Responsible Suppliers

Businesses can reduce the environmental impacts of their packaging by working with suppliers with a strong commitment to responsible environmental management. Wherever possible, packaging materials should be purchased from businesses able to independently verify the sustainable origins of their materials for supply, or demonstrate a commitment to environmental sustainability, for example consider suppliers that are signatories to applicable New Zealand Product Stewardship Schemes and/or have adopted specific industry codes of practice and guidelines, for example Plastic New Zealand’s Design for the Environment guidelines. Other ways a supplier may demonstrate their commitment is a track record of publishing a corporate social responsibility (CSR) report.

Wherever possible, businesses should obtain independent verification and certification of all environmental claims made by suppliers.



# 4. END-OF-LIFE OPTIONS

## 4. End-of-Life Options:

Packaging should be designed to minimise the environmental and social impacts of its disposal

Recovery for recycling purposes  
Recovery for composting purposes  
Energy recovery  
Landfilling

End-of-life options for packaging would fall into four broad categories:

- ⊕ Recovery for recycling purposes
- ⊕ Recovery for composting purposes
- ⊕ Energy recovery
- ⊕ Landfilling

Useful Performance Indicator:

End of life communications

## 4.1 Recovery for Recycling Purposes

New Zealand does not currently have a nationally consistent system for the recovery of a wide range of recyclable packaging materials. Consultation with waste recovery and disposal operators, territorial local authorities and/or community recycling networks will provide information on what materials are collected in which region. Alternatively, contact the Packaging Council for further information.

Over time, the implementation of the Waste Minimisation Act 2008 is likely to result in increasing legal obligations for different types of products and their packaging to be recycled.

## 4.2 Recovery for Composting Purposes

The environmental benefits of packaging materials which meet international composting standards are currently limited by the low number of composting facilities in New Zealand. Organic waste constitutes a large portion of the New Zealand waste stream and makes a significant contribution to the environmental effects of waste disposal. However, at this time there is little opportunity to fully realise the benefits of compostable packaging material in New Zealand.

## 4.3 Energy Recovery

Currently there are no solid waste incineration plants that burn household waste operating in New Zealand, although these are common overseas.

Technology such as pyrolysis and anaerobic digestion are being piloted on a small localised scale. Whilst these are not commercially viable disposal options at present, in the future, these technologies might provide for larger commercial scale waste to energy solutions.

Waste to energy is an area of on-going development as cleaner technologies become available, and more acceptable, as an option for waste management.

Useful Performance Indicator:

Packaging Energy Recovery Rate

## 4.4 Landfilling

Landfilling is the least favoured disposal option but current limitations inherent in re-use and recycling systems, and the economic constraints imposed by low volumes of material over a wide geographical area, mean that recovery of packaging materials is not always an option.

Therefore, it is recommended that reviewers of packaging minimise the impacts packaging will have when it is landfilled. The package and its components, for example ink, dyes, pigments, stabilisers, solders and adhesives, should be designed so that any hazardous substances resulting from the aerobic and/or anaerobic conditions in a landfill such as emissions, ash or leachate are minimised.

Useful Performance Indicator:

Landfilling of packaging

# PACKAGING, ENVIRONMENTAL CLAIMS AND THE LAW

The information in this Code about the law is for general guidance only. For all legal issues, including complying with legal requirements for packaging, it is critical that independent legal advice is taken in relation to New Zealand and any other jurisdictions to which products or packaging are exported.

For copies of New Zealand legislation and regulations listed in this Code go to: [www.legislation.govt.nz](http://www.legislation.govt.nz)

The law can change rapidly so it is important for individual businesses to be aware of changes and the impact this has on them. This Code discusses key statutes in force as at March 2010.

## Green Marketing and the Fair Trading Act 1986

In New Zealand, the Fair Trading Act prohibits traders from engaging in conduct that misleads or is likely to mislead consumers. Conduct includes information placed on packaging, in advertising, and communications to distributors or consumers.

The Fair Trading Act (“FTA”) prohibits persons in trade from engaging in conduct that is:

- ⊕ Misleading or deceptive, or
- ⊕ Likely to mislead or deceive.

The Act also sets out more specific prohibitions including prohibitions against making false or misleading representations that goods are of a particular:

- ⊕ Kind,
- ⊕ Standard,
- ⊕ Quality,
- ⊕ Grade, or
- ⊕ Composition, or
- ⊕ Goods that have had a previous history.

Also, the FTA prohibits businesses from claiming that goods or services have any sponsorship, approval, endorsement, performance characteristic, use or benefit that they do not have. For example, businesses must not claim that packaging is certified as sustainable unless certification has been obtained and is current for that packaging.

Breach of these specific prohibitions is a criminal offence that can result in a fine of up to \$200,000 for a company or \$60,000 for an individual per breach.

Most other countries, including Australia and the United Kingdom, have similar laws prohibiting misleading or deceptive conduct, or more specific laws prohibiting misleading environmental claims.

The Commerce Commission has broad powers to investigate potentially misleading conduct, including environmental claims, made by a New Zealand business or a business marketing into New Zealand.

The Advertising Standards Authority is a non-government body which hears complaints about advertisements, including complaints about the accuracy of advertisements. If the Advertising Standards Authority upholds a complaint about an advertisement, almost all publications in New Zealand are obliged by contract to refuse to publish that advertisement.

## Environmental Claims about Packaging

If a product has “environmentally friendly” properties (e.g. recycled content or recyclable materials), often that benefit can be promoted to consumers. Many consumers consider these claims when choosing which products to purchase. Consumers are entitled to rely on those traders who manufacture and supply the products to ensure that all environmental claims are true and accurate. All environmental claims about products or packaging must be accurate and must not give any misleading impression.

The effect of the FTA is that environmental claims about goods (including packaging) must not mislead, and must not be likely to mislead. All environmental claims in advertising, promotional materials and on product or packaging must be accurate, and must be capable of being verified.

This means that businesses making environmental claims about their products must have records on hand to justify all environmental claims. For some claims, this includes keeping records of:

- 🕒 Independent testing by a qualified and certified testing laboratory (e.g. that a “compostable plastic” can break down fully if composted) or
- 🕒 Independent certification (e.g. “paper sourced from renewable plantations”)

To assist businesses in complying with the FTA, the Commerce Commission has published:

- 🕒 *Guidelines for Green Marketing*<sup>1</sup>, and
- 🕒 *Guidelines for Carbon Claims*<sup>2</sup>.

These guides are recommended for businesses developing or marketing “green” products in New Zealand.

<sup>1</sup><http://www.comcom.govt.nz/FairTrading/GuidelinesforGreenMarketing/Overview.aspx>

<sup>2</sup><http://www.comcom.govt.nz/FairTrading/DraftGuidelinesonCarbonClaims/Overview.aspx>

## Making Misleading Environmental Claims - “Greenwashing”

Greenwashing is the practice of making vague or general “environmental” claims which do not stand up to close scrutiny. Greenwashing behaviour includes making broad claims like “friendlier for the environment” which are unable to be proved or disproved. Consumers and the Commerce Commission scrutinise environmental claims to ensure that they are meaningful and accurate.

Greenwashing harms all law-abiding traders because it devalues all environmental claims in the eyes of consumers.

The Commerce Commission is aware of this problem and has already investigated the accuracy of green claims, and has issued warnings where traders were not able to substantiate their claims.

