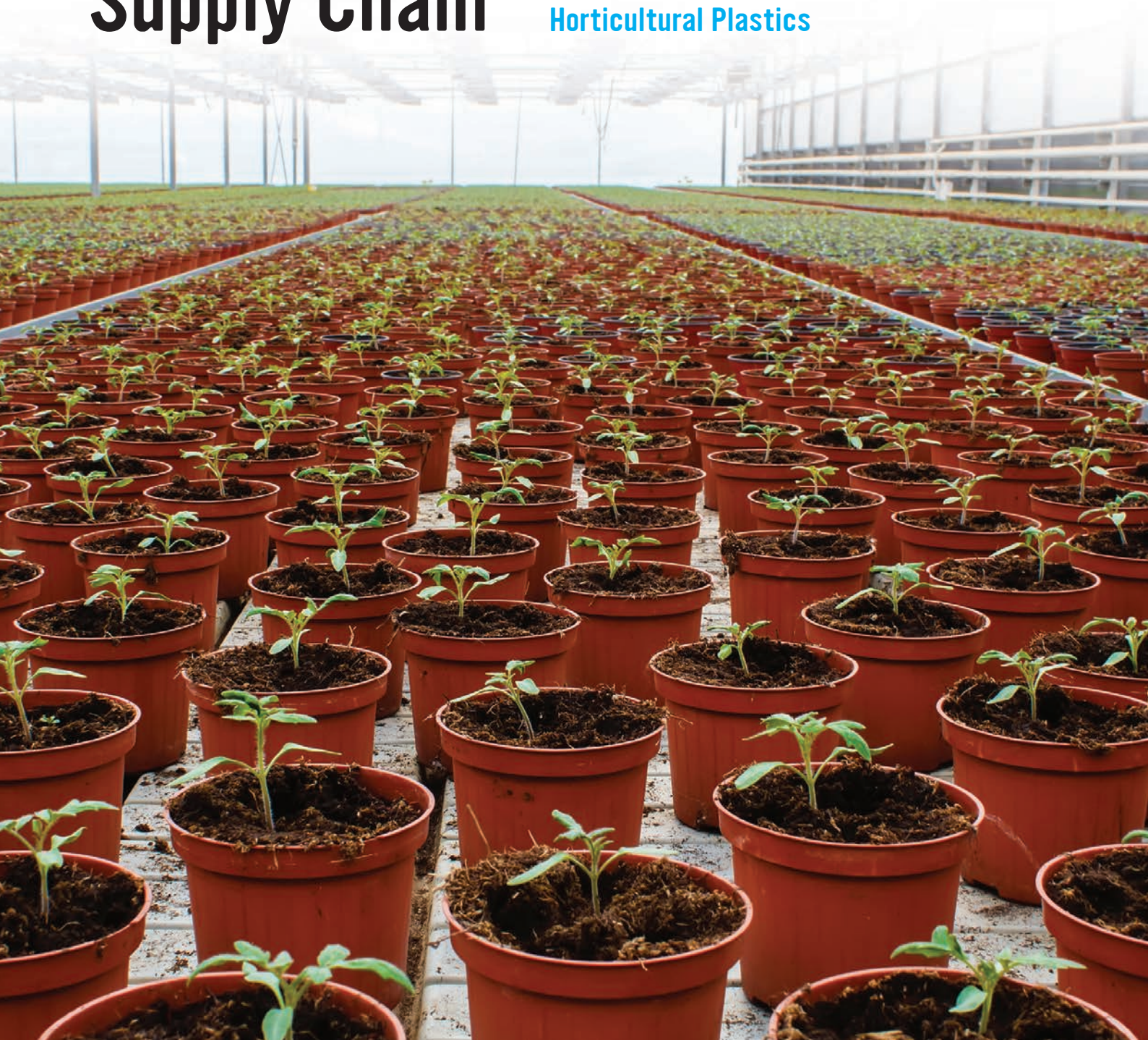


DISCUSSION DOCUMENT

Managing Plastics in the New Zealand Plant Production Supply Chain

Transitioning to a Circular Economy for
Horticultural Plastics



“Waste is one of the greatest challenges of our time. Aotearoa New Zealand is one of the highest generators of waste per person in the world. We use too much, waste too much and pollute too much”.

- Ministry for the Environment 2021



Purpose

This paper is a strategic 'think piece' about waste in the New Zealand plant production supply chain.

The purpose of the paper is to prompt discussion on how our industry should respond to changes in regulation and industry practice in the way we manage plastics and waste. It signals the need for significant change in how we source and manage plastics using a circular approach and to propose the establishment of an NZPPI Advisory Committee to guide our strategic work in this area.

Background

Sustainability and waste have moved to the forefront of our industry strategy with increasing political and social pressure driving action to reduce plastic waste from our products and supply chains.

