

# **Introducing market restrictions on problematic single-use plastic items in Scotland**

**Final Business and Regulatory Impact  
Assessment (BRIA)**

**November 2021**



**Scottish Government**  
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## 1.0 Title of proposal: Market restrictions on problematic single-use plastic items in Scotland

1. This document is the final Business and Regulatory Impact Assessment (BRIA) for the introduction of market restrictions on problematic single-use plastic items as identified in Article 5 of the EU Single-Use Plastics Directive (EU SUPD) 2019/904.<sup>1</sup> The final BRIA builds detail onto the partial BRIA published on 12 October 2020 and is written subject to the best available information at the time.

## 2.0 Purpose and intended effect

### 2.1 Background

2. The EU SUPD proposes action on 10 single-use plastic items that account for approximately 70% of marine litter products found on European beaches. The directive promotes circular approaches and includes a set of ambitious measures to reduce the impact of these single-use plastics items. One of the measures, contained within Article 5 of the Directive, is a restriction on placing selected single-use products on the market.
3. These proposals build on a range of activity already undertaken as Ministers have sought to create a more circular economy which keeps products and materials in high value use for as long as possible.
4. In February 2016, Making Things Last: A Circular Economy Strategy for Scotland<sup>2</sup> was published. This overarching strategy integrated the key elements of the Zero Waste Plan<sup>3</sup> and Safeguarding Scotland's Resources<sup>4</sup> and built on Scotland's zero waste and resource efficiency agendas. The strategy set out how a more circular economy would benefit:
  - The environment – cutting waste and carbon emissions and reducing reliance on scarce resources.
  - The economy – improving productivity, opening up new markets and improving resilience.
  - Communities – more, lower cost options to access the goods we need with opportunities for social enterprise.

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<sup>1</sup> European Union (2019) [Directive \(EU\) 2019/904 of the European Parliament and of the Council of 5 June 2019 on the reduction of the impact of certain plastic products on the environment, Article 3\(3\)](#).

<sup>2</sup> The Scottish Government (2016) [Making things last – A circular economy strategy for Scotland](#).

<sup>3</sup> The Scottish Government (2010) [Scotland's Zero Waste Plan](#).

<sup>4</sup> The Scottish Government (2013) [Safeguarding Scotland's resources - A programme for the efficient use of our materials](#).

5. The Scottish Government has acted to address the negative externalities associated with single-use disposable products through the introduction of the single-use carrier bag charge in 2014 and its pending increase; the ban of microbeads in 2018; and the ban of plastic-stemmed cotton buds which came into effect in October 2019. The Scottish Government will also introduce a Scottish Deposit Return Scheme to increase recycling rates and reduce littering of single-use drinks containers. Regulations were passed by the Scottish Parliament in May 2020 and the scheme will become operational in due course.<sup>5</sup>
6. The Expert Panel on Environmental Charging and Other Measures (EPECOM) was formed in May 2018.<sup>6</sup> Its remit was to advise Scottish Ministers on charges or other measures which may be adopted in Scotland with the goal of encouraging the long-term and sustainable changes in consumer and producer behaviour required to move towards a circular economy. In July 2019 the Expert Panel set out its recommendations to tackle the dependence on, and environmental impact of, single-use disposable beverage cups in Scotland. Included in its recommendations was support for the commitment within the EU Single-Use Plastics Directive to ban expanded polystyrene beverage cups by 2021.<sup>7</sup> The group published a second report *Ending the Throwaway Culture: Five Principles for Tackling Single-use Items* in September 2020.<sup>8</sup>

## 2.2 Objective and rationale

7. The Scottish Government proposes to introduce legislation which introduces market restrictions on specific disposable single-use plastic products. The evidence summarised in this document will be used to inform the policy-making process.
8. Potential non-plastic alternatives that exist for the specified single-use products have been identified as part of the BRIA process. Targeted exemptions to the market restrictions to support independent living and provide access to single use plastic items where necessary for medical needs have been included in the draft regulations. Those exemptions will be considered in the Equality Impact Assessment (EQIA) which accompanies this BRIA.
9. When disposed of incorrectly, single-use plastic products end up in our rivers, lochs, and seas and cause significant harm to the marine environment as well as to the public's enjoyment of Scotland's natural landscapes. The disposable

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<sup>5</sup> The Scottish Government (2020) [The Deposit and Return Scheme for Scotland Regulations 2020](#).

<sup>6</sup> The Scottish Government (2018) [Expert Panel on Environmental Charging and Other Measures \(EPECOM\)](#).

<sup>7</sup> The Scottish Government (2019) [Single-use disposable cups: EPECOM recommendations](#).

<sup>8</sup> The Scottish Government (2020) [Ending the throwaway culture: Five principles for tackling single-use items \(EPECOM\)](#).

single-use plastic products specified in this impact assessment are some of the most commonly-found products of plastic litter washed up on Scotland's shores.<sup>9</sup>

10. Scotland has significant water resources including: 18,743 km of coastline,<sup>10</sup> 125,500 km of rivers and 25,500 lochs.<sup>11</sup> These resources are vitally important in a number of areas as they support a variety of wildlife, tourism and recreation and provide domestic and commercial water supplies.
11. Once in the environment plastic litter can persist for hundreds of years causing enormous harm to ecosystems. Impacts include mortality or sub-lethal effects on plants and animals through entanglement, physical damage, and it can enter food chains when ingested. When plastic enters the marine environment it eventually breaks down into microplastics which have the potential to accelerate accumulation of chemicals throughout the food chain, with potential negative impacts on human and animal health. Most plastic waste eventually comes to rest on the seabed and in doing so can facilitate the invasion of alien species.<sup>12</sup>
12. Chemicals added during the manufacture of plastics can enhance durability, act as a colorant, plasticizer, stabilizer or increase flame retardancy. Some of these chemicals are classified as persistent organic pollutants (POPs) and endocrine disruptor chemicals (EDCs) and will further harm terrestrial and marine life if ingested as microplastics.<sup>13</sup>
13. For context, plastic decomposes around 100 times more slowly than a biodegradable material such as paper.<sup>14</sup> Some plastic items can last for a few decades, whereas others may last for over 500 years. Table 1 below demonstrates the comparison of decomposition times between plastics and biodegradable materials.<sup>15</sup>

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<sup>9</sup> Marine Conservation Society (2019) [Great British Beach Clean 2019](#).