Indicators of greenwashing claims can include:

- 🕒 **Vagueness:** Including claims a product is “green” or “sustainable” without any details backing up these claims. Unsubstantiated, generic claims without support can be meaningless and therefore likely to mislead consumers.
- 🕒 **No Proof:** Including claims a product is “from sustainable sources” or is “carbon neutral”. Claims a product or packaging is sourced from sustainable or sustainably managed sources should be backed up by independent certification. “Carbon Neutral” claims should be supported by independent checking and certification taking into consideration the whole lifecycle of the product.
- 🕒 **Irrelevance:** Including claims a paper product is “biodegradable”, or an aerosol is “CFC free”. Paper should biodegrade. By law, aerosol products should be CFC free. These claims suggest that there is an added environmental benefit to the product when in fact the product does not have any added environmental benefit.
- 🕒 **Distractions:** These are claims that seek to distract consumers from the fundamental environmental problems attached to a product. Several car companies have been the subject of complaints to the Advertising Standards Authority because they have claimed their cars were “green” when in fact those cars emitted large amounts of CO<sub>2</sub> during their useful lives.
- 🕒 **Not The Full Picture:** This includes claims a product is “recyclable” when in fact there are no facilities in New Zealand to recycle that product or to collect it for recycling overseas.

## Waste Minimisation Act 2008

The Waste Minimisation Act 2008 gives the government the power to encourage, and in some circumstances require, industries to take responsibilities for their products (including packaging) when those products reach the end of their useful lives.

The Act empowers the government to require particular industries to set up mandatory “product stewardship schemes” to manage end-of-life products. “Product stewardship” is an ethic that encourages or requires everyone involved in the manufacture, use and disposal of a product to take responsibility for what happens at the end of the product’s useful life.

A mandatory product stewardship scheme under the Waste Minimisation Act can place legal obligations on producers, brand owners, importers, retailers, consumers and other parties to take greater responsibility for the environmental effects of designated products (including their packaging) throughout the product lifecycle.

Alternatively, industry groups can choose to apply to the Ministry for the Environment to have a voluntary product stewardship scheme accredited under the Waste Minimisation Act.

If the government finds that voluntary measures, including voluntary product stewardship schemes, are not sufficient to manage the environmental effects of packaging, then the government is more likely to impose mandatory product stewardship requirements for some or all types of packaging.

The Waste Minimisation Act gives the government power to impose regulations, including regulations to support a mandatory product stewardship scheme. Fines of up to \$100,000 could be imposed on businesses or individuals that breach regulations, for example by knowingly disposing of an item of packaging other than via the applicable product stewardship scheme.

## Consumer Guarantees Act 1993 (“CGA”)

The Consumer Guarantees Act 1993 sets minimum standards for the performance of goods and services that are ordinarily acquired for personal, domestic or household purposes. If goods or services fail to meet minimum standards defined by CGA guarantees, consumers are entitled to recover remedies from the suppliers of goods or services, and from the manufacturer of goods.

Under the CGA, packaging is part of the product. One part of the minimum standards set by the CGA is that goods must be reasonably fit for any purpose that the supplier represents the goods are or will be fit. This includes representations on packaging, and in advertising.

Consumers are entitled to rely on all claims about what a product and the packaging will or won't do without having to check other information. This includes environmental claims about packaging; e.g. “this carton is compostable” or “this bottle is recyclable”. Where a plastic identification code is used, consumers are entitled to rely on that sign as correct identification of what the product is made of, for example PET or HDPE plastic.

If the packaging does not perform as stated, consumers might have a claim against the manufacturer or supplier/retailer of the product under the CGA. In some circumstances traders might have to give full refunds to consumers because packaging does not live up to its environmental claims. If packaging fails to comply with a CGA guarantee, traders might have to give full refunds of the product's purchase price even if the product itself is satisfactory: the packaging is as much a part of the product as its warranty.

## Commerce Act 1986

The Commerce Act 1986 prohibits conduct which impacts negatively on competition in New Zealand. The Act also empowers the Commerce Commission to enforce the Commerce Act (as well as other Acts including the Fair Trading Act 1986 and the Credit Contracts and Consumer Finance Act 2003).

In summary, the Commerce Act prohibits agreements that have the purpose, effect or likely effect of substantially lessening competition in a market. Contracts between competitors to fix buy or sell prices of goods are prohibited, as are agreements between competitors to exclude third parties from a market. Businesses that have a substantial degree of power in a market must not use that power to eliminate competitors, or to restrict, prevent or deter others from competing in a market. This is a brief summary only of the major provisions in the Commerce Act that are most likely to arise in relation to packaging and product stewardship. There are other more specific rules in the Commerce Act, including a prohibition on resale price maintenance.

If found guilty of a Commerce Act breach, businesses could face a penalty of up to the greater of: \$10 million, or three times the commercial gain from the breach, (or if commercial gain cannot be ascertained) 10% of group turnover. Individuals face a penalty of up to \$500,000.

In some circumstances, the Commerce Commission can authorise an anti-competitive agreement. However, this is only possible before an agreement is entered into. Independent legal advice can help identify whether Commerce Commission authorisation is an option.

Whenever competitors talk to one another about environmental packaging, including recycling or waste recovery systems, all individuals and businesses must be aware of competition law issues. Before considering entering into an agreement with competitors (even an informal agreement closed by a hand shake) obtain independent legal advice about Commerce Act issues. Discussions between competitors should only take place on the basis that nothing will be agreed to until the parties have obtained their own legal advice, and if required, Commerce Commission authorisation has been granted.

At any meeting with competitors, if you become uncomfortable about a competition law issue, leave the meeting straight away and get independent legal advice.

This is just a brief introduction to competition law issues. You should get specific legal advice. Investing now in an understanding about how competition law could affect your business can save money in future, particularly if a problem emerges.

Most countries have similar competition laws (also called “Anti-trust” laws). Regulators in different countries frequently work together in dealing with international or multinational cartels.

## Selected Industry-Specific Packaging Laws

In New Zealand there are some laws that impose industry-specific or product-specific legal requirements relating to packaging. Businesses must ensure all packaging complies with all applicable laws both in New Zealand and in any export markets across the world. This section is not intended to be exhaustive in terms of specific packaging legislation or regulations in New Zealand, or overseas. You should obtain your own independent legal advice, and other necessary professional advice.

In developing new products/packaging or adapting products/packaging for a new overseas market, allow time to comply with applicable local laws. For example, some countries might require registration or approval of products, including packaging. Development timeframes need to take into account the time that will be needed to obtain the relevant registrations or approvals.

For some packaging, material choice could be dictated by legislative or regulatory requirements. Packaging size could be influenced by the quantity of regulatory information required on the package and/or label.

**Health & Safety Regulations:** Health and safety regulations are a legislative requirement throughout all aspects of the packaging lifecycle. For example to reduce the risk of human injury during handling, smaller packaging formats may be required which use more packaging when compared with larger packaging formats.

For a guide on the Health & Safety in Employment Act 1992 go to the Occupational Health and Safety section on the Department of Labour website. [www.dol.govt.nz](http://www.dol.govt.nz)

**Food Contact:** Packaging material which comes into direct contact with food is regulated. It is the responsibility of food manufacturers and sellers to ensure their products are safe and that they comply with relevant legislation, including the Food Act 1981 and the food Code.