The global plastics industry has hit a crunch point. Responding to a sudden and drastic import ban on recycling material into China in 2016, Governments globally have acted quickly with incentives and regulations to reduce and deal with waste locally.

Heightened public concern about the environmental and resource impacts of single use plastics is driving government and business to respond. Among the targets, plant pots in particular have attracted significant media coverage.

Our industry is aware of this change and the need to take action to respond. This is a complex, adaptive challenge that will require leadership to guide change in how we do things. Some have already taken action with recycling initiatives and research programmes underway to reduce and reuse plastics in our supply chains.

To support our industry in this critical area NZPPI has applied for funding to progress work to design and implement a solution for our industry and we are proposing to establish an Advisory Committee to oversee this work.

Introduction

Waste within the plants supply chain is in the spotlight. There is a strong message to our industry that the large quantities of plastics from items like plant pots, labels and trays need to be reused, rather than going to waste in landfill.

Addressing this is a high priority with a clear direction from NZPPI's Members and stakeholders that they are wanting to make progress. Without a credible solution and urgent action this issue risks negatively impacting our industries credentials and social license. Our members also think this is the right thing to do and this is the right time to do it.

Our industry is in a phase of significant growth, with plant production estimated to be increasing at a rate of 15% - 20% year. (NZPPI data). This growth is welcome but is driving an increasing volume of plastic waste.

Managing plastics in our complex supply chain is challenging. Recovering the vast quantities of pots from around the country is costly and in many cases impractical. Processing the material and turning it back into pots will require a different ways of thinking and doing business.

Despite the challenges there is already progress being made to remove plastic inputs and to design and establish recycling programmes.

These initiatives are expected to become the norm and NZPPI is wanting to open a discussion within our industry about what the future looks like in this area and how we can better manage plastics in our supply chains.

What has happened so far?

- An influential report published in 2016 by the Ellen MacArthur Foundation, titled "**The New Plastics Economy: Rethinking the future of plastic**"¹, highlights the benefits of plastic and proposes that it is valued and managed so it never becomes waste. This approach is part of a **global circular economy** that has become the context for change in this area.
- In 2018 the New Zealand Government signed the international declaration – the New Plastics Economy Global Commitment – led by the Ellen MacArthur Foundation and the United Nations. Government policy covering waste is now based on the Circular Economy approach.
- NZPPI is working with the Australian industry, through their relationship with Greenlife Industry Australia (GIA), APCO & the ANZPAC Plastics Pact to contribute to and learn from the work they have underway to design a recycling scheme for polypropylene pots, trays & labels in Australia.
- In July 2020, the NZ Government established new regulations that will require plastic plant pots, trays and labels to be part of a Government approved product stewardship programme (a recycling scheme) by July 2023.
- In August 2021 the Ministry for the Environment released the **National Plastics Action Plan** which describes a "**Product Stewardship**" framework for industries to establish schemes to enable them to meet the new regulations.
- In October 2021 the Government opened up a consultation on its Waste Strategy, seeking input into the design of new approaches and legislation to eliminate plastic waste within 30 years.
- The **Plastics Innovation Fund** opened on 2 November. NZPPI will submit an application for funding to provide the resources to progress the design and set of schemes in our industry.
- NZPPI is recommending that our industry begins to act now to implement an industry framework for waste, starting with plastic packaging (this document).

What materials are we dealing with?

Since the 1970's plastics have been an important enabler of the growth and efficiency of the plant production industry.

Today, more than 2/3 of the estimated 400 million seedlings grown in New Zealand are in plastic containers, with the exceptions being forestry seedlings (100 million), fruit trees / vines (5-10 million) for horticulture and around 1 million field grown shrubs and trees.

The versatility of plastic makes it an ideal material for plant pots. There is vast amounts of research going into finding new materials to replace plastics in horticulture but there are currently few that surpass the quality and durability of plastic.

Plastic pots are typically made of four different resin types, including high density plastics, (HDPE#2), low density polyethylene (LDPE #4), polypropylene, (PP#5) and polystyrene (PS#6). Of these materials, poly propylene (PP #5) is by far the most common used in plastic trays and containers.



Horticultural plastics:

Type	Code	Uses
High Density Polyethylene (HDPE)	#2	Irrigation tube, shade cloth, pond liners, root barrier.
Low Density Polyethylene (LDPE)	#4	Growbags, greenhouse film, mulching film, alkathene pipe.
Polypropylene PP	#5	Plant pots, propagation trays, labels, stakes.
High Impact polystyrene (HIPS)	#6	Propagation trays.

The Focus on Polypropylene (#5)

As polypropylene (PP) is the dominant material for horticulture packaging, stewardship schemes in similar industries overseas have focussed on this material first in order to have the biggest impact. This focus does not mean that other solutions are ignored, but it acknowledges that there are few scalable alternatives available today.

The PP polymer has properties that make it suitable for a circular approach. Importantly, it doesn't degrade during reprocessing meaning it

can be used many times.

