To the:

Ministry for the Environment

On:

Reducing the Impact of Plastics on Our Environment
Moving Away from Hard-to-Recycle and Single-Use Items

4 December 2020

Submission by:

PLASTICS NZ
NEW ZEALAND'S INDUSTRY ASSOCIATION

Industry Association
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This submission is on behalf of the New Zealand plastics industry and its customers. It is also specifically endorsed by the following companies.

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1 Introduction:

Plastics New Zealand is the trade organisation representing the New Zealand plastics industry. Our Membership comprises over 190 businesses including manufacturers, suppliers, recyclers (reprocessors), brand-owners and consultants to the industry. The industry has a broad range of company sizes from very large corporates to small enterprises.

Our Members are impacted by all aspects of this consultation. As specific Members will experience different impacts from the proposals, particularly in relation to the economic impacts, we have recommended that individual companies also make their own submissions. Some of the companies endorsing this submission may also send in their own to cover off specific points.

Please also see the separate submission from our EPS Sector Group detailing the specific impacts of the proposed blanket ban on EPS packaging.

Plastics NZ would welcome the opportunity to discuss our submission with MfE in more detail and will also engage directly with the relevant Ministers regarding certain elements of these proposals.

2 Our Approach to this Consultation

This scope of this consultation is very broad, covering three entire categories of material application and Single-Use Products (SUP). As the review of the consultation document was carried out, it was apparent that some significant assumptions were made from combining the analysis of material phaseouts and SUP bans together, as though they can be treated the same way. This is not the case as the impacts are different for each class, and sometimes sub-class, of material.

The following feedback on the consultation is therefore divided into categories with each of the materials and SUPs considered separately. This ensures that the information is clear, and the analysis is not confused by combining opposing impacts.

3 Problem Description

Q1: Do you agree with the description in this document of the problems with hard-to-recycle plastic packaging and single-use plastic items? If not, why?

In part only. The consultation presents an oversimplified view of the problem and does not adequately consider all aspects of the issues at hand. A number of substantive errors are also made.

We do not agree with designation of the EPS packaging used in cold chain supply chains & as protective packaging as 'difficult to recycle'.

3.1 Narrow Focus

The discussion of a 'low waste future' without linkage to a low-emissions circular economy shows a narrow focus. Without the low emissions component built firmly into the strategy there is a real risk of unintended environmental harm. This is evidenced by focusing on plastic materials and single-use-plastic items rather than all single-use packaging and assisting people to move away from single-serve convenience.

3.2 EPS is not always 'difficult to recycle'

The consultation presents an oversimplified view of the problem and lumps kerbside collected rigid polystyrene together with takeaway containers and EPS packaging used for product protection and in cold-chain supply lines. Please see the Plastics NZ EPS Sector Group submission for additional details on this matter. In summary however:

- There is no problem finding offshore markets for polystyrene if the material is separated and in sufficient quantity. It is a valuable material with many uses. As an example, Plastics News shows post-consumer polystyrene pellet as having a value of $2.11NZD/kg, 70% higher than the value of coloured HDPE[1].
- The NZ EPS manufacturers prevented over 150,000 cubic metres of polystyrene going to landfill in 2019 (1,200 tonnes) through their recycling efforts and are actively increasing this in 2020. A large portion of this material went back into NZ-made EPS products rather than offshore.
- There is plenty of scope for Extended Producer Responsibly (EPR) or product stewardship for the packaging materials used in cold-chain supply lines and for protective packaging.

3.3 Plastic as a 'major source of pollution'

We acknowledge that there is an issue with leakage and littering of plastics into our ecosystem. A significant amount of work needs to occur to resolve the issues with infrastructure, littering and our linear economy.

The consultation document implies a strong link between the types of plastics used and the amount of plastic pollution in the environment. This link is tenuous at best.

Moving away from difficult-to-recycle materials in the NZ plastics economy will assist with improving sorting and recycling of NZ plastics. However, phasing out of materials is extremely unlikely to change behaviours and reduce the amount of pollution as this does not address the root causes of the leakage and littering. Work programmes are instead needed to prevent leakage from our waste management systems, to enforce littering bylaws, and to clean-up existing leakage from substandard land-fill sites.

> **Recommendation #1:**
> Implement work programmes focused on preventing leakage from our waste management systems, enforce littering bylaws, and to clean up existing materials leaked from substandard landfill sites.

3.4 Plastics and Climate Change

The consultation draws some erroneous conclusions regarding plastics and climate change. The statement *The plastics industry's consumption of oil is projected to increase to 20 per cent of total annual oil production by 2025* is based off a report from the World Economic Forum[2] which in turn references the IEA, World Energy Outlook 2014[3] report. As the worlds understanding of issues around climate change and plastics have increased, there have been significant changes over the last five years. Review of more recent reports indicates that plastics are approximately 44% of petrochemicals market with the rest being nitrogen fertilisers and other chemical products[4]. Chemical feedstocks increase from 12% of total oil demand in 2017 to 16% in 2050[5]. With 44% contribution the plastics industry's consumption of oil is therefore approximately 7% of total oil demand in 2050, not 20%.

[1] https://www.plasticsnews.com/resin/currentPricing/recycled-plastics
[2] World Economic Forum 2016 *The New Plastics Economy: Rethinking the future of plastics, Geneva* http://www3.weforum.org/docs/WEF_The_New_Plastics_Economy.pdf
[3] IEA (2014), World Energy Outlook 2014, IEA, Paris https://www.iea.org/reports/world-energy-outlook-2014
[4] IEA (2018), The Future of Petrochemicals, IEA, Paris https://www.iea.org/reports/the-future-of-petrochemicals, Figure 2.3
[5] IEA (2018), The Future of Petrochemicals, IEA, Paris, Figure 4.6

The claim that *plastics will be responsible for up to 15 per cent of the total 'carbon budget' by 2050* references Geyer, Jambeck and Law (2017)[6]. This report does not discuss this matter. The author perhaps meant to reference the 2019 *Plastic and Climate*[7] report from CIEL which claims that plastics could reach 10-13% of the carbon budget remaining to ensure temperatures remain at or below a 1.5°C rise. This report obfuscates plastics with petrochemicals calling into question the veracity of the basic data. It also ignores the impact of moving from plastic to alternative materials. Plastic is strong and lightweight. Alternative materials are nearly always thicker and heavier. A report by Franklin Associates in 2018[8] showed that global warming potential would increase two to three times if plastic packaging was switched out for alternative materials.

Plastics are also a critical enabler of the technologies required to meet New Zealand's Zero Carbon 2050 goals. This includes the technology enabling renewable energy use for wind and solar and electric vehicles of all types.

Recommendation #2:
Stop looking at plastics in isolation and focusing on end-of-life only. All human activity has environmental impact. Start analysing impacts from a cradle-to-cradle perspective for all materials or products within the system.

3.5 Problems with recyclability and design

The consultation document discusses the problems with recyclability and design. There are some errors within this:

- Polypropylene (PP, #5) has a very strong end market in New Zealand and is fully viable for onshore reprocessing.
    - Discussions with our Members have shown that 5 of Plastics NZ's members could each utilise the entire volume of NZ's post-consumer PP packaging in a single product. One of these is actively looking at the option of importing post-consumer PP bales into NZ for reprocessing.
    - Two of NZ's reprocessors are already recycling post-consumer PP onshore and a third will begin over the next few months.
- Both LDPE and PP have reasonably strong markets offshore if they are collected and sorted correctly. The issue here is not with the materials, but with NZ's waste management infrastructure.
- The statement that polystyrene is difficult to recycle due to limited offshore markets is incorrect, as discussed in Section 3.2. The challenge with rigid polystyrene is the separation and the quantity, not the offshore market.
- There is an error in the implication that EPS is carcinogenic. Please see EPS Sector Group submission for further discussion.

[6] Geyer, Roland & Jambeck, Jenna & Law, Kara. (2017). Production, use, and fate of all plastics ever made. Science Advances. 3. e1700782. 10.1126/sciadv.1700782. https://www.researchgate.net/publication/318567844_Production_use_and_fate_of_all_plastics_ever_made

[7] Plastics & Climate, The hidden costs of a plastic planet, CIEL https://www.ciel.org/wp-content/uploads/2019/05/Plastic-and-Climate-FINAL-2019.pdf

[8] Life Cycle Impacts of Plastic Packaging Compared to Substitutes in the United States and Canada, Franklin Associates for ACC, 2018, https://plastics.americanchemistry.com/Reports-and-Publications/LCA-of-Plastic-Packaging-Compared-to-Substitutes.pdf

The discussion on single-use plastic items entirely misses the point that the main issues are with the 'single-use' aspect of the packaging, not the plastic itself. The focus should be on all single-use-packaging rather than the material to avoid unintended consequences.

4 Objectives

Q2: Have we identified the correct objectives? If not, why?

No – the focus is too narrow.

4.1 Main Objective

While the main objective is laudable in intent, the focus is too narrow. The emphasis should be on reducing the environmental and economic impacts of unnecessary waste within the NZ system.

Restricting the objective to 'reducing the amount in use' biases the analysis. While there is a definite need to consider the higher levels of the waste hierarchy, remove unnecessary packaging, and to redesign both our packaging and our system to ensure circularity, the importance and function of effective packaging should not be forgotten. Such a narrow focus on only the end-of-life portion of environmental footprint, is likely to lead to increases in food waste or product damage. The loss of the contents of the packaging has a far more significant environmental impact than the packaging itself. By focusing narrowly on plastics, the proposals almost guarantee increased emissions.