<sup>10</sup> Marine Scotland (2021) [Facts and figures about Scotland's sea area \(coastline length, sea area in sq kms\)](#).

<sup>11</sup> Scottish Government (2016) [Key Scottish Environment Statistics 2016](#).

<sup>12</sup> Deudero S., Alomar C. (2015) "Mediterranean marine biodiversity under threat: Reviewing influence of marine litter on species" in Marine Pollution Bulletin, Volume 98.

<sup>13</sup> Gallo, F et al (2018) "[Marine litter plastics and microplastics and their toxic chemicals components: the need for urgent preventive measures](#)", in Environmental Sciences Europe, Volume 30.

<sup>14</sup> Resource Futures (2019) "A preliminary assessment of the economic impacts of a potential ban on expanded polystyrene food and beverage containers", p.23.

<sup>15</sup> Ibid.

**Table 1: Decomposition rates of plastics and biodegradable materials**

<b>Item</b>	<b>Decomposition rate</b>
Paper towel	2-4 weeks
Newspaper	6 weeks
Wax carton	3 months
Plywood	1-3 years
Plastic grocery bag	10-20 years
Styrofoam cup	50 years
Plastic beverage bottle	450 years
Fishing line	600 years

14. It is expected that market restrictions on a range of single-use disposable products will:
- Reduce the volume of plastic waste created.
  - Reduce the amount of plastic waste entering Scotland's rivers, lochs and seas.
  - Reduce the number of products littered where reusable substitutes exist.
  - Encourage wider behaviour change around material choice.
15. Achieving these strategic objectives will help Scotland progress towards its 2025 waste targets, accelerating Scotland's transition from a 'linear' economy which is environmentally unsustainable and energy- and resource-intensive to a more resource-efficient and sustainable circular economy.
16. With reference to the National Performance Framework,<sup>16</sup> directly applicable strategic objectives are:
- We value and enjoy our built and natural environment and protect it and enhance it for future generations.<sup>17</sup>
  - We reduce the local and global environmental impact of our consumption and production.<sup>18</sup>
17. Directly applicable from the Measurement Set are:<sup>19</sup>
- Reduce greenhouse gas emissions.
  - Improve Scotland's reputation.
  - Improve people's perceptions of their neighbourhood.

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<sup>16</sup> The Scottish Government (2021) [National Performance Framework](#).

<sup>17</sup> The Scottish Government (2021) [National Outcome: We value and enjoy our built environment and protect it and enhance it for future generations](#).

<sup>18</sup> The Scottish Government (2021) [National Outcome: We reduce the local and global environmental impact of our consumption and production](#).

<sup>19</sup> The Scottish Government (2020) [National Performance Framework - National Indicator Performance](#).

- Improve the condition of protected nature sites.
  - Increase natural capital.
  - Improve the state of Scotland’s marine environment.
  - Reduce Scotland’s carbon footprint.
  - Reduce waste generated.
18. Enacting market restrictions on specific single-use plastic products will contribute to objectives set out in the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019.<sup>20</sup>
19. The Climate Change Plan: Third RPP 2018-2032 was published in February 2018 and sets out plans to achieve decarbonisation of the economy in the period to 2032, making progress towards the target of reducing emissions by 80% by 2050. An update to the Climate Change Plan was published in December 2020.<sup>21</sup>
20. In 2015, the Scottish Government signed up to support the United Nations Sustainable Development Goals.<sup>22</sup> The ambition behind the goals is to end poverty, protect the planet and ensure prosperity for all as part of a new sustainable development agenda. Market restrictions on the specified single-use plastic products will have a positive impact on a number of these goals, most explicitly Goals 12, 13, 14 and 15:
- Responsible Consumption and Production.
  - Climate Action.
  - Life Below Water.
  - Life on Land.
21. Finally, enacting market restrictions on specific single-use plastic products will contribute to the Green Recovery Plan objectives set out in Protecting Scotland, Renewing Scotland, the Government’s Programme for Scotland 2020-21.<sup>23</sup>

“We will ensure our rural economy and Scotland’s rich natural resources and biodiversity are central to our economic, environmental, and social wellbeing.”

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<sup>20</sup> The Scottish Parliament (2019) [Climate Change \(Emissions Reduction Targets\) \(Scotland\) Act 2019](#).

<sup>21</sup> The Scottish Government (2020) [Securing a green recovery on a path to net zero: climate change plan 2018–2032 - update](#)

<sup>22</sup> United Nations (2020) [UN Sustainable Development Goals](#).

<sup>23</sup> The Scottish Government (2020) [Protecting Scotland, Renewing Scotland: The Government’s Programme for Scotland 2020-2021](#).



## 3.0 Consultation

### 3.1 Consultation within Government

22. The Scottish Government Environment and Forestry Directorate has engaged with other relevant teams across the Scottish Government regarding the potential impacts of the policy on, for example:
- Socio-economic inequality issues such as low income, low wealth, and area deprivation.
  - Different geographic communities including island communities.
  - People experiencing disabilities and their carers.
  - Businesses, including the food and drink industry and the hospitality sector.

### 3.2 Public consultation

23. A partial BRIA document was published alongside the Scottish Government consultation paper on the introduction of market restrictions. The consultation was launched on 12th October 2020 and ended on 4th January 2021, seeking views on the items to be covered by the restrictions, and how the restrictions might be implemented. The consultation contained 8 questions with a mix of open and closed (tick-box) questions, including topics such as:
- Items to be covered.
  - Exemptions
  - Future market restrictions
  - Environmental, economic, and social impacts
  - The impact of COVID-19
24. The analysis was based on 2,689 responses, comprising of 787 substantive (personalised) responses from 90 organisations and 697 individuals, and 1,902 campaign responses (submitted using a standard template), in this case provided by Friends of the Earth Scotland.
25. Organisational responses were submitted by environmental charities, third sector and community organisations (29); packaging manufacturers and other types of manufacturing organisations (22); food, drink, tourism, and other business organisations (16); public sector organisations (11); environmental consultancies and resource management organisations (8); and a small group of other organisations that did not fit into any of the preceding categories (4).
26. A full analysis of the consultation responses and key messages was published on 17<sup>th</sup> March 2021 and is available [here](#).