Also, the demand for PP recyclate is currently high, which helps the business case for collecting and reusing the material. Another advantage is that PP is not on the Government's phase out list of hard-to-recycle materials.

There are several challenges to address with horticultural packaging, including a lack of standardisation, the inability for black plastic pots to be detected and collected in the municipal recycling system and the need to recover pots from across the country, including remote areas. Solving these issues will require new thinking and redesigning the current system.

In Australia, the industry association Greenlife Industry Australia (GIA) has partnered with the ANZPAC Plastic Pact to deliver the Polypropylene Plant Packaging & Recycling programme (PoPPR). This is a two year programme to design a Product Stewardship programme for PP pots, trays and labels in Australia.

The PoPPR programme has four key targets:

1. Eliminate unnecessary and problematic packaging
2. 100% of plant packaging is reusable, recyclable or compostable by 2025
3. Increase recycling by 25%
4. Average 25% recycled material in plant packaging

This is the first programme in our region that deals with horticultural packaging and will provide learning opportunities for our industry as they work through the challenges like collection and product stewardship frameworks. To enable this learning, NZPPI is part of the PoPPR Steering Group, which provides leadership and advice to the programme.



Alternative Materials

Developing and adopting alternatives to petroleum based plastic materials is a significant area of research in the industry. Of note is the work undertaken at Scion over more than 10 years, focussed on developing bioplastics for a range of uses in horticulture.

These materials have the benefit that they can be planted directly into soil, or disposed of in domestic or industrial composting facilities.

A range of biodegradable materials are coming onstream, including the rapid adoption of paper systems, (e.g. Ellepot) which is rapidly replacing tonnes of plastics within the plant propagation and growing process.

New forms of bioplastics are becoming available that have the same properties as petroleum based plastics but are derived from renewable resources, like plant resins.

Despite the increasing range of new products entering the market, bioplastics still make up less than 1% of the market (Scion data). Plant producers are actively trialling options that suit their production systems and customer requirements but a barrier to adopting these new materials is that modern nursery equipment is designed for plastic pots. The investment required to implement new equipment to handle alternative materials is significant.

There are some promising research results but plastic alternatives have a range issues including fungal growth, durability and water retention. These need to be addressed before plastic alternatives become a viable, scalable solution. Scion research estimates that new materials will begin to come in stream over the next decade.



The Emerging Regulatory Framework

In 2022 we will see significant changes to the Waste Minimisation Act to phase out, or regulate a wide range of plastics.

The Government has already announced measures to phase out a list of plastic items by 2025 including straws, plastic cutlery etc, PVC food packaging, polystyrene packaging and produce bags.

In July 2020, the Government announced six products to be declared 'priority products' for the establishment of regulated product stewardship schemes under the Waste Minimisation Act 2008 (WMA). New rules will discourage or prevent the importation of plastic items for single use, or that are not part of a recognised Product Stewardship programme. Plastic plant pots, trays and labels are included in this framework, meaning that there is possibly a 3 – 5 year timeframe to set up a recognised recycling scheme.

The newly regulated products are:

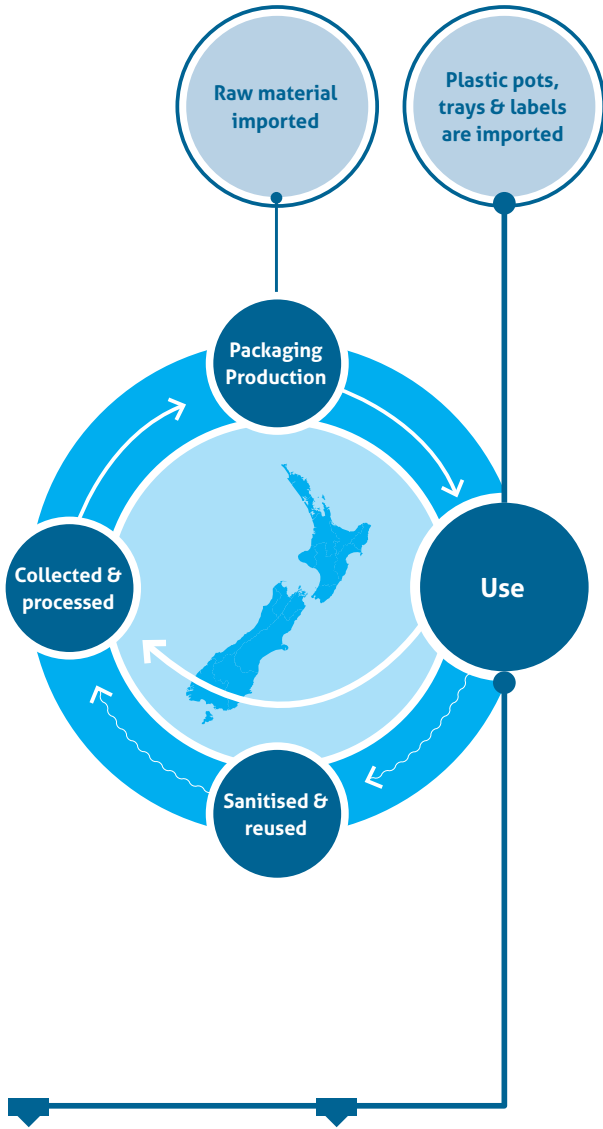
- plastic packaging
- tyres
- electrical and electronic products (e-waste including large batteries) agrichemicals and their containers
- refrigerants
- farm plastics.