Recommendation #3:

Change main objective to *Reduce the environmental and economic impacts of unnecessary waste within the NZ system.*

4.2 Secondary Objectives

There is an assumption that changing materials will lower the amount of litter and improve resource management. However, there is nothing in the proposals indicating planned action around litter prevention and behaviour change (e.g. education and enforcement). As plastic pollution is a result of poor waste management systems and/or human behaviour, there will be no reduction from simply changing materials. It will simply morph into a different format.

The 'lower risk of environmental damage' is highly debatable. Cradle-to-cradle analysis shows the alternatives often use more energy and water to manufacture, and have higher global-warming, acidification, and eutrophication potential than the plastic option. When considering all environmental impacts, rather than narrowly focusing on the end of life, plastic is often the optimal option.

5 Options for Consideration & Criteria

Q3: Do you agree that these are the correct options to consider? If not, why?

Yes – although an additional option should be added.

The options as presented appear to be the correct ones to consider. However, a ninth option should be added:

Option 9: Mandatory agreement with industry and business

An agreement which producers must engage with, would ensure a level playing field and participation by all. Specific targets could then be developed collectively with industry and government, ensuring ongoing progress towards circular economy goals.

Q4: Have we identified the right criteria (including weightings) for evaluating options to shift away from PVC and Polystyrene packaging, oxo-degradable plastics, and some single-use items? If not, why?

In part – as overall objective is too narrow in focus, so are the criteria.

As the focus of the main objective is too narrow, the 'Effectiveness' criterion is also too narrow. This focuses only on elimination, or significant reduction. The focus of this criterion should be the elimination or reduction of waste ending up in landfill or as litter. The narrow focus of this criterion immediately biases the analysis.

The rest of the criteria are reasonable when considered in the context of the scope. However, in the context of what we feel the objectives should be (see Section 4.1), then the criteria are too narrow.

Recommendation #4:

Modify the criteria to match revised objective proposed in Recommendation #3

6 Assessment of the Options

Q5: Do you agree with our assessment of the options, and our decision to take forward only one option (a mandatory phase-out)? If not, why?

No – the assessment has not been carried out correctly in our view

There are several issues with the way the assessment has been carried out. The first relates to the criteria used to make the assessment. While the criteria, and the weighting used, are suitable, the decisions have been made without adequate information. The consultation asks questions about the costs and impacts of the proposals. However, significant and inaccurate assumptions on both of these have been made in order to reach the conclusion that mandatory phase-out is the preferred option.

The second problem with the assessment is the way that phase-outs of entire material categories have been combined with bans on specific single-use items. Each material phaseout has different effectiveness and costs. The same is likely for each single-use plastic item. This analysis should therefore have been carried out for each item in the consultation separately, as different results are likely for each.

It is also misleading to have an *'? Unknown or no evidence'* score for certain options when the largest unknown factor relates to the costs of the various options; a criterion that has had specific costs applied for all options.

The following summary in Table 6.1 provides separated assessment for each material type in scope, excluding oxo-degradables. The full details, including table, for each assessment can be found in Appendix 1. This assessment has been carried out by Plastics NZ and is based on discussions with the industry, and other impacted parties, about the impacts of these proposals.

The oxo-degradable phaseout is not reanalysed. The oxo-degradable materials form a very small piece of the NZ plastics ecosystem therefore it is not cost-effective to focus on any options other than mandatory phase-out. Global movement away from these materials is also strong both in terms of the plastics industry and governments.

PVC packaging has been split into rigid and flexible packaging for separate analysis as they are different in terms of both use applications and end-of-life options. The analysis also assumes full coverage of all PVC packaging, not just that used in for food & beverage. This is necessary to prevent PVC packaging contaminating other recycling streams either via kerbside recycling or via the soft-plastics stewardship scheme. The majority of PVC packaging is outside of the food & beverage space.

Polystyrene has been split into three categories for analysis; rigid polystyrene such as that used for yoghurt six-packs, EPS used for food and beverage sold in supermarkets and in the hospitality sector (e.g. foamed takeaway containers, meat trays), and EPS used for cold-chain supply lines (e.g. seafood and vaccines) and protective packaging (e.g. whiteware and other heavy electronics).

Single-Use Plastic items are analysed together.

The following has been applied to all assessments:

- '? Unknown' score has been changed to 'Minimal' for the Effectiveness and Alignment assessments and 'Neutral' for Cost.
- Effectiveness is redefined to ask *Will the option advance the elimination or reduction of the packaging [material\product] ending up in landfill or littered?* This realigns the analysis to the unbiased objective of eliminating unnecessary waste as outlined in Section 4.1.
- When assessing the options as to whether they are achievable without new legislation or amending legislation it is strange to see an assessment of 'somewhat' achievable for voluntary agreements and reduction targets. These are achievable under current legislation. These are therefore changed to 'yes'. New option 9 (mandatory agreement) set as 'no' as unsure about this.

Recommendation #5:

Ensure analysis of materials (including sub-categories), and any single-use items is carried out on an individual basis, utilising all information gathered on actual costs to industry, thereby ensuring accuracy of assessment.

6.1 Summary of Assessments

Table 6. shows the results of the reassessment carried out by Plastics NZ for each of the material phaseouts and single-use-plastics (oxo-degradables excluded). The full details of these assessments can be found in Appendix 1.

The reassessment of each category separately confirms that mandatory phase-out is the leading option for PVC packaging, EPS food and takeaway packaging, and the single-use-items within scope. However, the reassessment also shows the following:

- For rigid polystyrene packaging - product stewardship is shown to be equivalent to mandatory phaseout
- For EPS used in cold-chain supply lines and as protective packaging – product stewardship is the best option with mandatory phaseout coming 5th.

Table 6.1 Reassessment Results

Category	1. Voluntary agreement / pact	2. Reduction targets	3. Labelling requirements	4. Levy / tax	5. Product stewardship	6. Mandatory phase-out	7. Mandatory recycled content	8. No change (ad hoc voluntary action)	9. Mandatory agreement with targets
Original Assessment	*6th*	*3rd =*	*7th*	*3rd =*	*2nd*	*1st*	*3rd =*	*8th*	*N/A*
PVC – Rigid	3rd =	3rd =	8th	5th	9th	1st	7th	6th	2nd
PVC – Flexible	3rd =	3rd =	8th	5th	9th	1st	7th	6th	2nd
PS – Rigid	4th =	4th =	9th	6th =	1st =	1st =	8th	6th =	3rd =
EPS – Food	4th =	4th =	7th =	2nd	9th	1st	6th	7th =	3rd
EPS – Cold Chain & Protection	3rd =	3rd =	9th	7th	1st	5th =	5th =	8th	2nd
Single-Use Items	4th =	4th =	9th	2nd	7th	1st	6th	8th	3rd

Recommendation #6:

For rigid polystyrene packaging covered in phase 2 (e.g. yoghurt pottles) - remove from kerbside collection but fully investigate product stewardship as an alternative option alongside mandatory phaseout. This should include economic analysis based on actual impacts to F&B manufacturers rather than assumed impacts.

Recommendation #7:

Pursue formalised product stewardship for EPS packaging used in cold-chain supply lines and as protective packaging for heavy electronics. Mandatory phaseout is not suitable based on separated analysis and the alternatives are not viable replacements. The packaging is already included under the scope of the 'plastic packaging' priority product category.

The consultation document discusses mandatory phaseout as '*addressing the top of the waste hierarchy (refuse and reduce)'*. This an overstatement as the proposals do not include specific actions to encourage reuse. There is a huge assumption that businesses will take the opportunity to look at reuse models. However, the hospitality sector has been incredibly hard hit by Covid and will be further hit with pending minimum wage increases, increased sick leave provisions and annual holiday entitlements. These businesses are unlikely to have the funding, or the energy, to investigate and trial reuse options without significant incentivisation.

It is also stated that a mandatory phaseout will '*create a level playing field for manufacturers, suppliers and retailers'.* This is true to a point. However, these changes are impacting a competitive market that is broader than plastic packaging. By focusing only on plastics and not single-use packaging creates competitive disadvantages for plastics manufacturers. In this situation Government has a substantial degree of power in the market. Under Section 36(2)(b) of the Commerce Act 1986, a party having this level of power in a market must not take advantage of that power for the purpose of preventing or deterring a person from engaging in competitive conduct in that or any other market. It is our view that the focus on plastics rather than all single-use packaging actively prevents some plastics manufacturers from engaging in competitive conduct.

Claiming that a mandated phase-out will *lead to less litter, and cleaner waterways and oceans* is also an overstatement. This may be true for some of the single-use-plastic items. However, changing the type of material the packaging is made from will not lead to less litter. Litter and leakage from waste-management systems is not the fault of the material but the fault of the system and the people using it. It's time we looked for the root cause of the problems and stop blaming the plastic. We wouldn't blame a tree blown over in a storm so why do we blame the plastic for being disposed of incorrectly.

7 Phase Out Hard-To-Recycle Plastics – PVC & Polystyrene

PVC and Polystyrene are not single material categories.

- PVC is a material that ranges from fully rigid to fully flexible. This wide variance, and the different end-of-life destinations mean that these need to be dealt with separately in discussion.

- Polystrene covers several different categories; rigid polystyrene (e.g. yoghurt 6-packs), EPS food and takeaway containers/cups and the EPS packaging used for cold chain supply lines and as protective packaging. Each of these are quite different and need to be dealt with separately in discussion.

Q6: Do you agree with the proposed phase-out of PVC and polystyrene packaging as set out in two stages (by 2023 and 2025)? If not, why?

In part only. Different materials need different timeframes. Mandatory phaseout is also not the preferred option in all cases as discussed in Section 6

Q7: Have we identified the right packaging items that would be covered by a phase-out of PVC and polystyrene packaging? If not, what would you include or leave out, and why?