## Summary of public consultation findings

27. There was strong overall support from both organisations and individuals for market restrictions to be introduced on single-use plastics supplied in a commercial context.
28. Among individuals, 94% were in favour of a ban on all the items specified in the consultation paper
29. Among organisations, the proportion in favour of a ban ranged from 76% for single-use plastic plates, to 91% for single-use balloon sticks and food and beverage containers made from expanded polystyrene. In general, packaging manufacturers and other types of manufacturing organisations were less supportive of market restrictions on the specified items than other respondents.
30. The 1,902 respondents who submitted their responses through the Friends of the Earth Scotland campaign expressed support for market restrictions on all the specified items.
31. Respondents who were in favour of market restrictions on all the proposed items acknowledged the convenience of single-use plastics but thought:
  - The harm to the environment caused by these items was, in most cases, greater than any benefit they provided.
  - They were a symbol of Scotland's throwaway culture.
  - None of the items in the proposed list could be considered 'essential'.
  - Their continued production and use acted as a deterrent to innovation and/or wider use of existing, greener, and more sustainable alternatives.
  - Existing alternatives were, in many cases, cheaper than the equivalent single-use plastic item.
32. Respondents in favour of market restrictions on all the proposed items also argued that regulation was needed to 'make change happen' and that banning these items was preferable to charging consumers more for them.
33. Some respondents supported restrictions on most, but not all, of the single-use plastic items specified in the consultation paper. Individuals in this group often identified as disabled and/or raised concerns of the potential implications for disabled people. Most organisations in this group were food, drink, tourism or other businesses, or manufacturers. These organisations highlighted where exemptions should be made, for example in vending machines or in bio-based and compostable take-away packaging. Some organisational respondents in this group called for life-cycle assessments to identify social, economic, and environmental impacts of potential alternatives to the single-use plastic items that are proposed for restrictions.

34. A small group of respondents opposed market restrictions on at least half of the specified items. This group mainly comprised manufacturing organisations or food, drink, tourism, and other business organisations. They argued that, in certain contexts, there were no better alternatives available and they opposed a 'blanket, one-size-fits-all' approach to dealing with single-use plastic products.
35. Respondents were mostly supportive of restrictions on the non-commercial supply of single-use plastics in tackling Scotland's throwaway culture. Those opposed to such restrictions (all of whom were packaging or other manufacturers) highlighted the potential costs of alternatives for charitable and community food groups and the NHS, or they argued that bio-based compostable single-use items should be permitted where reuse is not possible for health, safety, practical or economic reasons.
36. 94% of respondents supported the proposal to introduce a restriction on the manufacturing of the specified single-use plastic items, with similar levels of support among individuals and organisations as a whole. However, food, drink, tourism and other business organisations and manufacturing organisations were divided in their views.
37. Respondents supporting this restriction thought the manufacturing industry needed to take greater responsibility for environmental damage. If the commercial supply of the specified items was going to be effectively banned in Scotland, then it was viewed as 'inconsistent' to permit companies to continue to profit from the manufacture and export of these items to other countries.
38. The most common reason given for opposing a restriction on manufacturing the items was that this would risk Scottish companies becoming uncompetitive internationally, given that such restrictions will not exist in many other countries. (These concerns are addressed in the Competition Assessment.)
39. 80% of respondents were opposed to additional exemptions to the proposed market restrictions, while 20% supported additional exemptions. There were however differences between organisational and individual views on this issue. Most individuals did not support further exemptions, whilst organisations had a roughly 50/50 split between opposition and support. Manufacturing, food and drink, tourism, and other business organisations were more likely than other organisations to support additional exemptions.
40. Support for additional exemptions was mostly focused on groups of items or 'materials', and around two main sectors:
  - Medical, care, and independent living.
  - Food, drink, and catering.

41. Those opposed to additional exemptions argued that a minimal approach to exemptions should be adopted to provide clarity for all parties; to avoid loopholes which would potentially undermine the aims of the market restrictions; and to increase the effectiveness of the legislation, encourage innovation and maximise the environmental benefits.
42. Exemptions were supported where single-use plastic straws were required for medical reasons or to support independent living. Respondents suggested that disabled people should be consulted to determine how best to implement the proposed exemption, and called for reusable, recyclable, or compostable straws to be developed and made available to these groups instead.
43. Suggestions were also made for how access to plastic straws could be made available for those who needed them, whilst still restricting use for the general public. The two main views given here were that plastic straws could be provided on prescription or through health and social care services, and that they should be made available only upon request; in hospitality venues, for example.
44. More than 94% of respondents, and 79% of organisations, were in favour of additional market restrictions for single-use plastic items. The 1,902 respondents who submitted responses through the Friends of the Earth Scotland campaign wanted to see additional market restrictions cover plastic wet wipes and plastic tampon applicators. The main reasons given by supporters was the immediate and long-term damage caused by single-use plastics and the shift away from these items as part of a broader move to a 'greener', low carbon economy.
45. The main opposition to additional market restrictions came from packaging manufacturers and other types of manufacturing organisations. Comments here included:
  - Single-use plastics served an important purpose and that effective alternatives were not always available.
  - Other effective ways of dealing with problematic single-use plastics were already planned or being pursued (e.g. EPR, taxes, recycling initiatives).
  - Non-plastic alternatives could also cause environmental harm.
46. Environmental, economic, or social impacts relating to the proposed market restrictions were identified by just over a quarter of respondents. Organisations were more likely than individuals to do so. The main impacts discussed were:
  - Environmental impacts of alternatives to single-use plastics.
  - Impacts of littering.

- Opportunities and challenges for business.
  - Need for support for businesses following the changes.
  - Role and influence of 'big business' in achieving change.
  - Global trade in and use of single use plastics.
  - Impacts on health and wellbeing.
  - Financial impacts on individuals.
  - Impacts on equality groups.
47. 57% of respondents said the COVID-19 pandemic had resulted in changes to the market or wider economy that were not fully accounted for in the consultation. Organisations were more likely than individuals to think this. Respondents thought that COVID-19 had brought economic and social changes which had a potential impact on the single-use plastics market, and the wider aims of the proposed market restrictions. Changes were identified within the retail, hospitality and catering, service, health and social care, leisure and recreation sectors, and in people's working arrangements (including home working).
48. Respondents also identified changes in public attitudes and behaviours, and increased costs for businesses. While there was broad agreement over COVID-related changes, there was less agreement over the appropriate response to these changes and the implications for introducing market restrictions on single-use plastic items.
49. Other comments mostly involved endorsement of the proposed market restrictions and/or to emphasise the need for urgent action in this policy area. Respondents wanted the Scottish Government to 'go further' to address the problem of plastic and to facilitate a move to a more sustainable, 'greener economy'. Respondents also called for the (re)introduction of the Circular Economy Bill to the Scottish Parliament. These comments were made by the 1,902 respondents from the Friends of the Earth Scotland campaign, and other individuals. Some manufacturing, food, drink, tourism, and other business organisations provided information about ongoing work to improve the sustainability of products and stressed the importance of a collaborative approach in progressing work in this area.