It is yet to be considered if PP horticultural packaging is best managed as part of the regulatory framework for plastic packaging, or farm plastics as they can sit in either category. This is something that our industry should consider, noting that we use pots across forestry, native plants, fruit and vegetables and well as garden retail.



The Current State

● Off shore ● Onshore



Store/ Stockpiled

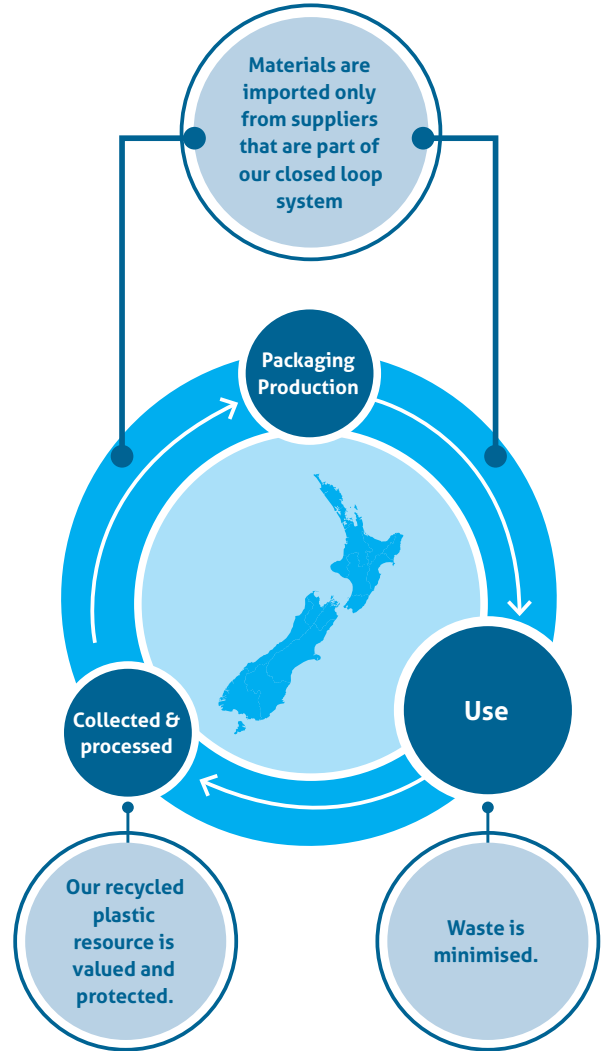
Pots trays and label remain in nurseries and home sheds and may be reused, or remain in storage.

Landfill

Most plastic pots, trays and labels are sent to landfill as they are unable to be captured in the council recycling system.

The Future State

● Off shore ● Onshore



The whole framework is recognised as an Accredited Product Stewardship Programme

Plastics are used less

Technology, including paper pots and novel materials, like bioplastics, provide opportunities to progressively remove plastics from our supply chains.

Plastics are diverted from landfill

Few plastic pots, trays and labels are sent to landfill as they are able to be recovered in council recycling systems.

A Circular Approach

By signing the international **New Plastics Economy Global Commitment**, the New Zealand Government has joined other UN countries to commit to establishing a **Circular Economy for plastics**.

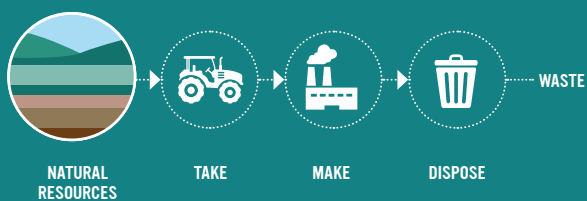
This approach aims to eliminate unnecessary plastics and prevent plastics that remain in use going to waste or landfill. The Circular Economy is now the basis for the Government's policy framework for waste and will feature heavily in policy and investment in other areas.

The Circular Economy includes the following principles:

- Design products and systems that remove waste, pollution and emissions.
- Eliminate unnecessary use of materials.
- Keep high value materials, like polypropylene, in use.
- Regenerate natural systems, so the environment is healthy for future generations.
- Take responsibility for the past, present and future condition of our natural environment.
- Think in systems, where everything is interconnected.
- Deliver equitable and inclusive outcomes.