In part only. Different coverage is needed than that proposed. See discussion below for each material type.

Q8: Do you think we should include all PVC and hard polystyrene packaging in stage 2 of the phase-out (e.g. not just food and beverage and EPS packaging).

For PVC and rigid polystyrene – yes.

We do not agree with the inclusion of cold-chain and protective EPS packaging in the phaseout.

Q9: What would the likely costs or benefits of phasing out all PVC and polystyrene packaging (hard polystyrene and EPS by 2025?)

See analysis in Section 6 and Appendix 1 for each material. This has been carried out with coverage across all consumer-facing sectors in mind. The primary benefit of phasing out all PVC and rigid PS packaging for materials able to be reprocessed in NZ is the removal of plastics from landfill as this is where #3 and #6 plastics are heading.

Q10: Do you believe there are practical alternatives to replace hard-to-recycle packaging (PVC, polystyrene, and EPS)? If not, why?

Yes for PVC – rigid PVC packaging can be replaced by PET. Flexible PVC packaging can be replaced by multi-laminate, multi-layer material able to be accepted in the soft plastics recycling scheme.

In part for rigid PS – alternatives are theoretically available. However, these all require changes to packaging formats and possibly product formulation (in food space). To implement alternatives will take significant capital expenditure, and a long period of R&D, testing and regulatory compliance activities.

Yes for EPS used as food packaging and in hospitality. Alternatives are readily available.

No for EPS used in cold-chain supply lines and protective packaging (e.g. seafood, vaccines, whiteware). Please see discussion below and in separate submission from EPS Sector Group.

Q13: Have we identified the right costs and benefits of a mandatory phase-out of the targeted plastics? If not, why? Please provide evidence to support your answer.

No – see analysis in Section 6 and Appendix 1. Costs have been significantly underestimated for the phaseout of rigid polystyrene and the EPS used for cold-chain supply lines and protection.

Q14: How likely is it that phasing out the targeted plastics will have greater costs or benefits than those discussed here? Please provide details to explain your answer.

Very likely to have greater costs – see answer to Q13

Q15: What would help to make it easier for you and your family, or your business/organisation to move away from hard-to-recycle plastic packaging and use higher value materials or reusable/refillable alternatives?

Access to funding to assist transition away from hard-to-recycling packaging. A national plan to transition NZ to a low-emissions circular economy is also required to ensure integrated and systemic planning across all material types, covering all aspects of the waste hierarchy.

7.1 Rigid PVC

The proposal removes all food and beverage items that contain PVC packaging by January 2023.

NZ manufacturers began moving away from rigid PVC to PET several years ago. The majority of remaining rigid PVC packaging could be converted to PET within the proposed timeframe. The NZ plastics industry is ready for this change.

The main concern with rigid PVC is the small scope of the coverage. The main aim of moving away from rigid PVC is to eliminate it from kerbside collections and from contaminating the PET recycling stream. By focusing on food and beverage packaging, the majority of rigid PVC packaging is left out as this is in the wider consumer-retail space. PVC packaging is very common across all retail packaging including for toys, cosmetics, hardware items, manchester, and other consumer goods.

As a large portion of the non-food & beverage packaging is imported, a focus on F&B only provides a disadvantage to local manufacturers, without addressing the waste issue. Costs would be incurred without achieving the objectives of the phaseout.

One particular type of PVC packaging may need to be exempted in the short term. This is the PVC used for single-dose medication blister-packs. PVC is the most common blister packaging material due to its low cost. Changes in this packaging could result in price increases for end-users with no net environmental benefit. These blister packs are non-recyclable in NZ as they are sealed with a lidding material typically made from a foil or paper laminate. This laminate stays on the paper making it difficult to recycle. A complete packaging format, away from blister packs, would be required to fully remove the PVC. Something that would require significant regulatory compliance activities to achieve as well as requiring customer behaviour change. It also potentially disadvantages a sector of society who needs their medication portioned in a clear and safe manner.

Recommendation #8:

Expand scope for rigid PVC to include all packaging, thereby ensuring intent of phase-out is achieved (i.e. removal of PVC from kerbside). There should be no time difference in the phase-out of the packaging in the F&B space vs general retail as the majority of rigid PVC packaging is outside of F&B.

Recommendation #9:

Consider an exemption for PVC used in single-dose medication blister-packs.

7.2 Flexible PVC

The proposal removes all food and beverage items that contain PVC packaging by January 2023.

This packaging is not accepted at kerbside but may contaminate the soft-plastics recycling scheme. PVC is not accepted within this scheme (including PVDC coatings).

It is important to note that PVC/PVDC has unique properties in providing both a moisture and gas transmission barrier. All other materials used in packaging provide only one of these. This means that any replacement of PVC in flexible applications is likely to require a multi-layer, multi-material film. Alternatives may also result in an increase in the total amount of plastic to achieve the same performance. While likely more acceptable in the soft-plastics scheme, this is not a foregone conclusion. Phasing out of PVC/PVDC for flexible packaging may reduce the amount of packaging ending up in landfill but this is not guaranteed.

Flexible PVC is also used extensively used outside the food and beverage space. For some items, such as cosmetics, the same gas and moisture transmission properties are important. For many others PVC is selected because it is cheap, strong and has excellent transparency to showcase the

product. A very large portion of this packaging is imported into NZ on finished product. Any phase-out would therefore need to cover all flexible PVC packaging to be effective.

While a mandated phase-out would remove this packaging as a potential contaminant and from landfill, it is unclear as to whether the cost-benefit is there for proceeding. The costs of changing the packaging are high for business (see Section 6 and Appendix 1), and the costs of monitoring and enforcing the change across all imported packaging and finished products would likely be high.

> **Recommendation #10:**
> Expand focus to all flexible PVC packaging but carry out a cost-benefit analysis to determine if the benefits of proceeding outweigh the costs of not changing.

7.3 Rigid Polystyrene (PS)

Stage 1 (January 2023)

The proposals identify 'some' polystyrene food and beverage packaging to be phased out by January 2023. The rigid PS items included in this time frame are PS cups, sushi packaging, PS trays and casings used for confectionary and other items.

NZ manufacturers are already moving away from the type of packaging covered by stage 1 and there are viable alternatives on the market. Some applications may require longer implementation times than others but overall, the proposed timeframe is acceptable.

It should be noted that a lot of the rigid PS packaging covered by Stage 1 is used in the hospitality sector and is imported into NZ in bulk. It is not unusual for a hospitality business to buy in a pallet-load of packaging, very cheaply, that is expected to last several years. The plastic bag ban showed this tendency from the hospitality and retail sectors as many were left with pallet loads of bags from offshore suppliers. Plastics NZ fielded many calls on this and understands that a large amount of this material ended up in landfill.

The impacts of Covid-19 may well have exacerbated this issue due to lower sales in hospitality businesses than expected. It is important to gather information on the amount of packaging that needs to be run-out before a date is placed on this. The hospitality sector has been impacted badly by Covid. A poorly timed ban could result in businesses having to scrap owned packaging, paying for landfill costs, while also having to pay more for replacement packaging. The alternatives are often more expensive as polystyrene is relative cheap and can be formed with very thin walls.

> **Recommendation #11:**
> Consult with the retail and hospitality sectors to determine the amount of packaging in the system and determine phase-out timeframes based on allowing existing stock to be used up.

Stage 2 (January 2025)

The proposals identify 'all remaining' polystyrene food and beverage packaging to be phased out by January 2025. This includes the rigid PS containers used to package chilled dairy products.

As discussed in Section 6 mandatory phase-out is not the only option that should be considered for rigid PS packaging. The costs of changing are extremely high. Product stewardship may also be a viable option that achieves the objective without creating undue costs for business and the community.

Brands and manufacturers are working on alternatives to this rigid PS packaging already. However, the timeframe may be problematic. While 2025 sounds a long way off, four years is a relatively short

time for the amount of activity that needs to occur. With global supply chains in shambles, the lead times for materials, tooling and equipment from international suppliers will also extend timeframes.

Rigid PS is strong and can be formed into very thin wall sections. It also has great 'snap' properties allowing for the creation of the six-pack yoghurt format. The majority of rigid PS packaging covered by this Stage is manufactured on form-fill-seal lines where the packaging and product manufacture occur in the same operation. This is heavily automated, high-speed equipment. Both the packaging and the product formulation are designed specifically for the process. Changing away from this requires most, if not all, of the following:

- Research into alternative materials and packaging formats
- Product reformulation to suit new packaging and achieve required shelf-life
- Redesign and prototyping of new packaging
- Heat treatment testing; sterilisation, UHT, pasteurization etc.
- Preliminary performance and safety testing
- Process equipment replacement/modification; procuring, ordering, shipping, validation
- New tooling development
- Stock build ready for line changeover
- Line changeover & commissioning
- Final product testing; transport testing, shelf-life
- Stock build for release & logistics back-fill
- Customer engagement on release to ensure no loss of market share with changes
- Iteration if tested packaging formats do not meet all requirements.

To avoid unfairly penalising companies that are making genuine efforts to utilise packaging in a more circular manner, we recommend investigation into product stewardship as well as a mandated phase-out as discussed in Section 6.1 Recommendation #6. If mandated phase-out goes ahead, we strongly recommend allowing flexibility on the January 2025 timeframe.

Recommendation #12:

As per our analysis Mandatory Phaseout is not the only option for rigid PS phase-2 packaging. Product Stewardship should be discussed with producers and manufacturers.