More information is available from the NZ Food Safety Authority. [www.nzfsa.govt.nz](http://www.nzfsa.govt.nz)

Regulations in this area also apply internationally and compliance with recognised international food standards such as those of the European Union or the United States Food and Drug Administration is necessary for selling food in those jurisdictions. [www.fda.gov](http://www.fda.gov), [www.efsa.europa.eu](http://www.efsa.europa.eu)

**New Zealand Requirements for Hazardous Substances:** All Hazardous Substances must be packaged and handled in compliance with the requirements of the Hazardous Substances and New Organisms Act 1996 ("HSNO Act") and all applicable regulations under that Act including the Hazardous Substances (Packaging) Regulations 2001. The Environmental Risk Management Authority enforces compliance with the HSNO Act. For more information including a database of chemicals classified in accordance with the Hazardous Substances and New Organisms (HSNO) regulations go to the hazardous substances section of the ERMA website. [www.ermanz.govt.nz](http://www.ermanz.govt.nz)

When buying products from overseas, specialist advice may be needed to ensure that you check that substances which are prohibited in New Zealand, but not in the source country, are not part of the products that you import.

**International Requirements for Hazardous Materials:** Many jurisdictions including the USA, the European Union, Japan, China, and many other Asian and South American countries have laws identifying chemicals that must not be used as additives in packaging. Use of prohibited additives or use of higher than permitted levels of additives could lead to prosecution and/or product recall. These additives restrictions include heavy metals.

For further information [www.epa.gov](http://www.epa.gov) search on toxic and hazardous chemicals regulations in the USA.

<http://ecb.jrc.ec.europa.eu/> (formerly known as the European Chemicals Bureau) for regulations relating to Europe. Includes link to REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) regulations.

Independent advice may also be needed particularly if your products are for export.

**Pharmaceuticals:** Medsafe is responsible for administering the Medicines Act 1981 and Regulations 1984 and should be consulted for specific information relating to pharmaceutical packaging. [www.medsafe.govt.nz](http://www.medsafe.govt.nz)

**Overseas Laws and Regulations:** Businesses intending to export packed goods need to be aware of the legislation which is specific to the jurisdiction where the product is to be exported to. Businesses are likely to need specialist legal advice on the law of the country to which products will be exported.

For example packaging in the European Union is subject to the Packaging and Packaging Waste Directive (94/62/EC) which includes the "essential requirements" to be satisfied for packaging in order for packaged goods to circulate freely in the EU single market. For further information search the Transport & Packaging section of [www.cen.eu/cen](http://www.cen.eu/cen)

## Sample Legislation Related to Consumer Packaging

Relates to	Legislation
<b>Misleading labelling, packaging and environmental claims</b>	Fair Trading Act 1986 Refer - Guidelines for Green Marketing Refer - Guidelines for Carbon Claims
<b>Waste Minimisation &amp; Product Stewardship</b>	Waste Minimisation Act 2008
<b>General Sales &amp; Marketing</b>	Consumer Guarantees Act 1993
	Sale of Goods Act 1908
<b>Hazardous Goods</b>	Hazardous Substances (Packaging) Regulations 2001
	Hazardous Substances (Identification) Regulations 2001
	Hazardous Substances (Disposal) Regulations 2001
<b>Distribution of Goods</b>	Carriage of Goods Act 1979
	Civil Aviation Act 1990
	Maritime Transport Act 1994
<b>Food</b>	Food Act 1981
<b>Labelling Requirements</b>	Medicines Act 1981
	Fertilisers Act 1960
<b>Disposal</b>	Specialist advice should be sought for the disposal of contaminated packaging

# EXTERNAL ENVIRONMENTAL REPORTING AND SUSTAINABLE PROCUREMENT

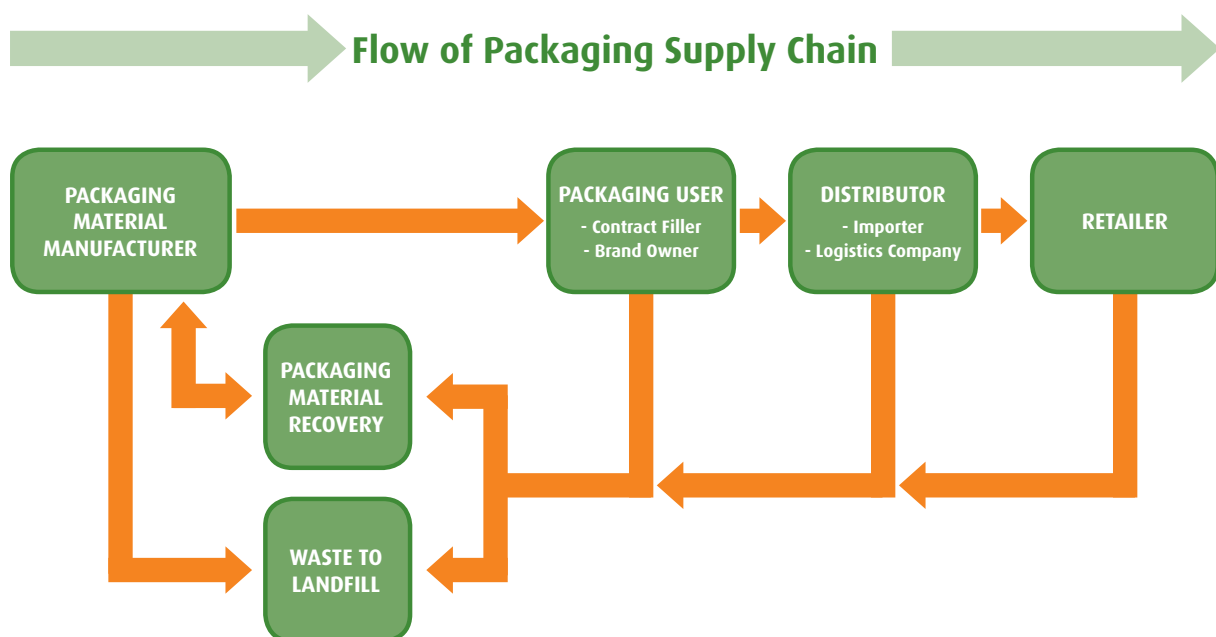
## External Environmental Reporting

If your business is part of a supply chain that includes an organisation engaged in environmental reporting on some level, you will inevitably be asked to provide information to help fill their data gaps.

For example, a brand owner may redesign a package resulting in significant packaging material savings and significant transportation savings (quantitative data). Alternatively, a business may choose to only use suppliers who have adopted recognised industry guidelines or compliance schemes (qualitative data).

To quantify any of these benefits will require data gathering both up and down the packaging supply chain.

The diagram below illustrates the flow of the packaging supply chain, and used in conjunction with the performance indicators set out in sections 2-4 of this Code gives some guidance on which parameters could be measured to provide quantitative and qualitative environmental data at each point in the supply chain.



## Sustainable Procurement

Sustainable Procurement has been defined by the United Kingdom Government-commissioned Sustainable Procurement Taskforce as "...a process whereby organisations meet their needs for goods, works and utilities in a way that achieves value for money on a whole life basis in terms of generating benefits not only to the organisation, but also to society and the economy, whilst minimising damage to the environment." (Procuring the Future, Sustainable Procurement Task Force, 2006).

If you have measure and monitor systems in place to report on the performance indicators in sections 2-4 of this Code you are more likely to be at a competitive advantage if you are bidding for a contract where the tenderer is engaged in sustainable procurement practices which include some environmental measures.

Any company bidding to be a supplier of goods and services to the New Zealand Government must take into account that sustainability is one of the principles embedded in the Government's procurement policy. Ministry for Economic Development considers sustainability to be an important component of whole-of-life costs and expects whole-of-life costs to play a major role in a procurer's decision making if they wish to do business with the Government.

This philosophy has also been adopted by a number of local councils and businesses who are demanding more information about their suppliers' sustainability credentials and taking whole-of-life costs into account when assessing bids for contracts.