Product Stewardship & the Circular Economy

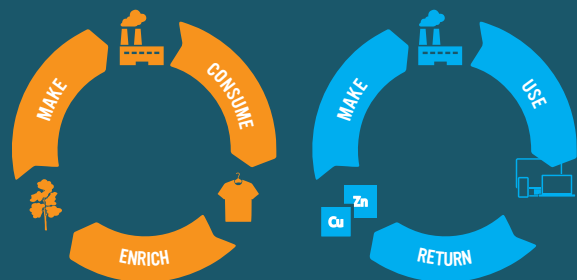
Linear economy



Technical & biological materials mixed up

Energy from finite sources

Circular economy



Biological materials

Technical materials

Energy from renewable sources

“The one-directional (linear) life cycle of a product from natural resources is Take-Make-Dispose-Waste. Products can have technical and biological materials mixed up. Energy is from finite sources. The circular (continuous) economy includes the biological materials Make-Enrich cycle and the technical material Make-use-return cycle. Energy is from renewable sources”.

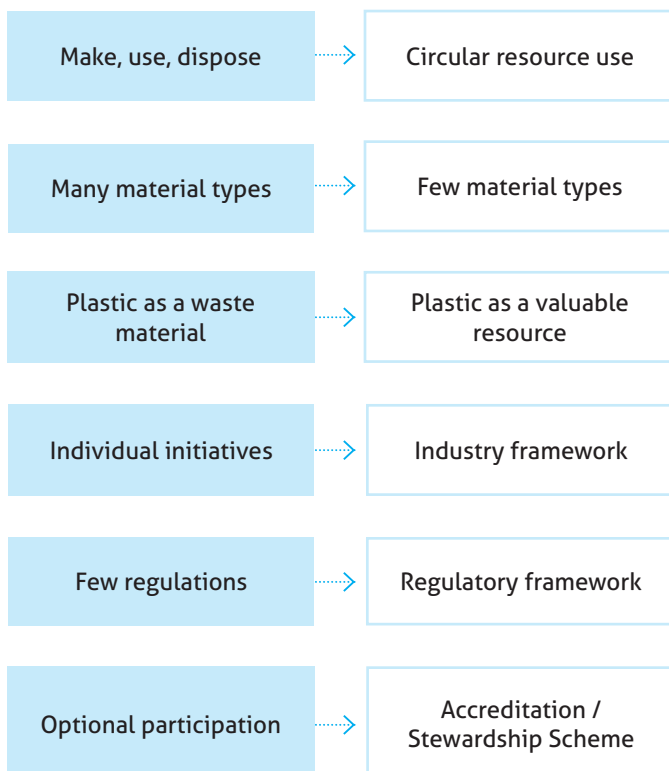
- Ministry for the Environment 2021

How we see the Future

- A partnership is in place that drives plastic stewardship in the industry
- The volume of plastic waste going to landfill is reducing in all parts of the supply chain
- The portion of recycled plastic in pots, trays and labels is increasing
- It's easy to recycle plastic pots, trays & labels
- Our industry reputation is enhanced as we are part of the new circular economy
- There is opportunity for businesses that participate
- Our plastics framework is an Accredited Product Stewardship Programme
- Research and innovation is underway into new materials (1- 10 years)

The Strategic Shifts Required

From To



Bringing this together will require:

1. Gaining a collective understanding and agreement on our goals
2. Rallying industry leaders and reaching out to others that are on the same mission
3. Finding the resources, know-how and funding needed
4. Designing and developing the business and operating models
5. Committing to a plan and executing it.

Getting the Ball Rolling

We are already off to a good start as many NZPPI members & supporters have sustainability and waste reduction engrained in their strategies. In order to support these initiatives and to encourage others onto the journey we now need to bring this together at an industry level.

Getting the ball rolling requires us to bring together the specialist knowledge that exists across our industry, the Government and organisations like the Agrecovery Foundation, the Australian Packaging Covenant Org (APCO) & the ANZPAC Plastics Pact.

Pulling these groups together will enable us to generate the best ideas to design and develop the new operating models we will need and the resources and funding to get the work done.

Initiatives that are Underway



Mitre 10 Pot Recycle Scheme

In November 2021 Mitre 10 launched its 'Pot Recycle' scheme, in conjunction with Recycling Group, Pact Plastics and Zealandia Horticulture. Pot Recycle is a closed loop system for plastic ID5 garden plant and seedling pots, diverting them from landfill and reducing the amount of new plastic used. Customers also have the ability to take pots or send them to be recycled.



Closed Loop Plastics Scheme – Garden City Plastics (GCP)/ Daltons

GCP has worked with APCO to develop and pilot its Closed Loop Plastics scheme to recover and reuse polypropylene plant pots from nurseries, landscapers and home gardeners. GCP is working with Daltons in NZ to include pots recovered in NZ in the scheme.



Kings Plant Barn – Swap a Pot & Label Recycling Stations

Kings have installed collection boxes for pots and labels at each of their stores. The scheme encourages customers to drop off pots they don't need, while customers looking for a pot can collect one. Recyclable plastic is used in items like fence posts, raised garden beds, etc.