Recommendation #13:

If a mandated phase-out proceeds for all rigid PS by 2025, we strongly recommend flexibility on the implementation date. This could include a non-compliance process to enable companies to provide evidence of the work carried out towards the phaseout, and the reasons why they cannot meet the deadline.

7.4 Expanded Polystyrene (EPS) Food Packaging

The proposals identify 'some' polystyrene food and beverage packaging to be phased out by January 2023. The EPS food and beverage items included in this are EPS meat trays, containers (e.g. clamshell takeaway) and EPS cups. It is also assumed to cover the EPS containers used for some supermarket products such as noodle bowls.

NZ manufacturers have already been moving away from the EPS packaging covered in this scope and alternatives are already on the market. The majority of the remaining EPS in this category could be converted to alternatives within the proposed timeframe. The NZ plastics industry is ready for this change.

As with the discussion for rigid polystyrene in Section 7.1 it must be noted that a large amount of this type of packaging is utilised within the hospitality industry. To avoid undue costs on a sector hit hard by covid-19, and to avoid unused plastic packaging ending up in landfill, Recommendation #11 also applies to this category of EPS packaging.

7.5 Expanded Polystyrene (EPS) Cold Chain & Protective Packaging

The proposals identify all EPS packaging to be phased out by January 2025 including bins made from EPS and packaging for homewares, electronics, and other consumer goods.

Amongst other things EPS bins are used across cold-chain supply lines for seafood, pharmaceuticals (e.g. vaccines) and biological products (e.g. blood, organs, and other biological matter). These types of products have stringent regulatory and safety requirements relating to thermal management and product protection. Maintaining product safety and performance is critical to these products.

EPS is also a material with excellent impact and energy absorption properties making it ideal for protection of heavy electronic items and equipment. Electronic goods of all types are required to pass stringent transportation testing before they are able to be sold. This is to prove they are able to withstand the rigours of the distribution system without presenting safety risks for the end-user (e.g. electrical shock).

Real-world testing of the alleged alternatives to EPS has shown that they do not meet the high-level requirements of cold-chain supply lines and shipment of heavy products. See the separate submission from the Plastics NZ EPS Sector Group for more details on this.

Under the Waste Minimisation Act 2008 Section 23 (2)(b) the Minister for the Environment must not recommend the control or prohibition of the manufacture or sale of products containing specified materials (Section 23 (1)(b)) unless a reasonably practicable alternative to the specified material is available. The alternatives proposed in the consultation document are not viable for these particular types of EPS packaging. The Minister **must not** therefore recommend a blanket ban for all EPS packaging.

As shown in Section 6 and Appendix 1, product stewardship is an effective option for handling the EPS packaging used in cold-chain supply lines and for protective packaging. The EPS manufacturers are already recycling EPS and are ready to do more. Formalised product stewardship would enable the key stakeholders across the wider system, including those importing protective packaging in the retail and medical sectors, to become part of the solution.

Recommendation #14:

As the proposed alternatives are not viable for cold-chain supply lines and for protective packaging of heavy electronics goods, the Minister for the Environment must not recommend their prohibition under the WMA Section 23 (2)(b). We recommend therefore that product stewardship is utilised for the EPS Packaging used in cold-chain supply lines and as protective packaging. The packaging is already included under the scope of the 'plastic packaging' priority product category.

8 Preventing Harm from Oxo-Degradable Plastics

Q11: Do you agree with a mandatory phase-out of all oxo-degradable plastics by January 2023? If not, why?

Yes – although we would like to see it happen faster than this. The definition needs to be broadened to include all conventional plastics with prodegradants additives included.

Conventional plastics (e.g. PE, PP) in the environment slowly degrade into fragments and eventually become biodegradable, but the entire process may take decades or longer. This can even take hundreds of years if the oxidation process is limited. There are chemical additives available that act as catalysts to accelerate the fragmentation step – called prodegradants additives. However, while degradation time is faster than conventional plastics the oxo-degradables still take many years to break down, often much longer than claimed[9]. During this time, they exist as microplastics in the environment, including the ocean. Oxo-degradable plastics are not a viable solution for addressing plastic waste and is in fact counterproductive. Very few experts support the claim of effective biodegradation of oxo-degradable plastic[10]. However, significant evidence has been provided showing that oxo-degradable plastics are not a solution to plastic packaging pollution, and that they are not suited for effective long-term reuse, recycling at scale, or composting[11].

- ***Oxo-degradable plastics undermine mechanical recycling and the move to a circular economy.*** Recycling systems do not allow plastics containing oxo-degradable additives to be separated from untreated plastics. This means that oxo-degradable plastics have a high potential to contaminate the recycling stream for conventional plastics. As the additives accelerate degradation the durability of the material is impacted, and the performance weakened. For example, wood composite decking utilising recycled soft plastic has particular specifications for durability. The inclusion of prodegradants would weaken the ability of the timber to withstand weather conditions leading to faster breakdown and collapse. Oxo-degradable plastic is also not suited for reuse systems as it begins fragmenting within a few months or years. It is by its very design not created for long-term reusable applications.

- ***Oxo-degradable plastics don't fit within defined recovery systems.*** *ISO 15270:2008 - guidelines for the recovery and recycling of plastics wastes* provides a principled, hierarchical approach to managing plastic products at end of life. Oxo-degradable technologies do not fit within the ISO guidelines because there are currently no recovery options. Instead, greenhouse gases are generated during the decomposition process, and fragments persist. Further, performance standards for products made from oxo-degradables have not been established to verify consistent breakdown processes or the residual outcomes of that breakdown.

- ***Oxo-degradable plastics encourage more littering.*** Consumers may be encouraged to litter more if they believe products will degrade in the environment. There is some evidence that the belief that items are biodegradable or degradable could actually encourage people to litter or litter more[12].

[9] Ellen MacArthur Foundation, New Plastics Economy, Oxo-degradable Plastic Packaging is Not a Solution to Plastics Pollution, Reference 10, https://ecostandard.org/wp-content/uploads/oxo-statement.pdf
[10] New Plastics Economy Oxo-degradable Plastic Packaging is Not a Solution to Plastics Pollution, Reference 6
[11] New Plastics Economy Oxo-degradable Plastic Packaging is Not a Solution to Plastics Pollution, Reference 7
[12] GESAMP (2015). Sources, fate and effects of microplastics in the marine environment: a global assessment, Kershaw, P.J., ed). Section 5.5. This is also well documented with cigarette litter, since many smokers mistakenly believe cigarettes biodegrade quickly.

- ***There is ongoing confusion and uncertainty with respect to 'degradable' terminology.*** Significant confusion still exists with consumers, industry, and governments with respect to the terms "degradable," "biodegradable, "oxo-degradable," and the like. The terms are often used interchangeably, without an understanding of the degradation mechanism, end-destination environments the products have been designed to end up in, and standards applicable to verify performance and degradation claims of the materials in real-world environments. Oxo-degradable plastics are often marketed as ox/oxo-biodegradable or biodegradable leading to further confusion.

- ***Oxo-degradable plastics are being removed from markets globally.*** The use of oxo-degradable plastics is not supported by key governments, influential Non-Governmental Organisations, and the majority of plastics associations around the world.

While the 'oxo-degradable' definition covers the majority of existing degradable plastics this is not a fully comprehensive term. It covers photo-degradable, oxygen-degradable, and heat-degradable plastics. It may be best to designate the phase-out to be 'conventional plastics, from fossil or plant-based feedstocks, with prodegradants additives included to accelerate fragmentation'. This means that new products in a similar vein are automatically covered. For example, earlier this year biodegradable nitrile gloves were advertised extensively in New Zealand[13]. These gloves are designed to 'biodegrade' in an anaerobic landfill environment.

As the overall amount of conventional plastics containing prodegradants additives is limited within the NZ market, and with rapid creation of microplastics for these materials, we recommend a shorter timeframe for phase-out. The small group of companies importing these products should be able to provide adequate information as to the level of their stocks, providing accurate development of a phase-out deadline.

A note of caution: While prodegradants additives in conventional plastics are problematic for the reasons discussed above, they are also used in genuinely compostable products (i.e. certified). We strongly recommend discussing the specific wording of the phase-out with the polymer experts at Scion and New Zealand's universities to ensure the development of compostable materials is not hindered.

Recommendation #15:

Discuss specific terminology of phaseout of conventional plastics with prodegradants additives with polymer experts at Scion and New Zealand's universities to ensure broad coverage without disadvantaging the development of compostable materials.

Recommendation #16:

Shorten phase-out timeframe if it is possible to do so without financially disadvantaging those companies importing oxo-degradable products.

[13] https://www.insinc.co.nz/biodegradable-gloves.html

9 Single-Use Plastic Items

Q16: What do you think about the proposed mandatory phase-out of some single-use plastics items (see table 7)? Please specify any items you would leave out or add and explain why.

We partly support the phaseout of some single-use plastics. See discussion below for further details.

Q17: Do the proposed definitions in table 7 make sense? If not, what would you change?

See answer to Q16.

Q18: What would be an appropriate phase-out period for single-use items? Please consider the impact of a shorter timeframe, versus a longer timeframe, and provide details where possible.
A) 12 months? B) 18 months? C) 2 years? D) 3 years? E) Other?
If you think some items may need different timeframes, please specify.

Timeframes depend on the type of SUP and the current NZ stocks of these items. Food outlets often buy packaging from overseas in large quantities covering several years. Two years may be required to use up some of this packaging so as to avoid unused packaging ending up in landfill. See discussions on each SUP for further detail.

Q22: Have we identified the right costs and benefits of a mandatory phase-out of single-use plastic items? If not, why? Please provide evidence to support your answer and clarify whether your answer applies to a particular item, or all items.