### **3.3 Business consultation**

50. The aim of the engagement with businesses was to identify: (1) the current state of the market for the specified single-use plastic items in Scotland; (2) the evidence base related to individual items (e.g. sales volume; unit cost per item); (3) industry views around the impact of market restrictions for the items; and (4) the potential for unintended consequences of market restrictions.
51. To understand the full impacts of the legislation on small, medium, and large businesses, discussions were held with an appropriate cross-section of affected stakeholders.

52. Results of the business consultation have informed and will be presented in the Competition Assessment and Scottish Firms Impact Test sections.

## 4.0 Options

53. The Scottish Government is aligning policy with EU SUPD Article 5, to consider the introduction of market restrictions for the following items:

- Single-use plastic cutlery (forks, knives, spoons, chopsticks).
- Single-use plastic plates.
- Single-use plastic straws.
- Single-use plastic beverage stirrers.
- Single-use plastic balloon sticks.
- Single-use food containers<sup>24</sup> made of expanded polystyrene (EPS) and extruded polystyrene (XPS), including their covers and lids.
- Single-use cups and other beverage containers made of EPS and XPS, including their covers and lids.<sup>25</sup>

54. Given that the Scottish Government has committed to implementing regulations in line with the EU SUPD Article 5, only one policy option is compared to the business-as-usual scenario.

55. Therefore, the two options considered are:

56. **Baseline:** No policy change – business as usual. The baseline against which the costs and benefits of the introduction and implementation of the market restrictions on the single-use plastic items are evaluated.

57. **Option 1:** Scottish legislation will restrict the supply and manufacture of the single-use plastic items listed above. Specific exemptions will apply to the restrictions to ensure medical, health, and wellbeing purposes as well as independent living.<sup>26</sup>

### 4.1 Approach to modelling the policy options

58. The cost-benefit model focuses on the switch from the restricted single-use plastic items to the most-likely alternative single-use products. In line with earlier studies conducted for the Department for Environment, Food and Rural Affairs (Defra), the model also assumes a decrease in overall use of single-use items (plastic and alternative) over time, under both the business-as-usual scenario and Option 1. Part of this decrease is driven by a shift towards reusable products. Owing to limited comparability of the application of

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<sup>24</sup> Used for on-the-go food which is ready to eat and does not require further preparation.

<sup>25</sup> For simplicity, both EPS and XPS items will be referred to as EPS throughout the rest of this assessment.

<sup>26</sup> Scottish Government (2020) [Introducing market restrictions on problematic single-use plastic items in Scotland: Partial Business and Regulatory Impact Assessment \(BRIA\)](#).

reusables as well as a lack of evidence, we have not sought to produce a separate model for reuse.<sup>27</sup>

59. Legislation concerning the restrictions is expected to be laid by the end of 2021. For the purposes of this document we have assumed regulations are laid in November 2021 and come into force on 1 June 2022. To reflect the expected timeline, the model uses 2021 as a base year and assumes a transition period between November 2021 and June 2022, when the restrictions have not yet been implemented.
60. The Scottish Government recognises the uncertainty around the potential impact the United Kingdom Internal Market Act 2020 could have on the effect of these regulations, if lower standards are applied elsewhere in the UK.
61. Due to the uncertainty of the impact of the United Kingdom Internal Market Act 2020 the modelling used in this BRIA assumes that the draft regulations are fully effective.

#### **4.2 Trends in market sales growth of the single-use items (plastics and alternatives)**

62. The model includes assumptions regarding the overall growth in market sales of all the single-use items in question: both the single-use plastic items covered by the restrictions and their most-likely alternatives. The assumptions regarding market trends have been informed by previous studies conducted for Defra, which looked at the impacts associated with similar restrictions on selected single-use plastic items.<sup>28</sup> The assumptions around market sales growth in these previous impact assessments incorporated population forecasts specific to England. To account for any differences in population forecasts, the model has been adjusted to account for these differences between the forecasts produced for England and Scotland.
63. The negative growth trends reflected in the assumptions below are driven by rising awareness of the population around the negative effects of single-use items, the desire of businesses to avoid the costs of non-plastic single-use alternative products, and a gradual shift towards reusable products.

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<sup>27</sup> It is difficult to anticipate and model the impact of restrictions on single-use plastics products on trends in reusables. First, their applications are less directly comparable. For example, food and drink outlets cannot easily switch to giving out reusable straws without systems in place to recover the items and associated consumer behaviour change. Second, like-for-like assessment of price is not straightforward, as it must be based on a 'functional unit', representing one use of the item. This requires reliable data on how many times each item is reused, on average, which is not available.

<sup>28</sup> Resource Futures on behalf of Defra (2018a): [A preliminary assessment of the economic impacts of a potential ban on plastic cutlery, plastic plates and plastic balloon sticks](#), [A preliminary assessment of the economic, environmental and social impacts of a potential ban on plastic straws, plastic stem cotton buds and plastics drinks stirrers](#); and Resource Futures on behalf of Defra (2019) [A preliminary assessment of the economic impacts of a potential ban on expanded polystyrene food and beverage containers](#).