PoPPR project (Australia)

Similar frameworks are already in place overseas. The Australian Greenlife industry is piloting their 'PoPPR' scheme and the Horticultural Trades Assn in the UK launched a nation-wide plant pot recycling scheme in 2019.

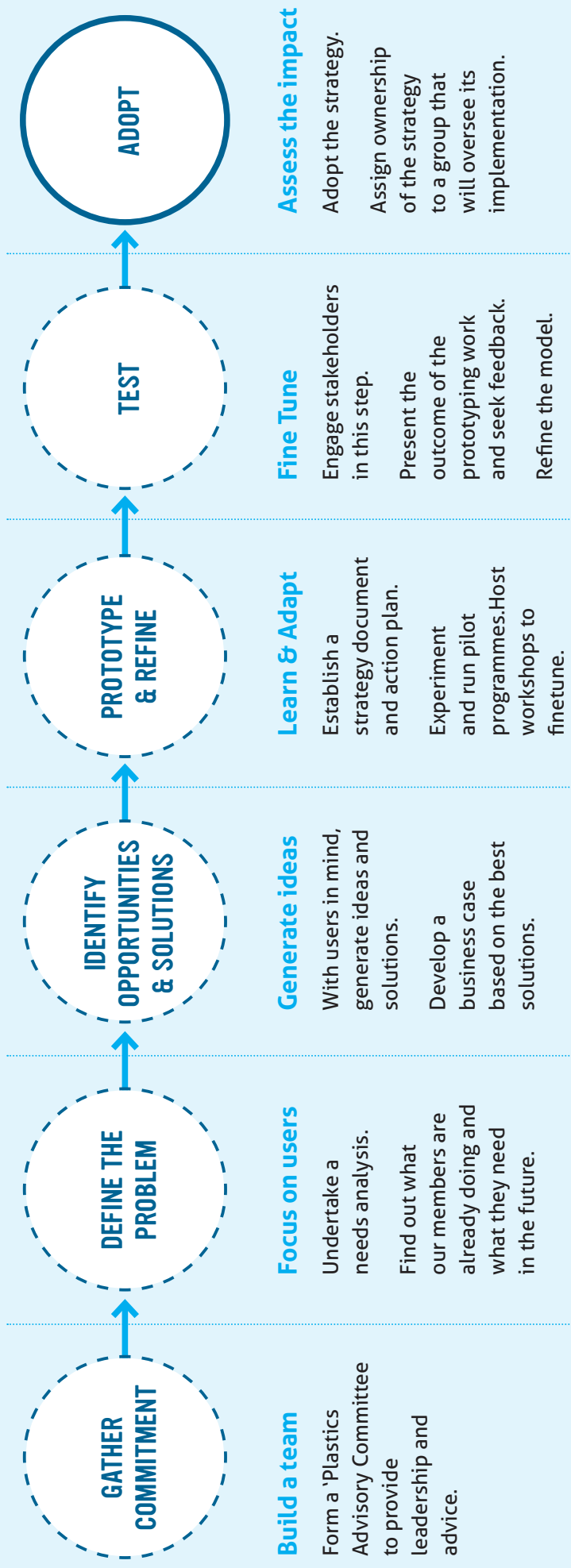


Agrecovery Foundation

In New Zealand, the Agrecovery Foundation has a key leadership role Product Stewardship Programmes the New Zealand Primary industries. Agrecovery has well established national network for plastic recovery and recycling.

ROADMAP

PROCESS



RESOURCES

Source funding Secure funding from the Waste Minimisation Fund and other sources.	Leadership A Plastics Advisory Committee for leadership and advice.	Stakeholders Build a network of stakeholders within our industry, in other industries & countries.	Adopt a culture of innovation Develop ideas and seek out the best ones to pursue.	Integrity Seek recognition of the framework as an Accredited Product Stewardship programme under the Waste Minimisation Act.
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Our Members

Our work is made possible through the funding & support of our members, who are at the centre of everything we do.

Changing how we source and use plastics in our industry requires everyone to get involved.

Please support the businesses that are contributing to this work and encourage others to become involved so that we can all move forward together.