Any business wishing to understand sustainable procurement and key concepts such as whole-of-life costs in more detail will need to undertake it's own research and training. The Packaging Council can provide some assistance to individual businesses. [www.packaging.org.nz](http://www.packaging.org.nz)

# GLOSSARY

## **Brand Owner means:**

- ⊕ A person who is the owner or licensee in New Zealand of a trade mark under which a product is sold or otherwise distributed in New Zealand, whether the trade mark is registered or not
- ⊕ A person who is the franchisee in New Zealand of a business arrangement which allows an individual, partnership, or company to operate under the name of an already established business
- ⊕ In the case of a unit of product which has been imported, the first person to sell that unit of product in New Zealand
- ⊕ In respect of in-store packaging, the supplier of the packaging to the store; or
- ⊕ In respect to plastic bags, the importer or manufacturer of the plastic bag or the retailer who provides the plastic bag to the consumer for the transportation of products purchased by the consumer at the point of sale

**Carbon Footprint** is 'the total set of greenhouse gas emissions (GHG) caused directly and indirectly by an individual, organisation, event or product' (UK Carbon Trust 2008). The carbon footprint of a product or process is measured by undertaking a GHG emissions assessment. The scope of a carbon footprint analysis can vary and may not always include all GHGs. When it does, the footprint is generally expressed as 'CO<sub>2</sub> equivalent' or CO<sub>2</sub>-e.

**Closed Loop System** refers to a system that functions within a zero-waste supply chain that completely re-uses, recycles or composts all materials.

**Cradle to Cradle** A phrase invented by Walter R. Stahel in the 1970s and popularised by William McDonough and Michael Braungart in their 2002 book *Cradle to Cradle: Remaking the Way we Make Things* By William McDonough & Michael Braungart, North Point Press 2002. This framework seeks to create production techniques that are not just efficient but are essentially waste free. In cradle to cradle production all material inputs and outputs are seen either as technical or biological nutrients. Technical nutrients can be recycled or reused with no loss of quality and biological nutrients composted or consumed. By contrast cradle to grave refers to a business taking responsibility for the disposal of goods it has produced, but not necessarily putting products' constituent components back into service.

[www.sustainabilitydictionary.com](http://www.sustainabilitydictionary.com)

**Importer of Branded Product** means, in the case of an imported product, the first person to sell that unit of product in New Zealand

**Industry** means any manufacturing, industrial, commercial, wholesale or retail activity or process that can generate, recycle, treat, transport, store or dispose of consumer packaging waste

**Key Performance Indicators** a quantitative or qualitative proxy for an issue or characteristic an organisation wants or needs to measure

**Lifecycle Analysis (LCA)** is a technique to assess the environmental aspects and potential impacts associated with a product, process, or service, by:

- ⊕ Compiling an inventory of relevant energy and material inputs and environmental releases
- ⊕ Evaluating the potential environmental impacts associated with identified inputs and releases
- ⊕ Interpreting the results to help you make a more informed decision

[www.epa.gov](http://www.epa.gov)

**Metric** the method used to express an indicator that an organisation wants or needs to assess

**Packaging Component** any stand-alone element of primary packaging or secondary package such as a bottle cap or a protective sleeve, or any stand-alone element of transport packaging such as a pallet or strapping and includes labels, adhesives, inks and/or coatings used on the component

**Packaging Manufacturer** means a business that manufactures or imports packaging materials

**Post-Consumer Material** means material generated by households or commercial, industrial and institutional facilities as final users of a product that can no longer be used for its intended purpose. This includes returns of material from the distribution chain (AS/NZS ISO 14021: 2000, Environmental labels and declarations–Self-declared environmental claims)

**Post-Industrial Material** means material diverted from the waste stream during a manufacturing process. This does not include reuse of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process (AS/NZS ISO 14021: 2000, Environmental labels and declarations–Self-declared environmental claims)

**Product Stewardship** is the ethic of shared responsibility through the lifecycle of products and encompasses the environmental impact of the product through to and including its ultimate disposal

**Raw Material Supplier** means a business that supplies raw materials to companies that manufacture product packaging

**Recovery Chain** means all of the organisations involved in recovering and reprocessing packaging. These include, but are not limited to:

- 🌱 Local government
- 🌱 Waste service providers
- 🌱 Material reprocessors; and
- 🌱 Recycled product manufacturers

**Recyclate** is material collected for recycling

**Recyclable** packaging for a product means it is reasonably able to be recovered in the market where a product is sold through collection or drop-off systems and is able to be reprocessed and used as a raw material for the manufacture of a new product

**Recycle** for a product, means to recover the product and use it as a raw material to produce another product

**Recycled Content** is the proportion, by mass, of recycled material in a product or packaging. Only post industrial and post-consumer materials are considered to be recycled content (AS/NZS ISO 14021: 2000, Environmental labels and declarations–Self-declared environmental claims)

**Recycled Material** means material that has been reprocessed from recovered (reclaimed) material by a manufacturing process and made into a final product or into a component for a product (AS/NZS ISO 14021: 2000, Environmental labels and declarations–Self-declared environmental claims)

**Resource Efficiency** means the efficiency with which we use resources and minimise environmental impacts throughout the lifecycle of a product or service (such as packaging)

**Retailer** means a business involved in retailing consumer packaged products

**Secondary Packaging** used to secure or bundle multiples of consumer product, for example, cardboard box, shipper, shrink film overwrap

**Shared Responsibility** refers to the equitable distribution of responsibility for managing the environmental impacts of consumer packaging to the most appropriate participants within the packaging supply and recovery chains

Shared responsibility may be achieved through, but is not limited to:

- 🌱 Policies and practices adopted by all participants in the packaging supply chain that contribute to minimising the environmental impacts of consumer packaging
- 🌱 Packaging designed to optimise its resource efficiency, recoverability and recycled content
- 🌱 Local government recovery services for used packaging

**Stakeholder** means any individual, group, company or level of government with an interest in the packaging or packaging waste industry in New Zealand

**Supply Chain** means all of the businesses that participate in creating, distributing and selling consumer packaging and/or products. These include but are not limited to:

- 🌱 Suppliers of raw materials for consumer packaging
- 🌱 Manufacturers of consumer packaging
- 🌱 Suppliers/distributors of consumer packaging
- 🌱 Manufacturers of consumer products
- 🌱 Fillers of consumer packaging, for example, contract packers
- 🌱 Brand owners of consumer products
- 🌱 Wholesalers/distributors of consumer products; and
- 🌱 Retailers of consumer products

**Sustainable Procurement** has been defined by the United Kingdom Government-commissioned Sustainable Procurement Taskforce as ...a process whereby organisations meet their needs for goods, works and utilities in a way that achieves value for money on a whole life basis in terms of generating benefits not only to the organisation, but also to society and the economy, whilst minimising damage to the environment. (Procuring the Future, Sustainable Procurement Task Force, 2006)

**Tertiary Packaging** used to secure or bundle multiples of secondary packaging, for example, pallet wrapping stretch film, shrink film, strapping

**Waste Hierarchy** is a conceptual framework of desirable waste management options - prioritising the avoidance of unnecessary consumption, then its re-use and recycling, and lastly its final disposal

**Whole-of-Life** of packaging encompasses the people and businesses involved in the life of packaging from packaging material manufacture through to recovery and/or final disposal and where raw materials are accounted for from the gates of the packaging manufacturer not earlier

# APPENDIX A - STANDARDS, CODES OF PRACTICE AND GUIDELINES

These are lists of selected standards, codes of practice and guidelines related to packaging. Many of these reflect industry best practice. You should obtain your own advice as to the currency, application and legal status of the documents referred to below, both in New Zealand and in other jurisdictions.