Not entirely. For food outlets (takeaways, cafes, restaurants, caterers) the packaging costs will increase, and on almost every item of packaging they utilise. If not through these proposals, through the plastic packaging and CRS product stewardship. Costs will be passed to the public where possible but it's also likely that the current economic environment for the hospitality sector will result in loss of margin to avoid customer loss.

The argument that there is benefit to brands 'doing the right thing' is incorrect given that everyone is forced to change with a mandated phaseout. No differential PR is possible in this situation.

9.1 Plastic Straws

We do not oppose the removal of single-use-plastic straws as they are frequently found during NZ waterway clean-ups, including those carried out by Plastics NZ. We also support the proposed inclusion of compostable and degradable plastic straws in this ban. PLA is the most commonly provided option for compostable straws and does not degrade if littered, as it requires higher temperatures than those that occur in the natural environment.

However, there are two considerations to be worked through.

The majority of straws in the market are imported however, NZ has a single straw manufacturer[14]. This phaseout would have a significant economic impact on this manufacturer. While they produce a variety of products, straws form a large part of their portfolio. By banning plastic straws government is effectively using its substantial degree of power in the NZ market and deterring this company from engaging in competitive conduct – a proposition that is against Section 36(2)(b) of the Commerce Act 1986.

The main concern with this phase-out is the impact on those with disabilities who cannot drink without a straw. The alternatives are not always suitable. Paper and other biodegradable options can fall apart too quickly. They're also easy for people with limited jaw control to bite through, posing a subsequent choking risk. Reusable straws are often not flexible – an important feature for

[14] https://www.profileint.co.nz/about-us

people with mobility challenges. Reusable straws also need to be washed, which not all people with disabilities can do easily. Metal straws, which conduct heat and cold in addition to being hard and inflexible, can pose a safety risk. Straws are also utilised as a tool to help regulate behaviour for sufferers of ADHD and other behavioural or sensory issues.

Recommendation #17:
Determine how catastrophic a plastic straw ban would be on NZ's only straw manufacturer and support them to diversify and stay competitive.

Recommendation #18:
Pay close attention to any submissions from those advocating for the rights of disabled people. Actively pursue consultation with disability rights advocates and organisations to ensure the needs of our disabled whanau are adequately considered and addressed. Timeframes for a ban should be based on the results of this consultation.

9.2 Plastic Cotton Buds

We agree with the removal of plastic shafted cotton buds from the market. These are frequently found during waterway clean-ups and alternatives are readily available with paper or bamboo shafts. Many retail operations are already moving away from plastic cotton buds. We have not seen options on the market utilising degradable or compostable plastics for cotton buds, but we support the inclusion of these plastics in this ban.

To our knowledge no NZ based manufacturers are impacted by this ban.

Timeframes should be based on the amount of stock held by NZ retailers to ensure that they are not negatively impacted by being left with unsaleable stock.

Another adjacent product that is often found during waterway clean-ups, and confused with the cotton bud shafts, are plastic lollipop sticks. There are alternatives available for these also. It would make sense to also remove these from the system.

Recommendation #19:
Include plastic lollipop sticks in coverage as alternatives are readily available.

9.3 Plastic Drink Stirrers

We do not oppose the removal of plastic drink stirrers from the market. Alternatives for these are readily available and many hospitality operations have already moved away from them. There are PLA biodegradable drink stirrers on the market. We support the inclusion of degradable and compostable plastics in this ban as these do not degrade if littered.

Several NZ manufacturers make these drink stirrers. However, they are a small part of their overall operations therefore the economic impact on their businesses will be small.

Timeframes should be based on the amount of stock held by NZ hospitality businesses and manufacturers to ensure that they are not negatively impacted by being left with unsaleable stock (See Recommendation #11).

9.4 Single-Use Plastic Tableware and Cutlery

In principle we support the move away from single-use plastic tableware and cutlery. However, there are some logistics challenges with this proposal. As with the plastic bag ban a decision will need to be made as to where the line is between disposable and reusable. This is not a straight-

forward decision as different materials (e.g. PP, PS, melamine) all have different properties. The thickness where an item becomes durable and therefore reusable will differ depending on the material the item is made from.

There are a number of NZ manufacturers who will be impacted by a ban on single-use plastic tableware and cutlery. However, most, if not all, of these manufacturers are also making non-plastic alternatives and/or reusable tableware and cutlery. While the economic impacts are likely to be moderate, these can be mitigated through a longer phase-out timeframe that allows the business time to adapt and change. We recommend a 3-year timeframe for this SUP ban.

See also Recommendation #11.

Recommendation #20:
Work with manufacturers to define the line between disposable and reusable for each plastic material type utilised for cutlery and tableware.

9.5 Single-Use Plastic Produce Bags

We do not oppose the move away from single use produce bags used for loose fruit and vegetables in stores and markets. The public are already used to using reusable bags in this space meaning a viable replacement option is readily available.

We do not support the removal of produce bags for pre-packaged produce.

We also support the coverage of degradable and compostable materials in this ban although we would be open to discussions on allowing the use of certified home compostable bags (certified to international standards such as OK Compost Home, AS 5810).

While discussions with MfE have indicated that the packaging on pre-packaged produce (e.g. salad leaves) is out of scope this is an important point missed in the consultation document. A large portion of the packaging used for pre-packaged produce is there to ensure shelf-life of the produce is optimised and to prevent food waste.

We also do not support the replacement of single-use-plastic produce bags with single-use paper bags. This is damaging to the environment due to the increased climate and water impacts. We propose a ban on all single use produce bags not just plastic ones, similar to what has been signed into law in New Jersey, USA[15].

See also Recommendation #11.

Recommendation #21:
Clarify the scope to exclude pre-packaged produce and widen ban to include all single-use produce bags not just plastic ones (i.e. include paper) to avoid unintended environmental harm.

9.6 Single-Use Plastic Cups & Lids

While we support a transition to more recyclable options, we suspect this will be difficult to monitor and enforce. The plastics ID code is not mandatory. PET, PS and PLA cups all look identical. How is the user (business or public) expected to tell the difference? Use of prohibited materials will only be

[15] https://www.nbcnewyork.com/news/local/murphy-signs-single-use-plastic-and-paper-bags-ban-in-new-jersey-into-law/2704192/

picked up once the materials reach the reprocessor and are found to be contaminating the waste stream. At that point it will be extremely difficult, if not impossible to trace the culprit.

We also find the exclusion of disposable coffee cups and their lids somewhat ridiculous. Their inclusion would create the perfect environment for reuse to thrive. Reusable coffee cups now have wide-spread acceptance and multiple schemes such as CupCycle and AgainAgain are already in action.

Part of the reason we find the exclusion odd is the fact that there is cross-over between the cups used for hot and cold beverages. See the example below. Saying that you can use this packaging format for coffee but not for cold drinks is confusing to the public and does not help move NZ to a circular economy.

Our recommendation is to change the scope to include coffee cups but modify the coverage to allow the use of paper cups with certified compostable lining for both hot and cold beverages. This should be done alongside action to create a stewardship scheme for coffee cups which includes composting at end of life. Plastic-lined coffee cups are already included under the scope of the 'plastic packaging' priority product category. This action would remove the confusion while also removing a non-recyclable waste stream from NZ.

See also Recommendation #11.

Recommendation #22:

Include coffee cups in the phase-out. Allow the use of paper cups with certified compostable lining for both hot and cold beverages. Create a product stewardship scheme for these specific cups.

9.7 Non-Compostable Produce Labels

In theory we agree with this transition. However, the produce labels should be certified home compostable to ensure that they are successfully biodegrading no matter where they are disposed. The adhesives and inks also need to be carefully considered as these can also cause issues to soil health if the wrong types are used[16].

There is significant R&D and progress being made already in this area by the leaders in the field; Jenkins Freshpac Systems and Sinclair International. Discussions indicate that mandatory phase-out of non-compostable produce labels will not accelerate the transition. The industry is already on

[16] Elmas, Gülnur & Çınar, Gamze. (2018). Toxic Metals in Paper and Paperboard Food Packagings. BioResources. 13. 7560-7580. 10.15376/biores.13.4.7560-7580. https://www.researchgate.net/publication/328495494_Toxic_Metals_in_Paper_and_Paperboard_Food_Packagings

target to achieve certified home compostable produce labels by 2025. A mandatory phase-out would distract from progress as it would result in additional meetings with government officials, retail stakeholders, concerned customers and others across the system.

We also note the use of the word 'sticker'. This denigrates the purpose and function of these highly technical and specialised labels. The items are produce labels not 'stickers'.

Recommendation #23:
Reconsider a mandatory phase-out for plastic produce labels as this will not accelerate progress towards the industries 2025 goal of certified home compostable produce labels.

9.8 Other Problematic Single-Use Items

Q19: What options could we consider for reducing the use of single-use coffee cups (with any type of plastic lining) and wet wipes that contain plastic? You may wish to consider some of the options discussed in this consultation document or suggest other options.

See Section 9.6 for discussion and proposal for single-use coffee cups.

See discussion below for wet wipes.

A large portion of the wet wipes on the market contain plastic. This was clearly shown in the BBC's War on Plastics[17] documentary series and shocked many in both the public and in business. While NZ does not have the love-affair with wipes that the USA or the UK has, there is still a reasonably high consumption. These end up in our waterways in quantity and, along with other waste products, clog sewers on a regular basis[18]. They also frequently cause pipe blockages within homes creating problems for homeowners and landlords.

Globally there is significant movement towards stricter labelling on wet wipes and other related legislation. This includes:

- Requirement of 'Do not flush' on non-flushable wipes[19].
- Inclusion of written warnings about potential clogs on flushable wipes
- Prohibiting manufacturers from labelling or advertising non-woven disposable products as flushable without prior approval[20]. Approved wipes must be plastic free.