PRODUCER MEMBERS

Acers Unlimited NZ Limited
 Allwood Trees Limited
 Alter-Natives Nursery & Landscaping
 Ambrosia Nurseries Ltd
 Annton Nursery Ltd
 Appletons Tree Nursery Ltd
 Arcadia Plants
 Ardmore Nurseries Ltd
 Awhitu Landcare
 Baker Boys Wholesale Nursery
 Bambina Rose NZ Ltd
 Beaumont's Nurseries Ltd
 Black Bridge Nurseries
 Blue Mountain Nurseries
 Butler Nursery
 Clarks Nursery
 Clevedon Nurseries
 Coastlands Plant Nursery Ltd
 Colorworx Nursery Ltd
 Container Nurseries Ltd
 Easy Big Trees Ltd

Erlon Limited
 Evandale Gardens
 Fern Factor Ltd
 Forevergreen Seedlings Ltd
 Fruitcraft New Zealand Ltd
 Full Bloom Nursery Ltd
 Garden Barn Ltd
 Goodfeed Limited
 Growing Spectrum New Zealand Ltd
 Hahei Plants Ltd
 Hamlin Nurseries Ltd
 Harrisons Country Gardenworld
 Harrisons Trees 2020 Ltd
 Hook Bush Nursery (2019)
 Horohoro Native Tree Nursery
 Icon Trees
 Infracore
 Islington Gardens
 Kaipara Coast Plant Centre
 Kaipatiki Project
 Kauri Park Nurseries Ltd
 Kentia Palms
 Kereru Gardens
 Kericell Nursery
 King's Plant Barn
 Kiwi Colour Ltd
 Kiwiflora Nurseries
 Korimako Habitats Ltd
 Kotare Subtropicals
 Kumano Environmental
 Kumeu Garden Hub
 Landscape Essentials
 LE Cooke Nurseryman Ltd
 Leacroft Nurseries Ltd
 Lifetech Laboratories Ltd
 Liner Plants NZ Ltd
 Lowlands Nursery
 Lyndale Nurseries Auckland Ltd
 Lynwood Avocado Nursery Ltd
 Magnolia Grove
 Mangawhai Natives
 Maryflower
 Millfield Nursery
 Minginui Nursery
 Moores Valley Nurseries
 Murrays Nurseries (2011) Ltd

Native Garden Nursery
 NativeAwa Ltd
 Naturally Native New Zealand Plants (2013)
 Natures Creation Ltd
 New Zealand Delphiniums
 Nga Rakau Nurseries Ltd
 Nga Uri o Hau Native Nursery
 Norfolk Road Nursery Ltd
 Nudo
 NZ Native Plant Nursery
 OE Nursery Wanganui Prison
 Opihi Nurseries Ltd
 Ormond Nurseries Ltd
 Palm Garden Limited
 Palmers Head Office
 Plant Hawke's Bay
 Porirua City Council
 Pukerau Nursery
 Rainbow Park Nurseries Ltd
 RhodoDirect
 Riversun Nursery Ltd
 Rural Design 1984 Ltd
 Sanctuary Mountain Maungatautari
 Scott Base Nurseries
 Scrub Growers Ltd
 Southern Woods Nursery Ltd
 Stanmore Farms
 Striks Nurseries
 Tawa-Glen Nursery
 Tawapou Coastal Natives
 Te Horo Ornamentals
 Te Karanga Nurseries Ltd
 Tharfield Nursery Ltd
 The Gorge Nursery
 The Little Big Tree Company
 Titoki Nursery Ltd
 Totara Glen Nurseries
 Treeline Native Nursery
 Trents Nursery Ltd
 Twining Valley Nurseries
 Van Lier Nurseries Ltd
 Vibrant Earth Ltd
 Vine Nursery New Zealand Ltd
 Waimea Nurseries Ltd
 Weka Nurseries
 Zealandia Horticulture