Standards	Reference
Environmental labels & declarations (adoption of ISO 14021:1999)	AS/NZS 14021
Plastic materials for food contact use	AS 2070
Contaminants and Natural Toxicants	FSANZ Food Code 1.4.1
Re-closable Packages: Child resistant packaging	NZS 5825
Transport of Hazardous Substances on Land	NZS 5433
Transportation Containers for Hazardous Substances: small packages	NZS 5418.2
Storage & Handling: Packaged products, agricultural chemicals	AS 2508.10.001
Waste Management, Health Care	AS/NZS 3816
European Packaging Standards	cen.eu/cen/Sectors/Sectors/TransportAndPackaging/Packaging
Packaging Recoverable Through Composting and Biodegradation	EN 13432

Codes of Practice and Guidelines	Reference
Aerosol Manufacture	OSH
Dangerous Goods by Air; Technical Instructions	ICAO
Dangerous Goods Code (IMDG), include 26 - 91	IMO
Dangerous Goods Regulations 33rd 1992	IATA
Labelling Cautionary & First Aid Labelling	MoH
Labelling Hazardous Material	NZ CIC
Material Safety Data Sheet, Guidance for Completion	MoH
Stacking and Storage Guidelines	OSH
Design for the Environment Guidelines 2006	PNZ
Degradable Plastics In New Zealand	PNZ
Code of Practice for the New Zealand Paperboard Packaging Industry	NZPPA
Case Studies in Environmental Sustainability from the Paper Sector	NZPPA
Sustainable Packaging Indicators & Metrics Framework	SPC

## Key:

<b>IATA</b>	International Air Transport Association	<b>OSH</b>	Occupational Safety & Health, New Zealand
<b>ICAO</b>	International Civil Aviation Organisation	<b>PNZ</b>	Plastics New Zealand (Inc)
<b>IMO</b>	International Maritime Organisation	<b>NZPPA</b>	New Zealand Paperboard Packaging Association (Inc)
<b>MoH</b>	Ministry of Health, New Zealand	<b>SPC</b>	Sustainable Packaging Coalition ®
<b>NZ CIC</b>	NZ Chemical Industries Council (Inc)		

# APPENDIX B - REFERENCES AND FURTHER RESOURCES

## General Information

- UK Advisory Committee on Packaging: Packaging in Perspective  
<http://www.mpma.org.uk/docs.200902271506PackaginginPerspectivebooklet.pdf>
- US Pike Research: Sustainable Packaging (Note: charges apply)  
[www.pikeresearch.com/research/sustainable-packaging](http://www.pikeresearch.com/research/sustainable-packaging)
- UK Department for Environment & Rural Affairs (defra) June 2009: Making the most of packaging  
[www.defra.gov.uk](http://www.defra.gov.uk)
- US The ULS Report: A Study of Packaging Efficiency as it relates to waste prevention

## Packaging Design Guidelines

- Australian Packaging Covenant Mk III Draft  
Sustainable Packaging Guidelines Draft, [www.packagingcovenant.org.au](http://www.packagingcovenant.org.au)
- Self-Assessment Review for Food and Drink Manufacturers - Envirowise (UK)
- Packguide: a guide to packaging eco-design, Didcot, Oxfordshire - Envirowise (UK) (2008)
- Sustainable Packaging Coalition (SPC) (2006), Design guidelines for sustainable packaging, SPC and GreenBlue, Charlottesville, USA, [www.sustainablepackaging.org](http://www.sustainablepackaging.org)
- WRAP (2009), A guide to evolving packaging design, WRAP, Banbury, (UK),  
[www.wrap.org.uk/retail/the\\_guide\\_to\\_evolution\\_of\\_packaging\\_design](http://www.wrap.org.uk/retail/the_guide_to_evolution_of_packaging_design)
- Packaging in the Sustainability Agenda: A Guide for Corporate Decision Makers  
ECR Europe, European. [www.ecrnet.org](http://www.ecrnet.org), [www.europen.be](http://www.europen.be)
- UK Packaging Resources Action Group (PRAG) "An Introduction to Packaging & Recyclability" 2009  
[www.wrap.org.uk/retail/tools\\_for\\_change/packaging\\_and.html](http://www.wrap.org.uk/retail/tools_for_change/packaging_and.html)

## Packaging Design and Measurement Tools

- Sustainable Packaging Alliance, Packaging Impact Quick Evaluation Tool (PIQET), - [www.sustainablepack.org](http://www.sustainablepack.org)
- WRAP (2009), UK packaging benchmark database, WRAP, Banbury, UK,  
[www.wrap.org.uk/retail/tools\\_for\\_change/uk\\_packaging\\_benchmark/index.htm](http://www.wrap.org.uk/retail/tools_for_change/uk_packaging_benchmark/index.htm)
- Walmart (US) - Packaging Scorecard - [www.walmartstores.com/sustainability](http://www.walmartstores.com/sustainability)
- GaBi Lifecycle Assessment software (Germany) - [www.gabi-software.com](http://www.gabi-software.com)
- SimaPro Lifecycle Assessment software (Netherlands) - [www.pre.nl/simapro](http://www.pre.nl/simapro)

## Container Geometry Tools

- CAPE Systems (UK/US): Cape Pack program at <http://www.capesystems.com/index.htm>
- TOPS Engineering Corporation (US): TOPS Package Design & Palletization Software  
<http://www.topseng.com/>

## Sustainable Procurement

- Information on Government procurement policy and the Government's Procurement Reform Agenda  
[www.procurement.govt.nz](http://www.procurement.govt.nz)
- The Govt3 programme led by the Ministry for the Environment from 2003-2009 and which included sustainable procurement as a key theme - <http://www.mfe.govt.nz/issues/sustainable-industry/govt3>
- Australian and New Zealand Government Framework for Sustainable Procurement -  
[http://www.med.govt.nz/templates/MultipageDocumentTOC\\_\\_\\_\\_29395.aspx](http://www.med.govt.nz/templates/MultipageDocumentTOC____29395.aspx)
- A guide illustrating the success firms and Government agencies are having with sustainable procurement (also includes tender documents as samples) - <http://www.nzbcsc.org.nz/project.asp?projectid=47>

## Ecolabels and Sustainability Claims

NZ Ministry of Economic Development

[http://www.med.govt.nz/templates/ContentTopicSummary\\_\\_\\_\\_37890.aspx](http://www.med.govt.nz/templates/ContentTopicSummary____37890.aspx)

## International Packaging Organisations

European Organisation for Packaging and the Environment (Euopen) - [www.euopen.be](http://www.euopen.be)

Industry Council for Packaging and the Environment (INCPEN) - [www.incpen.org](http://www.incpen.org)

The Packaging Federation: Trade association for the UK packaging manufacturing industry  
[www.packagingfedn.co.uk](http://www.packagingfedn.co.uk)

Valpak: UK provider of compliance and recycling solutions - [www.valpak.co.uk](http://www.valpak.co.uk)

BERR Department for Business Enterprise & Regulatory Reform: Packaging (Essential Requirements) Regulations  
– Government Guidance Notes December 2008

[http://uk.farnell.com/images/en\\_UK/rohs/pdf/berr\\_guidance\\_jul08.pdf](http://uk.farnell.com/images/en_UK/rohs/pdf/berr_guidance_jul08.pdf)