Our recommendations for wet wipes in the NZ context:

- Mandate that labels on wet wipes containing plastic (including biodegradable or compostable plastics) have a clear and obvious 'do not flush' message.
- Mandate that labels on wet wipes containing plastic (including biodegradable or compostable plastics) have a clear 'contains plastic' notification.

While we support the idea of a product stewardship approach or a voluntary agreement, the logistics of this could be challenging. The majority of wipes are imported into NZ and are manufactured by large multi-national corporations. NZ is a very small market for these corporations. Action is likely to be driven from larger markets such as the UK and EU. While there is international movement on solutions for wet wipes it is slow. It is difficult to see how stewardship or an

[17] https://www.facebook.com/watch/?v=2398115330420515
[18] https://www.stuff.co.nz/national/102463890/wiping-out-a-nasty-problem-big-stink-over-flushed-wet-wipes
[19] California AB-1672 Solid waste: premoistened nonwoven disposable wipes https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200AB1672
[20] New York State Senate Bill S5307A https://www.nysenate.gov/legislation/bills/2015/s5307/amendment/a

agreement in NZ would create real change. It is more likely to be a 'talk-fest' with minimal real action.

Recommendation #24:

Mandate labelling on wet wipes containing plastic (including biodegradable or compostable plastics) to include 'do not flush' and 'contains plastic' or similar, to make it clear to the public.

Q21: What do you consider an appropriate timeframe for working toward a future phase-out of plastic lined disposable coffee cups and wet wipes containing plastic?

See Section 9.6 for discussion and proposal for single-use coffee cups.

Given the issues that wet-wipes create for the NZ sewerage system and waterways changes should be implemented as soon as possible. Timeframes need to be determined in conjunction with retailers and any local manufacturers.

10 Appendix 1: Assessment of Options

10.1 Assessment Notes – Rigid PVC

The following notes apply to the assessment for Table 13.1. Note that this assessment assumed coverage of all rigid PVC packaging not just that used for Food & Beverage. Removing F&B packaging does not remove PVC from kerbside as the majority of this packaging is in the non-F&B space (e.g. toys, cosmetics, hardware, and other consumer goods).

Effectiveness:

1. The Packaging Accord was a voluntary agreement. All targets set out in the Accord were met within the target timeframes. We have also seen successful industry driven voluntary agreements around the phase-out of HBCD flame-retardants in construction EPS. A voluntary agreement can be at least 'somewhat' effective.

2. Reduction targets, backed up with strong government leadership and associated education and action, would be at least 'somewhat' effective as it would provide industry with clear information as to the direction of the NZ system.

3. A mandatory agreement with set targets (Option 9 as proposed in Section 5.0) would therefore be a 'yes' as the combination would be highly effective.

4. Labelling would be effective for some consumers but not the majority, so this is analysed as 'minimal' effectiveness. Labelling provides information but does not drive behaviour change. As this material would be diverted to landfill, labelling does not fulfil the objective of eliminating or reducing the amount of packaging to landfill.

5. Due to the wide range of properties in rigid PVC packaging materials, product stewardship would be difficult, if not impossible, to implement cost-effectively. This is assessed as 'No' for this reason.

6. Option 'No Change' would have 'minimal' to 'somewhat' effectiveness for removal of the rigid PVC packaging. There is already visible change in the market where brands are moving away from PVC to PET. This is assessed as 'minimal' due to the difficulty of changing imported products without regulation, and potential free-riders.

Costs:

7. Options 1, 2, 6 and 9 (mandatory agreement) are viewed by industry to have similar cost increases for the community, business, and public funds. Overall, these are all analysed as 'somewhat' in regard to implementation without undue costs, given that costs will be incurred by both business and the end-user. For rigid PVC packaging there is generally a readily available alternative. The alternatives do result in some cost to business in regard to higher packaging unit costs, tooling and equipment changes to implement new packaging material and format. All new packaging, particularly in the food & beverage and pharmaceutical space, requires a significant amount of testing to ensure all regulatory and performance requirements are being met. This is therefore assessed as 'somewhat' for cost.

8. Product stewardship costs for rigid PVC would be prohibitive as discussed under the Effectiveness discussion above. For this reason, it is assessed as 'No' for cost.

9. Recycled content is assessed as 'No' for rigid PVC. PVC is not a specific grade of plastic and can range in properties from fully rigid through to fully flexible. Even within the rigid PVC range there is significant variance in properties. It would be completely infeasible from an economic perspective to collect and sort this PVC into materials that could then be utilised as recycled content. We have also been unable to identify and global research into cycling rPVC back into food packaging.

10. For ‘No change’ option there are no undue costs. Businesses could change as their capex and budgets allowed. Increases in product costs due to changes can be built in over time, and gradually, meaning no undue costs on the consumer or business. While this means an assessment of ‘yes’ could be made, a ‘somewhat’ is applied due to uncertainty of engagement of brands.

Alignment with Strategic Direction:

11. The relationships across the plastics, packaging, resource recovery and government sectors in New Zealand are very collaborative and have a common goal of achieving circularity for plastics. Any agreement, reduction targets or other scheme would be instigated with this goal in mind. At minimum therefore any agreement, reduction target set, or other scheme would align ‘somewhat’ with the strategic direction.

12. Labelling is viewed a ‘minimal’ for this assessment. While it provides information, it does not create actual behaviour change and would therefore not have a significant impact on the removal of the packaging from recycling streams or landfill.

13. ‘No change’ is assessed as minimal. Visible, if slow, change is already occurring in transitioning away from rigid PVC to PET. This cannot therefore be assessed as ‘No’.

Table 13.1 Modified Analysis – PVC Rigid Packaging Only

Assessment criterion	1. Voluntary agreement / pact	2. Reduction targets	3. Labelling requirements	4. Levy / tax	5. Product stewardship	6. Mandatory phase-out	7. Mandatory recycled content	8. No change (ad hoc voluntary action)	9. Mandatory agreement with targets
Effectiveness ***(triple weighting)***	Somewhat (1 x 3 = 3)	Somewhat (1 x 3 = 3)	Minimal (0)	Somewhat (1 x 3 = 3)	No (-1 x 3 = -3)	Yes (2 x 3 = 6)	Somewhat (1 x 3 = 3)	Minimal (0)	Yes (2 x 3 = 6)
Cost ***(double weighting)***	Somewhat (1 x 2 = 2)	Somewhat (1 x 2 = 2)	No (-1 x 2 = -2)	Somewhat (1 x 2 = 2)	No (-1 x 2 = -2)	Somewhat (1 x 2 = 2)	No (-1 x 2 = -2)	Somewhat (1 x 2 = 2)	Somewhat (1 x 2 = 2)
Alignment with strategic direction	Somewhat (1)	Somewhat (1)	Minimal (0)	Somewhat (1)	Somewhat (1)	Yes (2)	Yes (2)	Minimal (0)	Yes (2)
Achievable under current legislation	Yes (2)	Yes (2)	Yes (2)	No (-1)	Yes (2)	Yes (2)	No (-1)	Yes (2)	No (-1)
Weighted total score	8	8	0	5	-2	12	2	4	9
Ranking	3rd =	3rd =	8th	5th	9th	1st	7th	6th	2nd

Scoring: Yes = 2, Somewhat = 1, Minimal = 0, No = -1

10.2 Assessment Notes – Flexible PVC

The following notes apply to the assessment for Table 13.2. Note that this assessment assumed coverage of all flexible PVC packaging not just that used for Food & Beverage. Flexible PVC packaging does not enter kerbside collection, except as contamination but impacts soft-plastics recycling. As this scheme will expand under the already declared mandatory product stewardship, flexible PVC is an important consideration. Most of this packaging comes from outside the F&B products. It is extensively used across all consumer retail.

Effectiveness:

1. Notes 1, 2, 3, 4 and 6 from Section 13.1 Effectiveness analysis also applicable for flexible PVC.

2. Flexible PVC packaging materials have a huge range of properties in terms of flexibility, tear resistance and transmission. Product stewardship would be difficult, if not impossible, to implement cost-effectively. This is assessed as 'No' for this reason.

Costs:

3. Notes 8, 9 and 10 from Section 13.1 Cost analysis are also applicable for flexible PVC.

4. Flexible PVC is used across a very wide range of applications. It is used for food products to prevent oxygen and moisture transmission, thereby prolonging shelf-life and ensuring safety. As PVC is quite rare in its ability to prevent both moisture and gas transmission it is difficult to replace with single-layer packaging. The most likely replacement will therefore be a multi-layer, multi-material flexible packaging format. To achieve this a significant amount of testing is required to ensure regulatory and performance requirements are met. Packaging unit prices would be higher, and costs would be incurred with the tooling and equipment changes required to implement the new packaging.

   Flexible PVC packaging in the non-food space is used extensively. For some items, such as cosmetics, the same gas and moisture transmission properties are important. For many others PVC is selected because it is cheap, strong and has excellent transparency to showcase the product. A very large portion of this packaging is imported into New Zealand on finished product. While the costs of changing for each individual item could be relatively neutral (due to being passed on to end-user) it is likely that the costs of implementing this change across the NZ system, and controlling imported packaging in particular, shift this to 'somewhat'.

   Options 1, 2, 6 and 9 (mandatory agreement) are therefore assessed as 'neutral' in regard to implementation without undue costs.