INDUSTRY PARTNERS

Acacia Bay Nursery	Mitre 10 Onehunga	Lyndale Custom Mix Limited
Advanced Hort Ltd	Mitre 10 Opotiki	Mitre 10 Mega Albany
Aeroview Garden Centre (2013) Ltd	Mitre 10 Otorohanga	Mitre 10 Mega Ashburton
Auckland Council (Botanic Gardens)	Mitre 10 Papamoa	Mitre 10 Mega Botany
Aussie Winners Pty Ltd	Mitre 10 Taumarunui	Mitre 10 Mega Cambridge
Berhampore Nursery	Mitre 10 Te Anau	Mitre 10 Mega Dunedin
Biogrow (2013) Limited	Mitre 10 Te Puke	Mitre 10 Mega Ferrymead
Bloomfields Garden Centre	Mitre 10 Waihi	Mitre 10 Mega Glenfield
Campbell's Garden Centre	Mitre 10 Waiuku	Mitre 10 Mega Greymouth
Carine Garden Centre & Water World	Mitre 10 Westport	Mitre 10 Mega Hastings
Cazna (NZ) Limited	Mitre 10 Whakatane	Mitre 10 Mega Henderson
Church Street Garden Central	Mitre 10 Whangaparaoa	Mitre 10 Mega Hornby
Clareville Nursery and Garden Centre	Mitre 10 Winton	Mitre 10 Mega Invercargill
Concept-Botanica Ltd	Needful Things - Home & Garden	Mitre 10 Mega Kapiti
Country Dog Garden Centre	New Plymouth District Council, Pukekura Park Fernery	Mitre 10 Mega Manukau
Data Harvest	Ouruhia Nursery Ltd	Mitre 10 Mega Marlborough
David King - Plant Nursery Consultant	Outer Space Landscape Company	Mitre 10 Mega Masterton
Eastwoodhill Arboretum	Outside In	Mitre 10 Mega Mt Wellington
Fairfield Garden Centre	Pacifica Home and Garden	Mitre 10 Mega Napier
Fiordland Nurseries and Mower Centre	Palmers Welcome Bay	Mitre 10 Mega Nelson
Flora and Co	Payless Plants	Mitre 10 Mega New Lynn
FRANKLIN AGRITECH	Place for Plants	Mitre 10 Mega New Plymouth
Garden Edge	Plant & Food Research	Mitre 10 Mega Palmerston North
Geraldine Garden Centre	Plant Zone Direct	Mitre 10 Mega Papanui
Get Growing Garden Supplies Ltd	Plantorama Nursery	Mitre 10 Mega Petone
GoodToGrow NZ Ltd	Plants on the Move Ltd	Mitre 10 Mega Porirua
Green Harvest Pacific Ltd	Primary Industry Training Organisation	Mitre 10 Mega Pukekohe
Greenleaf Plant Centre	Redwoods Garden Centre	Mitre 10 Mega Queenstown
GREENROOT	Roselands Pets & Plants	Mitre 10 Mega Rangiora
Greymouth Garden Centre	Selmes Garden Centre	Mitre 10 Mega Rotorua
Groconut Ltd	Sunhill Garden Centre	Mitre 10 Mega Ruakura
Grow Landscape & Lifestyle	Syngenta Flowers	Mitre 10 Mega Takani
Growell Ornamental Plants	Te Ngahere Ltd	Mitre 10 Mega Taupo
HEDGE Garden Design & Nursery	The Garden Depot	Mitre 10 Mega Tauranga
Invercargill City Council Nursery	The Garden Depot Levin	Mitre 10 Mega Te Awamutu
Just Plants Limited	The Garden Depot Napier	Mitre 10 Mega Te Rapa
Kaimai Garden Centre	The Garden Shop	Mitre 10 Mega Upper Hutt
Kii Tahī Limited	The Reference Publishing Co Ltd	Mitre 10 Mega Wanganui
KingGrapes Ltd	The Tree Company Limited	Mitre 10 Mega Warkworth
Kiwi Flora Ltd	Toi Ohomai Institute of Technology	Mitre 10 Mega Westgate
Limb to Limb Tree Care Limited	Transflora	Mitre 10 Mega Whangarei
Mackie's Garden Centre	Tranzplants (2008) Ltd	Norwood Ind Pty Ltd
Masons Garden Centre & Nursery	Tuaropaki Trust	Palmers Albany
Mitre 10 (NZ) Ltd	Tumbleweed Coastal Plants Ltd	Palmers Bethlehem
Mitre 10 Alexandra	Wal's Plant Land	Palmers Frankton
Mitre 10 Beachlands	Wanganui Garden Centre	Palmers Miramar
Mitre 10 Beckenham	Warren Engineering Ltd	Palmers New Plymouth
Mitre 10 Crofton Downs	Woodend Nurseries	Palmers Pakuranga
Mitre 10 Cromwell	YouthGrow Garden Centre	Palmers Pimmerton
Mitre 10 Dannevirke	Aorangi Bulb Nurseries Ltd	Palmers Remuera
Mitre 10 Feilding	Big Jim's Garden Centre	Palmers Rotorua
Mitre 10 Gisborne	Blueskin Nurseries Ltd	Palmers St James
Mitre 10 Gore	California Home and Garden	Palmers Whangarei
Mitre 10 Helensville	Decor Gardenworld	Plantarama Garden Centre
Mitre 10 Kaitaia	Egmont Seed Company Ltd	Portstone Garden Centre
Mitre 10 Kerikeri	Gammans-Granulated Bark & Potting Mix	Puniu River Care
Mitre 10 Martinborough	Green Door Garden & Gifts	Springvale Garden Centre
Mitre 10 Marton	Headford Propagators	T&G Global
Mitre 10 Matamata	Hire Plants Ltd	Terra Viva Home & Garden
Mitre 10 Morrinsville	ICL	The Urban Garden
Mitre 10 Motueka	Intelligro	Twigland Gardeners World
Mitre 10 New Plymouth	Kiwi Labels Ltd	Daltons Ltd
Mitre 10 Oamaru	Lushingtons Garden Gift & Café	TNZ Growing Products Ltd

Notes:

1. World Economic Forum and the Ellen MacArthur Foundation, "The New Plastics Economy: Rethinking the future of plastics" *19 January 2016*.
2. John Anthony Gardeners' guilty secret: Plant nursery trials sustainable plastic pot alternative www.stuff.co.nz, *Mar 28 2021*.
3. Leslie Hook and John Reid, "Why the world's recycling system stopped working". *Financial Times*, *October 25, 2018*.



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