# APPENDIX C - PERFORMANCE INDICATORS AND ASSOCIATED METRICS

**NOTE: Substrate is the input material that will be converted into a package**

Material Use	
<p><b>Total Material Use</b></p> <p>The mass of all materials used in substrates, packaging components or units of packaging</p>	<ul style="list-style-type: none"> <li>• Metric tonnes/metric tonnes of substrate</li> <li>• Kg/1000 units of packaging</li> <li>• Metric tonnes/yr (based on production rate)</li> </ul>
<p><b>Material Use Reduction</b></p> <p>The mass reduction in material used in substrates, packaging components or units of packaging resulting from design or material innovation</p>	<ul style="list-style-type: none"> <li>• Metric tonnes/metric tonnes of substrate</li> <li>• Kg/1000 units of packaging</li> <li>• Metric tonnes/yr (based on production rate)</li> </ul>
<p><b>Material Waste</b></p> <p>The mass of material waste generated during the production and extraction of raw material and the production and transport of packaging materials, packaging components or units of packaging</p>	<ul style="list-style-type: none"> <li>• Metric tonnes/metric tonnes of substrate</li> <li>• Kg/1000 units of packaging</li> <li>• Metric tonnes/yr (based on production rate)</li> </ul>
<p><b>Virgin Material Use</b></p> <p>The ratio of virgin material used to the total material used in substrates, packaging components or units of packaging</p>	<ul style="list-style-type: none"> <li>• % of total material used/metric tonnes of substrate</li> <li>• % of total material used/1000 units of packaging</li> <li>• % of total material used/yr (based on production rate)</li> </ul>
<p><b>Renewable Material Use</b></p> <p>The ratio of renewable material (virgin and recycled) used to the total material used in substrates, packaging components or units of packaging</p>	<ul style="list-style-type: none"> <li>• % of total material used/metric tonnes of substrate</li> <li>• % of total material used/1000 units of packaging</li> <li>• % of total material used/yr (based on production rate)</li> </ul>
<p><b>Post-Consumer Recycled (PCR) Material Use</b></p> <p>The ratio of post consumer recycled material used to the total material used in the production of substrates, packaging components or units of packaging</p>	<ul style="list-style-type: none"> <li>• % of total material used/metric tonnes of substrate</li> <li>• % of total material used/1000 units of packaging</li> <li>• % of total material used/yr (based on production rate)</li> </ul>
<p><b>Post-Industrial Recycled (PIR) Material Use</b></p> <p>The ratio of post industrial recycled material to total material used in the production of substrates, packaging components or units of packaging</p>	<ul style="list-style-type: none"> <li>• % of total material used/metric tonnes of substrate</li> <li>• % of total material used/1000 units of packaging</li> <li>• % of total material used/yr (based on production rate)</li> </ul>
<p><b>Chain of Custody</b></p> <p>The linked set of organisations, from point of harvest or extraction to point of purchase, that have held legal ownership or physical control of raw materials used in substrates, packaging components or units of packaging</p>	<p>Unknown, known or source-certified</p>
<p><b>Material Use to Product Yield</b></p> <p>The ration of packaging material used to amount of product or product service (eg number of loads of laundry that can be washed per unit of packaged laundry detergent) delivered</p>	<ul style="list-style-type: none"> <li>• Kg packaging material/kg product</li> <li>• Kg packaging material/1000 units of product</li> <li>• Kg packaging material/100 loads of laundry washed</li> </ul>

Community Impact	
<p><b>Recycling of Packaging</b></p> <p>The mass of recyclable packaging discarded from all sources (commercial and residential) that is collected for recycling and is recycled based on national waste management statistics.</p>	<p>Recycling rate x metric tonnes of packaging produced or used</p>
<p><b>Re-use of Packaging</b></p> <p>The number or mass of packaging components or units of packaging (collected from any source) that are reused for the same basic function.</p>	<p># reused/yr (based on annual production rate)</p> <p>Metric tonnes/yr (based on annual production rate)</p>
<p><b>End-of-Life Communications</b></p> <p>Consumer-focused communications (labelling, icons, website etc) to support appropriate end-of-life management of packaging components or units of packaging used.</p>	<p>Yes with substantiating documentation</p> <p>No</p>
<p><b>Product Safety</b></p> <p>The percentage of shipped products recalled for safety issues related to packaging.</p>	<p># products recalled ÷ # products shipped/yr</p>
<p><b>Landfilling of Packaging</b></p> <p>The mass of packaging from all sources (commercial and residential) that goes to a landfill based on national waste management statistics.</p>	<p>Landfill rate x metric tonnes of packaging produced/used</p>
<p><b>Packaging Energy Recovery Rate</b></p> <p>Mass of packaging that is recovered and used for energy generation based on national waste management statistics.</p>	<p>% packaging waste stream/yr</p>
<p><b>Packaged Product Shelf Life</b></p> <p>The ratio of a product's shelf life in packaging to a product's shelf life without packaging.</p>	<p>Months in packaging ÷ months without packaging</p>
<p><b>Community Investment</b></p> <p>The value of investments made in community projects related to packaging such as recycling education programmes or recycling infrastructure development, etc.</p>	<p>\$ / yr</p>
Water Use	
<p><b>Life Cycle Water Consumption</b></p> <p>The total volume of water consumed during the sourcing of raw, recycled and reused materials and the production filling and/or disposal of packaging materials, packaging components or units of packaging</p>	<ul style="list-style-type: none"> <li>• m<sup>3</sup>/metric tonne of final packaging material</li> <li>• Litres/1000 units of packaging</li> <li>• m<sup>3</sup>/yr (based on annual production rate)</li> </ul>
<p><b>Life Cycle Water Used from Stressed Sources</b></p> <p>The volume of water that is drawn from 'stressed watersheds' and used during the sourcing of raw, recycled and reused materials and the production filling and/or disposal of packaging materials, packaging components or units of packaging</p>	<ul style="list-style-type: none"> <li>• m<sup>3</sup>/metric tonne of final packaging material</li> <li>• Litres/1000 units of packaging</li> <li>• m<sup>3</sup>/yr (based on annual production rate)</li> </ul>