Alignment with Strategic Direction:

5. Notes 11 and 12 from Section 13.1 Alignment analysis are also applicable to flexible PVC.

6. 'No change' is assessed as 'No'. To date very little change has been noted in the flexible PVC packaging space, particularly in the non-F&B space. It is unlikely that significant change would be achieved without a regulatory lever.

Table 13.2 Modified Analysis – PVC Flexible Packaging Only

Assessment criterion	1. Voluntary agreement / pact	2. Reduction targets	3. Labelling requirements	4. Levy / tax	5. Product stewardship	6. Mandatory phase-out	7. Mandatory recycled content	8. No change (ad hoc voluntary action)	9. Mandatory agreement with targets
Effectiveness ***(triple weighting)***	Somewhat (1 x 3 = 3)	Somewhat (1 x 3 = 3)	Minimal (0)	Somewhat (1 x 3 = 3)	No (-1 x 3 = -3)	Yes (2 x 3 = 6)	Somewhat (1 x 3 = 3)	Minimal (0)	Yes (2 x 3 = 6)
Cost ***(double weighting)***	Somewhat (1 x 2 = 2)	Somewhat (1 x 2 = 2)	No (-1 x 2 = -2)	Somewhat (1 x 2 = 2)	No (-1 x 2 = -2)	Neutral (0)	No (-1 x 2 = -2)	Somewhat (1 x 2 = 2)	Somewhat (1 x 2 = 2)
Alignment with strategic direction	Somewhat (1)	Somewhat (1)	Minimal (0)	Somewhat (1)	Somewhat (1)	Yes (2)	Yes (2)	No (-1)	Yes (2)
Achievable under current legislation	Yes (2)	Yes (2)	Yes (2)	No (-1)	Yes (2)	Yes (2)	No (-1)	Yes (2)	No (-1)
Weighted total score	8	8	0	5	-2	10	2	3	9
Ranking	3rd =	3rd =	8th	5th	9th	1st	7th	6th	2nd

Scoring: Yes = 2, Somewhat = 1, Minimal = 0, No = -1

10.3 Assessment Notes – Rigid Polystyrene (PS)

The following notes apply to the assessment for Table 13.3. This is for rigid polystyrene such as yoghurt 6-packs.

Effectiveness:

1. Notes 1, 2, 3 and 4 from Section 13.1 Effectiveness analysis are also applicable for rigid PS.
2. Rigid PS packaging is very thin walled. As such the tonnage collected at kerbside is minimal, making it uneconomical to sort for reprocessing. However, rigid PS is used for some very specific packaging applications such as yoghurt six-packs and other chilled goods. While kerbside is not the right solution, it is probable that product stewardship involving community collection (eg. schools' program) would be effective. Product stewardship is therefore assessed as 'Somewhat' effective for rigid PS.
3. Option 'No Change' is assessed as 'minimal' effectiveness for removal of rigid PS packaging. While there is global movement in this space the high costs involved in changing packaging formats for chilled food means we're unlikely to see wholesale change without regulation.

Costs:

4. The cost of changing from rigid PS in food packaging is high. Most products using it are manufactured on highly automated, high-speed form-fill-seal lines that are very costly to change or replace. It is also not just a case of changing materials. The entire packaging format requires changing. In some cases, the product formulation will also need modification to sterilise or preserve the food product. The costs of these changes are extremely high; potentially in the millions for each brand-owner. Timeframes are also very challenging as it typically takes years to develop and test new packaging formats. Mandated timeframes alongside the phase-out could give rise to cost overruns if alternatives tested are not feasible and testing needs to be repeated. The costs of mandated phase-out are assessed as 'No' it cannot be implemented without undue costs to business and community.
5. Options 1, 2, and 9 (mandatory agreement) are viewed by industry to have similar cost increases for the community, business, and public funds. Overall, these are all analysed as 'neutral' in regard to implementation without undue costs, given that high costs will still be incurred by both business and the end-user. The higher flexibility on timeframes means that changes can be implemented as businesses capex budgets allow however moving this from a 'no' to 'neutral'.
6. Product stewardship would involve costs for business but would potentially also involve positive publicity through school-collection programmes or similar. This is therefore assessed as 'somewhat' for rigid PS.
7. Recycled content is assessed as 'No' for rigid PS. We have been unable to identify any global research into cycling PS back into food packaging. The costs would therefore be extremely high.
8. For 'No change' option there are no undue costs. Businesses could change as their capex and budgets allowed. Increases in product costs due to changes can be built in over time, and gradually, meaning no undue costs on the consumer or business. While this means an assessment of 'yes' could be made, a 'somewhat' is applied due to uncertainty of engagement of brands.

Alignment with Strategic Direction:

9. Notes 11 and 12 from Section 13.1 Alignment analysis are also applicable to rigid PS.
10. 'No change' is assessed as 'Somewhat' for the reasons discussed above.

Table 13.3 Modified Analysis – Polystyrene Rigid Packaging Only

Assessment criterion	1. Voluntary agreement / pact	2. Reduction targets	3. Labelling requirements	4. Levy / tax	5. Product stewardship	6. Mandatory phase-out	7. Mandatory recycled content	8. No change (ad hoc voluntary action)	9. Mandatory agreement with targets
Effectiveness ***(triple weighting)***	Somewhat (1 x 3 = 3)	Somewhat (1 x 3 = 3)	Minimal (0)	Somewhat (1 x 3 = 3)	Somewhat (1 x 3 = 3)	Yes (2 x 3 = 6)	Somewhat (1 x 3 = 3)	Minimal (0)	Yes (2 x 3 = 6)
Cost ***(double weighting)***	Neutral (0)	Neutral (0)	No (-1 x 2 = -2)	Somewhat (1 x 2 = 2)	Somewhat (1 x 2 = 2)	No (-1 x 2 = -2)	No (-1 x 2 = -2)	Somewhat (1 x 2 = 2)	Neutral (0)
Alignment with strategic direction	Somewhat (1)	Somewhat (1)	Minimal (0)	Somewhat (1)	Somewhat (1)	Yes (2)	Yes (2)	Somewhat (1)	Yes (2)
Achievable under current legislation	Yes (2)	Yes (2)	Yes (2)	No (-1)	Yes (2)	Yes (2)	No (-1)	Yes (2)	No (-1)
Weighted total score	6	6	0	5	8	8	2	5	7
Ranking	4^{th} =	4^{th} =	9^{th}	6^{th} =	1^{st} =	1^{st} =	8^{th}	6^{th} =	3^{rd} =

Scoring: Yes = 2, Somewhat = 1, Minimal/Neutral = 0, No = -1

10.4 Assessment Notes – Expanded Polystyrene (Food)

The following notes apply to the assessment for Table 13.4. They do not apply to the EPS poly-bins used in cold-chain supply lines or the protective packaging used on heavy electronic goods.

Effectiveness:

1. While voluntary agreements have been shown to be effective for packaging manufacturers, we are unaware of any voluntary agreements in the retail or hospitality space. As most of the EPS packaging in the supermarket is on imported products (e.g. noodle bowls), and the rest is primarily in use in takeaway operations, we view a voluntary agreement as being minimally effective for the removal of EPS packaging. The same applies to Reduction targets that are not mandated.

2. Product stewardship would be difficult for this type of packaging. With a large portion being used for food products that permanently contaminate the material (oils, colours, odours), it is also unlikely to be recyclable. As such product stewardship would not be effective for removal of this material from landfill. This is assessed as a 'No'.

3. Option 'No Change' is assessed as 'No' effectiveness for removal of this type of EPS packaging, particularly in a post-covid environment where economic pressures are high for the hospitality sector. All alternatives have a higher unit price.

4. A mandatory agreement with targets is assessed as 'somewhat'. While it would create movement in the right direction it would be very difficult to capture all businesses within the hospitality sector.

Costs:

5. There are alternatives available for all EPS packaging of this type. However, the unit cost is higher for most if not all alternatives. While not prohibitive this could have a perceived negative impact on the hospitality sector in the post-covid environment. If timeframes are handled correctly however, the businesses will be able to use up all 'old' EPS packaging and phase-in the new packaging. Costs would be relatively low and passed on to the end-buyer. This is therefore assessed as 'neutral' across options 1, 2, 6 and 9.

6. As discussed in point 2 above, product stewardship would be costly and ineffective for this type of packaging. This is therefore assessed as a 'No'.

7. Recycled content is assessed as 'No' for this EPS packaging for the contamination reasons discussed in point 2 above.

8. For 'No change' option there are no undue costs. Businesses could change as their budgets allowed. Increases in product costs due to changes can be built in over time, and gradually meaning no undue costs on the consumer or business. While this means an assessment of 'yes' could be made, a 'somewhat' is applied due to uncertainty of engagement of the hospitality sector.

Alignment with Strategic Direction:

9. Notes 11 and 12 from Section 13.1 Alignment analysis are also applicable to EPS packaging of this type.

10. 'No change' is assessed as 'No'. It is unlikely that packaging in the hospitality sector would shift away from EPS in a reasonable timeframe without regulatory levers being applied.