64. Research by Resource Futures found that many wholesalers were announcing a switch to plastic-free alternatives at the time the research was conducted.<sup>29</sup> This observed trend was projected to continue, with the assumption that this would be in a linear fashion. This is recognised as a simplified version of the market and in reality, it is likely that switching would occur in a non-linear fashion, however, it is difficult to provide a robust forecast of this. A Low, Central and High scenario approach was therefore taken by Resource Futures. We have adopted a similar approach, using Central figures in the model as follows:
65. For cutlery and plates, the model assumes an annual market growth trend of -1.1 per cent under the baseline, and of -2.1 per cent under Option 1.
66. For balloon sticks, the model assumes an annual market growth trend of -1.1 per cent under the baseline, and an annual change of -3 per cent under Option 1. The faster decline in the use of single-use balloon sticks compared with single-use cutlery and plates reflects the fact that alternatives to plastic balloon sticks are less readily available, and that it is easier to avoid their use.
67. In the case of beverage stirrers and straws, the model assumes a marginal annual increase in sales of 0.16 per cent under the baseline and an annual reduction of -1 per cent under Option 1.
68. Finally, in the case of EPS food containers and EPS cups, the model assumes an increase of 2.9 per cent in the sales of single-use items under both scenarios. This increase is primarily driven by the strong growth in the food service sector itself (reported to be as high as 7 per cent p.a.), as reported in a previous study.<sup>30</sup>
69. Note on the potential short-term impact of the pandemic on demand for single-use products: the model has been adjusted to take into account GDP forecasts published by the Office for Budget Responsibility (OBR), and associated impacts on market growth trends. The adjustments took into account the difference between GDP growth rate forecasts between the time of the previous studies for Defra (2018 and 2019) and the latest GDP growth rate forecasts published by the OBR in November 2020.
70. Taken together, the forecasts imply a significant drop in the annual growth rate of single-use products in 2020, followed by a rebound in growth between 2021-2023. Despite this potential rebound in the short-term, the overall number of single-use items in the market is expected to be lower than it would have been in the absence of the pandemic. The potential impacts associated with the pandemic on market growth rates are not modelled beyond 2023.

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<sup>29</sup> *ibid*

<sup>30</sup> Resource Futures on behalf of DEFRA (2019) [A preliminary assessment of the economic impacts of a potential ban on expanded polystyrene food and beverage containers.](#)



### 4.3 Trends in market shares

71. The market shares of the individual single-use plastic items and their most-likely alternatives were based on previous assessments undertaken in England for the Department for Environment, Food & Rural Affairs (Defra).<sup>31,32</sup> In line with views expressed by stakeholders, the model assumes the 2020 market shares of products in England and Scotland to be the same. Annual changes in the market shares of the restricted single-use plastic items were also informed by these previous studies, while incorporating new information on the availability of alternatives.
72. Baseline assumptions on changes in market shares of the restricted single-use plastic items are as follows:
- Single-use plastic cutlery and plates: a 10 percentage point per annum (p.a.) reduction in market shares, capped at 10 per cent of the total market.
  - Single-use plastic beverage stirrers and straws: a 10 percentage point p.a. reduction, capped at 1 per cent of the total market.
  - Single-use plastic balloon sticks: a 10 percentage point p.a. reduction in market shares, capped at 10 per cent of the total market.
  - EPS food containers and EPS cups: a 1 percentage point p.a. reduction.
73. Under Option 1, the model takes into account the timeline for policy announcement (November 2021) and implementation (June 2022), and assumes full compliance with the restrictions once they come into force in June 2022, while factoring in the exemptions for single-use plastic straws and balloon sticks. As a result, market shares for most items are assumed to reduce to 0 per cent by June 2022. A market cap of 1 per cent is assumed for single-use plastic straws, and a cap of 0.1 per cent is assumed for single-use plastic balloon sticks from June 2022 on.
74. During the transition period between November 2021 and June 2022, the model assumes that 20 per cent of the adjustment occurs in the first three months of the transition period and 80 per cent of the adjustment takes place in the final three months. Within each three-month adjustment period it is assumed that market shares adjust in a linear manner.

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<sup>31</sup> These calculated the relevant market shares based on consumption data provided by large companies.

<sup>32</sup> Resource Futures on behalf of Defra (2018a): [A preliminary assessment of the economic impacts of a potential ban on plastic cutlery, plastic plates and plastic balloon sticks](#), [A preliminary assessment of the economic, environmental and social impacts of a potential ban on plastic straws, plastic stem cotton buds and plastics drinks stirrers](#); and Resource Futures on behalf of Defra (2019) [A preliminary assessment of the economic impacts of a potential ban on expanded polystyrene food and beverage containers](#).

#### **4.4 Number and weight of items and prices**

75. Information from the Strategic Environmental Assessment (SEA) published by the Scottish Government for the same market restrictions was used to calculate the number and weight of single-use plastic and alternative items.<sup>33</sup>
76. The prices of single-use plastic and alternative items in Scotland have been estimated based on a study carried out related to a similar policy change in Wales. This used the averages of prices found on the websites of several wholesalers, which supply UK-wide, and therefore the figures did not need adjusting for the Scottish market.<sup>34</sup> The model assumes that prices remain constant for the period analysed and are calculated exclusive of VAT, as taxes are treated as transfer payments.

#### **4.5 Approach to assessing impacts of policy options**

77. The cost-benefit model considers the quantifiable impacts associated with the restrictions. The costs and benefits associated with each impact are analysed over a 10-year period (i.e. between 2022-2031) and a net present value (NPV) is calculated for each impact. The NPV calculations use a discount rate of 3.5 per cent, consistent with HM Treasury Green Book guidance.<sup>35</sup>

#### **4.6 Carbon impacts**

78. A decline in the use of the restricted items, coupled with a shift to the most-likely single-use alternative products typically made of wood and paper, has significant implications for carbon emissions at both the production and end-of-life waste management stages. The cost-benefit model evaluates the carbon impacts associated with the baseline and Option 1, using carbon factors published by Zero Waste Scotland.<sup>36</sup>
79. The carbon factors are compiled using a life-cycle approach and therefore encompass production or embodied impacts (regardless of whether production occurs in the UK or abroad), and disposal impacts, including emissions related to collection and transport, and to the waste management process. In addition, the carbon factors include avoided production impacts whereby waste is prevented and recycled (regardless of whether this occurs in the UK or abroad). Zero Waste Scotland reports different carbon factors for different types of

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<sup>33</sup> The Scottish Government (2020) [Introducing market restrictions on problematic single-use plastic items in Scotland: Strategic Environmental Assessment - environmental report](#).

<sup>34</sup> Cole, G; Worth, C; Powell, K; Reeve, S; Stevenson, S; Morgan, N; Walker, H (2019) [Preliminary research to assess the impacts of a ban or restrictions in sale in Wales of items in the EU's Single Use Plastics Directive](#). Cardiff: Welsh Government, GSR report number 32/2020.