Energy Use	
<p><b>Total Life Cycle Energy Intensity</b></p> <p>The total transport and non-transport energy used during the sourcing of raw, recycled and reused materials and the production, filling, transport and/or disposal of packaging materials, packaging components or units of packaging</p>	<ul style="list-style-type: none"> <li>• MJ/kg of final packaging material</li> <li>• MJ/1000 units of packaging</li> <li>• MJ/yr (based on production rate)</li> </ul>
<p><b>Renewable Energy Proportion</b></p> <p>The ratio of renewable energy used to total energy used during the sourcing of raw, recycled and reused materials and the production, filling, transport and/or disposal of packaging materials, packaging components or units of packaging</p>	<ul style="list-style-type: none"> <li>• MJ/kg of final packaging material</li> <li>• MJ/1000 units of packaging</li> <li>• MJ/yr (based on production rate)</li> </ul>
<p><b>Life Cycle Energy Intensity (Non-Transport)</b></p> <p>The total renewable energy used during the sourcing of raw, recycled and reused materials and the production, filling and/or disposal of packaging materials, packaging components or units of packaging</p>	<ul style="list-style-type: none"> <li>• MJ/kg of final packaging material</li> <li>• MJ/1000 units of packaging</li> <li>• MJ/yr (based on production rate)</li> </ul>
<p><b>Life Cycle Non-Renewable Energy Intensity (Non-Transport)</b></p> <p>The total non-renewable energy used during the sourcing of raw, recycled and reused materials and the production, filling and/or disposal of packaging materials, packaging components or units of packaging</p>	<ul style="list-style-type: none"> <li>• MJ/kg of final packaging material</li> <li>• MJ/1000 units of packaging</li> <li>• MJ/yr (based on production rate)</li> </ul>
<p><b>Life Cycle Renewable Energy Intensity (Non-Transport)</b></p> <p>The total renewable energy used during the sourcing of raw, recycled and reused materials and the production, filling and/or disposal of packaging materials, packaging components or units of packaging</p>	<ul style="list-style-type: none"> <li>• MJ/kg of final packaging material</li> <li>• MJ/1000 units of packaging</li> <li>• MJ/yr (based on production rate)</li> </ul>
<p><b>Life Cycle Energy Intensity (Transport)</b></p> <p>The total energy used to transport packaging materials, packaging components or units of packaging</p>	<ul style="list-style-type: none"> <li>• MJ/kg of final packaging material</li> <li>• MJ/1000 units of packaging</li> <li>• MJ/yr (based on production rate)</li> </ul>
<p><b>Life Cycle Non-Renewable Energy Intensity (Transport)</b></p> <p>The non-renewable energy used to transport packaging materials, packaging components or units of packaging</p>	<ul style="list-style-type: none"> <li>• MJ/kg of final packaging material</li> <li>• MJ/1000 units of packaging</li> <li>• MJ/yr (based on production rate)</li> </ul>
<p><b>Life Cycle Renewable Energy Intensity (Transport)</b></p> <p>The total renewable energy used to transport packaging materials, packaging components or units of packaging</p>	<ul style="list-style-type: none"> <li>• MJ/kg of final packaging material</li> <li>• MJ/1000 units of packaging</li> <li>• MJ/yr (based on production rate)</li> </ul>
<p><b>Recovered Latent Energy</b></p> <p>The amount of latent energy stored in packaging material the is recovered and made available again for use</p>	<ul style="list-style-type: none"> <li>• MJ/kg of final packaging material</li> <li>• MJ/1000 units of packaging</li> </ul>

Clean Production and Transport	
<p><b>Toxic Emissions</b></p> <p>The mass of all toxic emissions released to air, water or soil during the sourcing of raw, recycled and reused materials and the production, filling and/or disposal of packaging materials, packaging components or units of packaging</p>	<ul style="list-style-type: none"> <li>• Kg/kg of final packaging material</li> <li>• Kg/1000 units of packaging</li> <li>• Metric tonnes/yr (based on production rate)</li> </ul>
<p><b>Life Cycle GHG Emissions</b></p> <p>The mass of GHGs released to the atmosphere during the sourcing of raw, recycled and reused materials and the production, filling and/or disposal of packaging materials, packaging components or units of packaging</p>	<ul style="list-style-type: none"> <li>• Kg/kg of final packaging material</li> <li>• Kg/1000 units of packaging</li> <li>• Metric tonnes/yr (based on production rate)</li> </ul>
<p><b>Air Emissions</b></p> <p>The mass of non-toxic, non-GHG emissions released to the atmosphere during the sourcing of raw, recycled and reused materials and the production, filling and/or disposal of packaging materials, packaging components or units of packaging</p>	<ul style="list-style-type: none"> <li>• Kg/kg of final packaging material</li> <li>• Kg/1000 units of packaging</li> <li>• Metric tonnes/yr (based on production rate)</li> </ul>
<p><b>Water Emissions</b></p> <p>The mass of non-toxic emissions released to water during the sourcing of raw, recycled and reused materials and the production, filling and/or disposal of packaging materials, packaging components or units of packaging</p>	<ul style="list-style-type: none"> <li>• Kg/kg of final packaging material</li> <li>• Kg/1000 units of packaging</li> <li>• Metric tonnes/yr (based on production rate)</li> </ul>
<p><b>Sulphur Oxides Emissions</b></p> <p>The mass of SO<sub>x</sub> released to the atmosphere during the sourcing of raw, recycled and reused materials and the production, filling and/or disposal of packaging materials, packaging components or units of packaging</p>	<ul style="list-style-type: none"> <li>• Kg/kg of final packaging material</li> <li>• Kg/1000 units of packaging</li> <li>• Metric tonnes/yr (based on production rate)</li> </ul>
<p><b>Nitrogen Oxides Emissions</b></p> <p>The mass of NO<sub>x</sub> released to the atmosphere during the sourcing of raw, recycled and reused materials and the production, filling and/or disposal of packaging materials, packaging components or units of packaging</p>	<ul style="list-style-type: none"> <li>• Kg/kg of final packaging material</li> <li>• Kg/1000 units of packaging</li> <li>• Metric tonnes/yr (based on production rate)</li> </ul>
<p><b>Particulate Matter Emissions</b></p> <p>The mass of PM<sub>10</sub> and PM<sub>2.5</sub> particulate matter released to the atmosphere during the sourcing of raw, recycled and reused materials and the production, filling and/or disposal of packaging materials, packaging components or units of packaging</p>	<ul style="list-style-type: none"> <li>• Kg/kg of final packaging material</li> <li>• Kg/1000 units of packaging</li> <li>• Metric tonnes/yr (based on production rate)</li> </ul>
<p><b>COD Emissions</b></p> <p>The mass of COD emissions released to water during the sourcing of raw, recycled and reused materials and the production, filling and/or disposal of packaging materials, packaging components or units of packaging</p>	<ul style="list-style-type: none"> <li>• Kg/kg of final packaging material</li> <li>• Kg/1000 units of packaging</li> <li>• Metric tonnes/yr (based on production rate)</li> </ul>

<p><b>Suspended Solids Released</b></p> <p>The mass of suspended solids released to water during the sourcing of raw, recycled and reused materials and the production, filling and/or disposal of packaging materials, packaging components or units of packaging</p>	<ul style="list-style-type: none"> <li>• Kg/kg of final packaging material</li> <li>• Kg/1000 units of packaging</li> <li>• Metric tonnes/yr (based on production rate)</li> </ul>
<p><b>Nitrates Released</b></p> <p>The mass of nitrates released to water during the sourcing of raw, recycled and reused materials and the production, filling and/or disposal of packaging materials, packaging components or units of packaging</p>	<ul style="list-style-type: none"> <li>• Kg/kg of final packaging material</li> <li>• Kg/1000 units of packaging</li> <li>• Metric tonnes/yr (based on production rate)</li> </ul>
<p><b>Environmental System Management Use</b></p> <p>An EMS is in place for all operations related to the sourcing of raw, recycled and reused materials and the production, filling and transport of packaging materials, packaging components or units of packaging</p>	<p>Yes with substantiating documentation</p> <p>No</p>
<p><b>Energy Audits Conducted</b></p> <p>An energy audit is conducted for all operations related to the sourcing of raw, recycled and reused materials and the production, filling and transport of packaging materials, packaging components or units of packaging</p>	<p>Yes with substantiating documentation</p> <p>No</p>