Table 13.4 Modified Analysis – EPS (Food) Packaging Only

Assessment criterion	1. Voluntary agreement / pact	2. Reduction targets	3. Labelling requirements	4. Levy / tax	5. Product stewardship	6. Mandatory phase-out	7. Mandatory recycled content	8. No change (ad hoc voluntary action)	9. Mandatory agreement with targets
Effectiveness ***(triple weighting)***	Minimal (0)	Minimal (0)	Minimal (0)	Somewhat (1 x 3 = 3)	No (-1 x 3 = -3)	Yes (2 x 3 = 6)	Somewhat (1 x 3 = 3)	No (-1 x 3 = -3)	Somewhat (1 x 3 = 3)
Cost ***(double weighting)***	Neutral (0)	Neutral (0)	No (-1 x 2 = -2)	Somewhat (1 x 2 = 2)	No (-1 x 2 = -2)	Neutral (0)	No (-1 x 2 = -2)	Somewhat (1 x 2 = 2)	Neutral (0)
Alignment with strategic direction	Somewhat (1)	Somewhat (1)	Minimal (0)	Somewhat (1)	Somewhat (1)	Yes (2)	Yes (2)	No (-1)	Yes (2)
Achievable under current legislation	Yes (2)	Yes (2)	Yes (2)	No (-1)	Yes (2)	Yes (2)	No (-1)	Yes (2)	No (-1)
Weighted total score	3	3	0	5	-2	10	2	0	4
Ranking	4^{th} =	4^{th} =	7^{th} =	2^{nd}	9^{th}	1^{st}	6^{th}	7^{th} =	3^{rd}

Scoring: Yes = 2, Somewhat = 1, Minimal/Neutral = 0, No = -1

10.5 Assessment Notes – Expanded Polystyrene (Cold Chain & Protection)

The following notes apply to the assessment for Table 13.5. They only apply to the EPS poly-bins used in cold-chain supply lines or the protective packaging used on heavy electronic goods.

Effectiveness:

1. Notes 1, 2 and 3 from Section 13.1 effectiveness analysis also applicable for this type of EPS packaging.

2. Labelling would not be effective for EPS cold chain and protective packaging so this is analysed as 'no' effectiveness. Labelling does not drive behaviour change.

3. Formalised product stewardship, which required the retailers and producers to be involved in ensuring takeback and recycling of necessary EPS packaging, would be effective as shown by the recycling already underway in this space. This is therefore assessed as 'Yes'.

4. Option 'No Change' would have 'minimal' to 'somewhat' effectiveness for EPS packaging of this type. See the EPS Sector Group for full details but there are already concerted efforts within the NZ EPS industry to investigate voluntary stewardship on top of the recycling they already do. This would require the big-box retailers to be engaged, therefore it is assessed as 'minimal'.

Costs:

5. Options 1, 2, 5 and 9 (mandatory agreement) are viewed by industry to have similar cost increases for the community, business, and public funds. Overall, these are all analysed as 'somewhat' in regard to implementation without undue costs, given that costs will be incurred by both business and the end-user.

6. Mandatory phase-out of EPS in the cold-chain supply line and for protective packaging has significant impacts on business (see EPS Sector Group Submission). This is assessed as 'No' it cannot be implemented without undue costs.

7. Recycled content costs are viewed as having 'minimal' costs for this type of EPS packaging as this is already being carried out by NZ manufacturers.

8. For 'no change' option there are no undue costs. Businesses can change as their capex and budgets allow. Increases in product costs due to changes can be built in over time, and gradually, meaning no undue costs on the consumer or business. While this means an assessment of 'yes' could be made, a 'somewhat' is applied due to uncertainty of engagement of retailers.

Alignment with Strategic Direction:

9. Notes 11 and 12 from Section 13.1 Alignment analysis are also applicable to this type of EPS packaging.

10. 'No change' is assessed as 'minimal' alignment due to the uncertainty around the engagement of big-box retailers with no regulatory levers in place.

Alignment with Strategic Direction:

11. The implementation of a mandatory phase-out is dropped to 'somewhat'. A phase-out would require modification to the *National Standards for Vaccine Storage and Transportation for Immunisation Providers 2017 (2nd Edition)* as published by the Ministry of Health[21].

[21] https://www.health.govt.nz/system/files/documents/publications/national-standards-for-vaccine-storage-and-transportation-for-immunisation-providers-sep19.pdf

Table 13.5 Modified Analysis – EPS Cold-Chain & Protective Packaging Only

Assessment criterion	1. Voluntary agreement / pact	2. Reduction targets	3. Labelling requirements	4. Levy / tax	5. Product stewardship	6. Mandatory phase-out	7. Mandatory recycled content	8. No change (ad hoc voluntary action)	9. Mandatory agreement with targets
Effectiveness ***(triple weighting)***	Somewhat (1 x 3 = 3)	Somewhat (1 x 3 = 3)	No (-1 x 3 = -3)	Somewhat (1 x 3 = 3)	Yes (2 x 3 = 6)	Yes (2 x 3 = 6)	Somewhat (1 x 3 = 3)	Minimal 0	Yes (2 x 3 = 6)
Cost ***(double weighting)***	Somewhat (1 x 2 = 2)	Somewhat (1 x 2 = 2)	No (-1 x 2 = -2)	Somewhat (1 x 2 = 2)	Somewhat (1 x 2 = 2)	No (-1 x 2 = -2)	Minimal 0	Somewhat (1 x 2 = 2)	Somewhat (1 x 2 = 2)
Alignment with strategic direction	Somewhat 1	Somewhat 1	Minimal 0	Somewhat 1	Somewhat 1	Yes 2	Yes 2	Minimal 0	Yes 2
Achievable under current legislation	Yes 2	Yes 2	Yes 2	No -1	Yes 2	Somewhat 1	No -1	Yes 2	No -1
Weighted total score	8	8	-3	5	11	7	7	4	9
Ranking	3rd =	3rd =	9th	7th	1st	5th =	5th =	8th	2nd

Scoring: Yes = 2, Somewhat = 1, Minimal/Neutral = 0, No = -1

10.6 Assessment Notes – Single Use Plastic Products

The following notes apply to the assessment for Table 13.5. While the consultation covers seven different products the single-use-nature of their application allows for combination.

Effectiveness:

1. While voluntary agreements have been shown to be effective for packaging manufacturers, we are unaware of any of these in the retail or hospitality space. As most single use products in scope are sold through these sectors, we view voluntary agreement as being minimally effective for removal of this packaging. This also applies to non-mandated Reduction targets.
2. Product stewardship would be difficult and expensive for these types of products and is assessed as having 'minimal' effectiveness. Some consumers would diligently participate in schemes to ensure circularity, however the majority would be unlikely to bother if they couldn't utilise their kerbside recycling collection.
3. Labelling would not be effective for these products, indeed for some they are impossible to label. Labelling would provide information advising businesses and consumers of what to do with the packaging but does not drive behaviour change. This is analysed as 'no' effectiveness.
4. Option 'No Change' is assessed as 'No' effectiveness for removal of this type of packaging, particularly in a post-covid environment where economic pressures are high for the hospitality sector. All alternatives have a higher unit price.
5. A mandatory agreement with targets is assessed as 'somewhat'. While it would create movement in the right direction it would be very difficult to capture all businesses within the hospitality sector.

Costs:

6. There are alternatives available for all of the single-use items in scope. However, the unit cost is higher for most, if not all alternatives. While not prohibitive, this could have a negative impact on the hospitality sector in the post-covid environment. If timeframes are handled correctly however, the businesses will be able to use up all 'old' EPS packaging and phase-in the new packaging. Costs would be relatively low and passed on to the end-buyer. This is therefore assessed as 'neutral' across options 1, 2, 6 and 9.
7. As discussed in point 2 above, product stewardship would be costly and ineffective for these products. This is therefore assessed as a 'No'.
8. Recycled content is assessed as 'No' for these products as the majority of the materials used cannot currently be cycled back into food-contact materials. This is unlikely to change in New Zealand in the next decade and costs would be significantly higher for any alternatives utilising globally sourced recyclate (i.e. chemically recycled materials).
9. For 'No change' option there are no undue costs. Businesses could change as their budgets allowed. Increases in product costs due to changes can be built in over time, and gradually meaning no undue costs on the consumer or business. While this means an assessment of 'yes' could be made, a 'somewhat' is applied due to uncertainty of engagement of the hospitality sector.

Alignment with Strategic Direction:

10. Notes 11 and 12 from Section 13.1 Alignment analysis are also applicable to single-use-products of this type.
11. 'No change' is assessed as 'No'. It is unlikely that there would be movement away from these single-use products in a reasonable timeframe without regulatory levers being applied.

Table 13.6 Modified Analysis – Single Use Plastic Products Only

Assessment criterion	1. Voluntary agreement / pact	2. Reduction targets	3. Labelling requirements	4. Levy / tax	5. Product stewardship	6. Mandatory phase-out	7. Mandatory recycled content	8. No change (ad hoc voluntary action)	9. Mandatory agreement with targets
Effectiveness ***(triple weighting)***	Minimal (0)	Minimal (0)	No (-1 x 3 = -3)	Somewhat (1 x 3 = 3)	Minimal (0)	Yes (2 x 3 = 6)	Somewhat (1 x 3 = 3)	No (-1 x 3 = -3)	Somewhat (1 x 3 = 3)
Cost ***(double weighting)***	Neutral (0)	Neutral (0)	No (-1 x 2 = -2)	Somewhat (1 x 2 = 2)	No (-1 x 2 = -2)	Neutral (0)	No (-1 x 2 = -2)	Somewhat (1 x 2 = 2)	Neutral (0)
Alignment with strategic direction	Somewhat (1)	Somewhat (1)	Minimal (0)	Somewhat (1)	Somewhat (1)	Yes (2)	Yes (2)	No (-1)	Yes (2)
Achievable under current legislation	Yes (2)	Yes (2)	Yes (2)	No (-1)	Yes (2)	Yes (2)	No (-1)	Yes (2)	No (-1)
Weighted total score	3	3	-3	5	1	10	2	0	4
Ranking	4^{th} =	4^{th} =	9^{th}	2^{nd}	7^{th}	1^{st}	6^{th}	8^{th}	3^{rd}

Scoring: Yes = 2, Somewhat = 1, Minimal/Neutral = 0, No =