<sup>35</sup> HM Treasury (2020): [The Green Book, Central Government Guidance on Appraisal and Evaluation - Social time preference rate \(STPR\), p.45-46](#).

<sup>36</sup> Zero Waste Scotland (2011-2021) [Carbon Metric Publications](#).

materials, as well as for waste generated, and whether it is recycled, composted, landfilled or incinerated at the end-of-life stage. Further, the carbon factors differ depending on whether the waste is generated by households or non-households.

80. To monetise the carbon impacts associated with changes in the carbon footprint and emissions of single-use plastic and alternative products, the model uses carbon prices published in the Green Book by HM Treasury. The Green Book reports both traded and non-traded value for carbon prices,<sup>37</sup> depending on the type of emissions reductions and whether these come from sectors within the EU Emissions Trading System (EU ETS).<sup>38</sup> According to the UK Government's and the European Commission's guidance on the EU ETS, energy-intensive industry sectors including oil refineries, as well as pulp, paper, and cardboard are covered by the scheme. Therefore, the model applies the traded value to calculate the carbon impacts associated with emissions.

#### **4.7 Impacts associated with different end-of-life waste management options**

81. The model looks at four different end-of-life management options for the restricted single-use plastic items and their most-likely alternatives, namely:
- Landfill
  - Incineration (energy from waste, EfW)
  - Composting
  - Recycling
82. Together, these waste management options are assumed to account for around 99 per cent of the waste generated from the relevant single-use plastic and alternative items in a given year in Scotland. The model assumes that the rest of the waste generated (approximately 1 per cent) is littered.
83. To calculate the impacts associated with each of the end-of-life management options above, the cost-benefit model makes assumptions regarding the percentages of waste single-use plastic and alternative items that are landfilled, incinerated, composted or recycled. The model assumes that these percentages are constant over the period analysed. The assumptions have been informed by previous impact assessments conducted for Defra in relation to similar market restrictions on single-use plastic items in England.<sup>39</sup>

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<sup>37</sup> Department for Business, Energy & Industrial Strategy (2020) [Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal](#).

<sup>38</sup> European Commission (2021) [EU Emissions Trading System \(EU ETS\)](#).

<sup>39</sup> Resource Futures on behalf of Defra (2018a): [A preliminary assessment of the economic impacts of a potential ban on plastic cutlery, plastic plates and plastic balloon sticks](#), [A preliminary assessment of the economic, environmental and social impacts of a potential ban on plastic straws, plastic stem cotton buds and plastics drinks stirrers](#); and Resource Futures on behalf of Defra (2019) [A preliminary assessment of the economic impacts of a potential ban on expanded polystyrene food and beverage containers](#).

84. In the case of recycling, the model deviates from the assumptions used in the Defra studies regarding the percentage of single-use plastic and alternative items that are recycled, on the basis of insights from Zero Waste Scotland into recycling systems in Scotland.
85. Whereas the Defra studies assumed that some of the single-use plastic items within the scope of the restrictions were recycled, the model does not include recycling as an end-of-life waste management option for the single-use plastic items, as none of the items are currently targeted for collection in Scotland.
86. In the case of alternative single-use items, the model assumes that the alternatives to single-use plastic balloon sticks and EPS cups are the only items of which a share is recycled, but only a very small proportion. By contrast, alternatives to single-use plastic plates, cutlery, straws, beverage stirrers and EPS food containers are assumed not to be recycled, since these items are contaminated after use, and often poorly separated even if recycling is viable.
87. Scotland is currently scheduled to introduce a landfill ban on biodegradable municipal waste in 2025. The definition of biodegradable is such that almost all residual waste (of which the single-use plastic items form a part) would be covered. This assessment therefore currently assumes the management route for single-use plastic items disposed of as residual waste post-2025 would be Energy from Waste rather than landfill. We note however that Scottish Government is developing a route map identifying how to best achieve its 2025 waste commitments and optimise waste policy with wider climate goals beyond 2025.
88. To calculate costs or benefits associated with different end-of-life waste management options, the model uses gate fees charged for waste recycling, recovery, treatment and disposal options. These are based on a survey looking at gate fees charged to local authorities in the UK for different waste management options.<sup>40</sup> Given the landfill ban on biodegradable municipal waste that will be effective after 2025, a gate fee of £99 is assumed for all end-of-life waste management options except recycling from that year on.
89. To account for the income local authorities receive for materials provided to recycling facilities, the model uses price indicators for relevant materials. Price indicators for multigrade paper are applied to the two categories of alternative single-use items that are recycled (the cardboard alternatives to balloon sticks and EPS cups). Price data was collected and averaged over a five-year period to smooth the fluctuation in prices.<sup>41</sup>

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<sup>40</sup> WRAP (2019) [Gate fees 2018/19 report Comparing the costs of alternative waste treatment options](#)

<sup>41</sup> letsrecycle.com compiles prices per tonne for different materials on an ex works (EXW) basis (EXW is a shipping arrangement in which a seller makes a product available at a specific location, but the buyer has to pay the transport costs.) Paper prices were downloaded from: <https://www.letsrecycle.com/prices/>

#### 4.8 Direct and indirect costs of litter

90. Single-use items that are littered by consumers have three distinct impacts associated with them:
- Direct costs associated with the clean-up of items that have been littered.
  - Indirect disamenity costs from seeing litter on the ground.
  - Indirect costs from the negative effects of plastic pollution.
91. The cost-benefit model accounts for the first two but owing to a lack of data and suitable methodologies, it was not possible to include the indirect costs from the negative effects of plastic pollution, which affect territorial, land-based and marine natural capital. As a result, the benefits of Option 1, in terms of the avoided impacts of plastic pollution, are under-counted.
92. To estimate the direct costs associated with cleaning up litter, the model uses assumptions based on previous work conducted for Defra that around 1 percent of items are littered each year. These assumptions also take account of the different degradation rates involved for different types of materials.<sup>42</sup> An estimate for the costs associated with each tonne of litter clean-up, enforcement and education is provided based on a previous study assessing the scale and costs of littering in Scotland.<sup>43</sup>
93. In terms of the indirect (disamenity) costs of littering, it is assumed that the disamenity costs are perceived on a per-item basis rather than on the basis of the weight (or volume) of the items littered. The model draws on previous work by Zero Waste Scotland in applying an estimate of “willingness to pay”, reflecting what the population may be willing to pay for a cleaner environment on a per-item basis.<sup>44</sup> This cost estimate is then combined with the number of single-use items under the baseline and Option 1, to estimate the indirect (disamenity) costs associated with terrestrial and beach litter. As in the case of direct littering costs above, the model takes account of the differences between single-use plastic and alternative items in terms of degradation rates.
94. Estimates for the amount of beach litter attributable to EPS food and drink containers were informed by qualitative and quantitative research.<sup>45</sup> It should

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<sup>42</sup> Resource Futures on behalf of Defra (2019) [A preliminary assessment of the economic impacts of a potential ban on expanded polystyrene food and beverage containers](#).