<b>Cost and Performance</b>	
<p><b>Total Cost of Packaging</b></p> <p>The total cost of all materials, energy, equipment and direct labour used during the sourcing of raw, recycled and re-used materials and the production, filling, transport and/or disposal of packaging materials, packaging components or units of packaging</p>	<p>\$/Kg of final packaging material</p> <p>\$/1000 units of packaging</p> <p>\$/year based on production rate</p>
<p><b>Packaging Service Value</b></p> <p>The ratio of packaged product value to packaging value</p>	<p><math>\\$ \text{ of packaged product} \div \\$ \text{ of packaging}</math></p>
<p><b>Selling Unit Cube Efficiency</b></p> <p>The ratio of packaged product volume to the selling unit packaging volume</p>	<p><math>\text{Volume of packaged product} \div \text{volume of packaging used to display and sell the packaged product to a consumer}</math></p>
<p><b>Transport Packaging Cube Efficiency</b></p> <p>The ratio of total selling unit packaging volume to transport unit packaging volume</p>	<p><math>\text{cm}^3 \text{ of total selling unit packaging} \div \text{cm}^3 \text{ of pallet load}</math></p>
<p><b>Packaged Product Wastage</b></p> <p>The value of packaged product lost due to packaging failure</p>	<p><math>\\$ \text{ of packaged product} + \\$ \text{ of packaging lost} / 10,000 \text{ units of packaging}</math></p>

## References

Sustainable Packaging Indicators and Metrics Framework, Sustainable Packaging Coalition®, 2009.  
[www.sustainablepackaging.org](http://www.sustainablepackaging.org)

**It is important to refer to this document for advice on what to measure and what not to measure**

# APPENDIX D - PACKAGING DESIGN CHECKLIST FOR ALL NPD AND EXISTING PACKAGING REVIEW

(NOTE: For member's of the Packaging Council of New Zealand's Packaging Product Stewardship Scheme, discussions around this checklist need to be documented and recorded in Appendix E to meet reporting requirements.)

## 1. Packaging Functionality:

Packaging should be designed to meet market and consumer needs while minimising net environmental impact in a cost effective way

Y/N/Detail

<b>Meet Technical Performance Requirements</b>	Spoilage, Theft, Shelf Ready Packaging, Technology Trends	
<b>Meet Consumer Needs and Expectations</b>	Smaller Portion, Tamper Evidence/Hygiene, Special Needs Packaging, Closed Loop Packaging, End-of-Life options, Litter	
<b>Use of Appropriate Materials</b>	Materials from Renewable Sources, Degradable Material, Modified Atmosphere Packs	
<b>Labelling and Symbols to Help Re-use, Recovery and Recycling</b>	On-pack information, Plastic resin codes, Symbols	

## 2. Resource Efficiency:

Packaging should be designed to minimise the use of materials and other resources without compromising product quality and safety and economic viability

Y/N/Detail

<b>New Product Development (NPD) Process</b>	Is the packaging necessary?	
	Is the geometry of the container optimised to minimise packaging material?	
	Is the volumetric capacity of the container optimised with the volume of contents?	
	Is the packaging 'over-engineered' i.e. uses excessive materials for its requirements?	
	Is it feasible to complement an existing refillable container range?	
	What are the considerations for product integrity/functional requirements for storage?	
	Can this packaging format eliminate the requirement for or optimise reusable secondary/tertiary packaging?	
	What are the considerations for product integrity/functional requirements for retail?	
<b>Existing Packaging Review</b>	Is it possible to down gauge material (i.e. lightweighting)?	
	Through product redesign (e.g. concentrates) can packaging be redesigned to use less material?	
	Is it feasible to replace several smaller packages with one larger packaging format?	
	Have suppliers and customers been involved in the design/re-design to find ways to minimise packaging?	

<b>Existing Packaging Review</b>	Can this new packaging format eliminate the requirement for secondary/tertiary packaging?	
	Is the product suited to a bulk re-usable transit packaging system?	
<b>Minimise Materials</b>	Optimise combination of primary, secondary and tertiary packaging	
<b>Transportation (Supply Chain) Efficiencies</b>	What is the potential for distribution network efficiencies?	
	Maximise shipping space - 'Cubing Out'	
	Have alternative distribution systems been explored for their potential to reduce total packaging system?	
<b>Water &amp; Energy Efficiencies</b>	Do you have a process for monitoring and continuous improvement in place for water?	
	Do you have a process for monitoring and continuous improvement in place for energy?	

### 3. Low Impact Materials:

Packaging should be designed to minimise the environmental and social impact of materials and components. Materials should be selected incorporating a whole-of-life approach

Y/N/Detail

<b>Re-Usable Packaging</b>	Does the infrastructure exist to support collection and re-use?	
	Will this system comply with all relevant hygiene and Health and Safety Regulation including weight restrictions and cleanliness?	
	Is the environmental benefit justified when the entire system is assessed?	
	Is there a potential for secondary re-use if not for original purpose?	
<b>Post Consumer Recycled Materials</b>	What is the potential for 'tainting' characteristics?	
<b>Recyclable Materials</b>	Is the packaging made from a single material or is readily separated?	
	Is the material suitable for collection in the New Zealand context?	
	Will additives, adhesives, coating, inks etc affect the recyclability of the material?	
	Closures, sleeves, carry handles etc - will these need to be removed prior to recycling?	
<b>Materials from Renewable Sources</b>	What definition of 'renewable sources' are you using?	
	Is the material independently certified to be from renewable sources?	
	Do you understand the manufacturing process of these materials?	

<b>Materials from Renewable Sources</b>	Do you understand the final disposal options for these materials?	
<b>Degradable Materials</b>	Do you understand the technical characteristics of these materials? Including 'bonded' materials	
	If the material is compostable has it been certified to EN13432?	
	What steps have been taken to distinguish these materials from 'traditional' plastics to avoid contaminating those recycling streams?	
	Is a closed loop system feasible to avoid material going to landfill?	
<b>Risks Associated with Hazardous Materials</b>	Do these materials comply with all relevant legislation for both local and export markets?	
	Has consideration been given to the effect these materials will have if discarded in a reckless way?	
	Has consideration been given to the effect these materials will have if they go into a landfill operation which is not designed to prevent breakdown of materials and/or has methane capture technology?	
<b>Locally Sourced Materials</b>	Is a 'closed loop' system feasible for this material?	
<b>Materials from Responsible Suppliers</b>	Do you have evidence of supplier commitment to product stewardship principles and/or environmental management systems?	

## 4. End-of-Life Options:

Packaging should be designed to minimise the environmental and social impacts of its disposal

Y/N/Detail

<b>Recovery for Recycling Purposes</b>	Is consultation necessary to provide details on which materials are collected in which region?	
<b>Recovery for Composting Purposes</b>	Does the material meet recognised composting standards, for example EN13432?	
<b>Energy Recovery</b>	Would the material be suitable for a waste to energy technology providing all other options from re-use and recycling have been exhausted?	
<b>Landfilling</b>	Has consideration been given to the effect these materials will have if they go into a landfill operation where they may degrade aerobically and/or anaerobically?	

# APPENDIX E - REPORTING TEMPLATE

This should be used to record qualitative data to meet the requirements of the Packaging Council of New Zealand's Packaging Product Stewardship Scheme Key Performance Indicator, which requires members of the scheme to adopt the Code and provide evidence of how it is being implemented.

<b>Key Principle</b>	<b>Detail key qualitative benefits which demonstrate how your activities will result in direct waste minimisation or minimised the environmental impact of packaging. Where possible, provide case study examples from projects or initiatives.</b>
<p><b>1. Functionality:</b></p> <p>Packaging should be designed to meet market and consumer needs minimising net impact in a cost effective way</p>	
<p><b>2. Resource Efficiency:</b></p> <p>Packaging should be designed to minimise the use of materials and other resources without compromising product quality and safety and economic viability</p>	
<p><b>3. Low Impact Materials:</b></p> <p>Packaging should be designed to minimise the environmental and social impact of materials and components. Materials should be selected incorporating a whole-of-life approach</p>	
<p><b>4. Resource Recovery:</b></p> <p>Packaging should be designed to minimise the environmental and social impacts of its disposal</p>	