<sup>43</sup> Zero Waste Scotland (2013) [Scotland's Litter Problem: Quantifying the scale and cost of litter and fly tipping](#).

<sup>44</sup> Zero Waste Scotland (2013) [Scotland's Litter Problem: Quantifying the scale and cost of litter and fly tipping](#).

<sup>45</sup> Resource Futures on behalf of Defra (2019) [A preliminary assessment of the economic impacts of a potential ban on expanded polystyrene food and beverage containers](#).

be noted that no composition data was available for beach litter which clearly identifies EPS food and drink containers as separate items.

95. Total beach litter composition was informed by analysis of ten years' survey data from the Marine Conservation Society,<sup>46</sup> and the impact assessment for the EU SUPD.<sup>47</sup> From this, it was estimated that 'Polystyrene (small)' and 'Polystyrene foam' accounted for 9% of litter found on beaches. It was estimated that 20% of this was from EPS food and drink containers, given that the majority of EPS is used for consumer goods packaging. This 20% was then split into the individual products on the same ratio as applied to terrestrial litter within the impact assessment. From this, the estimate of the proportion of beach litter attributable to EPS items is as follows in Table 2:

**Table 2. EPS beach litter by product**

<b>Product</b>	<b>Proportion of total beach litter (%)</b>
<b>Beverage cups</b>	0.14
<b>Takeout containers and to-go boxes</b>	0.43
<b>Food trays and chip cones</b>	0.43
<b>Pots</b>	0.05

96. An important factor within this methodology is the comparison of the decomposition rates between EPS items and biodegradable alternatives. This is an important element in distinguishing the benefits gained from the use of alternative items compared to EPS. Non-plastic alternatives to single-use plastic items tend to decompose at a much faster rate, so there will be observable impacts on beach litter from the substitution of plastic to non-plastic single-use items.

#### **4.9 Waste collection costs**

97. In addition to the end-of-life waste management and littering costs described above, the cost-benefit model uses a simple approach to provide an estimate for waste collection costs incurred by local authorities. Waste collection costs are modelled for all end-of-life waste management options (including landfill, recycling, composting and EfW), using information on councils' refuse

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<sup>46</sup> Nelms et al. (2017) [Marine anthropogenic litter on British beaches: A 10-year nationwide assessment using citizen science data.](#)

<sup>47</sup> European Commission (2018) [Impact Assessment, Reducing Marine Litter: action on single-use plastics and fishing gear.](#)

collection services to estimate the approximate cost associated with waste collection.<sup>48</sup>

98. To provide a more robust estimate of the economic impact on waste collection services, the analysis would need to look at the wider costs such as gate rejects and higher gate fees paid for contaminated bins, and costs of disposal at the materials recovery facility (MRF) out gate. This was not possible owing to data constraints.
99. The analysis excludes landfill tax, as this is a form of transfer payment, defined as a redistribution of income through a payment where no goods or services are being paid for. Transfer payments are excluded from cost-benefit analysis under the Green Book methodology.

#### **4.10 Enforcement costs**

100. The introduction of the restrictions will lead to enforcement costs for local authorities, such as audits, investigations or legal cases. It is assumed that most enforcement will take place via Trading Standards Scotland and in combination with other duties, and therefore the additional staff time requirements will be low.
101. The cost-benefit model estimates the ongoing costs associated with enforcement using a bottom-up approach, taking into account the administrative and legal services required.<sup>49</sup> The model assumes a light-touch approach to enforcement, and calculates the costs based on 0.1 person per local authority to carry out the associated administrative tasks and 0.05 person per local authority for legal advice.

#### **4.11 Communication costs**

102. The introduction of the restrictions will be accompanied by a communications campaign. The cost-benefit model includes an estimate of these costs, based on current plans.

#### **4.12 Costs to consumers and distributors**

103. The move away from single-use plastic items to single-use alternatives can, in some cases, imply slightly higher prices, as products made of wood and paper can cost more than single-use plastic items. The cost-benefit model assumes that any increases in the prices of alternative items are passed onto the end consumer (i.e. full transfer of changes in item costs). This is consistent with

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<sup>48</sup> Audit Scotland (2000) [Benchmarking refuse collection, A review of councils' refuse collection services](#) and information provided by Zero Waste Scotland.

<sup>49</sup> Scottish Government (2005) Based on the approach in [Proposed plastic bag levy - extended impact assessment final report](#).



Defra impact assessments of similar restrictions on single-use plastic items.<sup>50</sup> As noted above (see 'Prices of items'), cost impacts are based on wholesale prices, exclusive of VAT.

104. The extent to which additional costs will be experienced by consumers will depend on the willingness and ability of individual businesses in the supply chain to absorb them. This depends on factors such as profit margins, market positioning<sup>51</sup> and own price elasticities of demand. How noticeable the cost increase is to an individual will also depend on the context of the purchase. Where a small number of items is provided along with a food or drink purchase, the costs to consumers are 'hidden' and any cost increases would be marginal. Cost increases would be more noticeable to consumers buying items in bulk from retailers.
105. There was insufficient data and evidence available to model the split of the additional costs from higher prices between businesses and consumers. However, this does not have any effect on the net NPV results.

## 5.0 Results

106. Table 3, below, summarises the cost impacts on each stakeholder group under the two scenarios assessed. It shows the NPV values under the baseline scenario and Option 1, for each impact and the affected stakeholder. The net benefit or cost is calculated by deducting the NPV under the baseline scenario from the NPV under Option 1. A higher NPV is represented as a benefit to society, therefore a negative change to the NPV represents an increased cost, and a positive change to the NPV represents an increased benefit. The table shows that the economy-wide impact of introducing the market restrictions, over a ten-year period, would be -£13.7 million compared to business as usual.

**Table 3. Results of the cost-benefit analysis**

Stakeholder	Impact	NPV under Baseline (£)	NPV under Option 1 (£)	Net change to NPV (£)
<b>Society</b>	Carbon impacts (production)	-2,349,765	-1,963,643	386,122
<b>Society</b>	Carbon impacts (recycling)	5,166	17,800	12,635

<sup>50</sup> Resource Futures on behalf of Defra (2019) [A preliminary assessment of the economic impacts of a potential ban on expanded polystyrene food and beverage containers](http://sciencesearch.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=220&ProjectID=20292). Available at: <http://sciencesearch.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=220&ProjectID=20292>

<sup>51</sup> Zero Waste Scotland (2021): "Pricing impacts of single-use plastic bans: Assessing the impact of market-restrictive bans for single-use plastic products on product pricing". Not published.



<b>Society</b>	Carbon impacts (composting)	58,456	77,084	18,628
<b>Society</b>	Carbon impacts (incineration)	-506,790	119,682	626,472
<b>Society</b>	Carbon Impacts (Landfill)	-40,026	-68,611	-28,585
<b>Local Authorities</b>	Recycled material	24,533	84,272	59,739
<b>Local Authorities</b>	Composting costs	-193,214	-257,908	-64,694
<b>Local Authorities</b>	Energy from Waste costs	-2,429,345	-2,835,118	-405,772
<b>Local Authorities</b>	Landfill costs	-100,791	-141,464	-40,673
<b>Local Authorities</b>	Direct littering costs	-652,888	-767,870	-114,982
<b>Society</b>	Indirect littering costs	-31,032,156	-29,485,645	1,546,511
<b>Society</b>	Visual disamenity of beach litter*			3,435,600
<b>Local Authorities</b>	Residual waste	-1,708,246	-2,087,874	-380,778
<b>Scottish Government</b>	Enforcement costs	0	-1,194,991	-1,194,991
<b>Scottish Government</b>	Communication costs	0	-289,855	-289,855
<b>Businesses</b>	Manufacturing costs	0	-676,471	-676,471
<b>Society</b>	Change in item costs	-272,665,971	-288,666,681	-16,000,709
<b>Total</b>		<b>-311,591,496</b>	<b>-327,462,427</b>	<b>-13,738,275</b>

\*The disamenity costs of beach litter could not be separated out into NPVs for the Baseline and Option 1.

107. The negative NPV is mainly driven by an increase in item costs of £16.0 million, reflecting the higher costs of some alternative items compared to the single-use plastic items. The model does not take into account any potential changes to alternative item costs over time. Scheme enforcement costs are also £1.2 million above the Baseline.
108. Another driver of costs is item weights. Alternative products are generally heavier than single-use plastic items. For instance, a paper cup weighs on average around 11g versus around 3g for its single-use plastic equivalent. The waste management costs are assessed on the basis of weight, meaning a higher cost for alternative products. The model does not take into account any potential changes in the weight of alternative products over the period analysed.
109. On the other hand, Option 1 has net carbon-related benefits of £1.0 million and net benefit of £5 million related to reductions in the indirect costs of littering, demonstrating the environmental benefits of the policy change.
110. Table 4 presents the net cost impacts as they affect each stakeholder group. The model estimates that the largest costs will fall onto society, which is mainly driven by the higher prices associated with the alternative items, while local authorities will face the smallest costs.

**Table 4: NPV impacts by stakeholder group**

<b>Stakeholder</b>	<b>NPV under baseline (£)</b>	<b>NPV under Option 1 (£)</b>	<b>Net change to NPV (£)</b>
<b>Local authorities</b>	-5,060,408	-6,007,567	-947,160
<b>Scottish Government</b>	0	-1,484,846	-1,484,846
<b>Society</b>	-306,531,088	-319,970,013	-10,003,325
<b>All</b>	-311,591,496	-327,462,427	<b>-13,738,275</b>

111. Table 5 shows how the economic impacts of market restrictions would be likely to vary by item.

**Table 5: NPV impacts by individual item**

<b>Category</b>	<b>NPV under Baseline (£)</b>	<b>NPV under Option 1 (£)</b>	<b>Net change to NPV (£)</b>
<b>Cutlery</b>	-111,837,195	-105,551,998	-6,285,198
<b>Plates</b>	-59,505,718	-57,071,734	-2,433,984
<b>Stirrers</b>	-1,835,685	-1,738,353	-97,332
<b>Straws</b>	-41,112,312	-38,883,191	-2,229,121
<b>Balloon Sticks</b>	-1,259,853	-1,267,894	8,041

<b>EPS containers</b>	-75,480,494	-96,586,358	-21,105,864
<b>EPS cups</b>	-20,412,306	-24,348,255	-3,935,949

Note: The table above excludes costs and benefits which cannot be separated out by individual item, so the columns do not add up to the total net NPV change seen in Table 3.

112. The model was found to have particularly sensitivity to the costs of EPS food containers and their alternatives, and as a result these were given additional attention.
113. Engagement with stakeholders (manufacturers, wholesalers and takeaway outlets) indicated that the most likely alternatives to EPS food containers were fibre-based containers (such as bagasse), which have very similar heat retention, grease and liquid resistant properties. Depending on the business models adopted by individual takeaway outlets, and the type of food sold, paper/card-based containers might also be considered. The choice of alternative container type will be largely influenced by prices. Currently, average prices for paper/card-based food containers are higher than those for fibre-based containers.
114. Under Option 1, fibre-based containers have been modelled as the most likely alternatives to EPS, due to their better functionality and lower price point than paper/card-based containers. In order to test what impacts might result if a share of businesses opted to use paper/card-based containers rather than fibre-based, a sensitivity analysis was undertaken. The results are presented in Table 6, below.

**Table 6. Market share of non-EPS food containers and NPV impacts**

% fibre-based	% paper/card-based	EPS container NPV (£)	Overall net NPV (£)
80	20	-24,343,429	-16,593,973
90	10	-22,050,217	-14,300,761
100 (Option 1 core assumption)	0	-21,487,731	-13,738,275

115. This shows that if 10% of the EPS food container market switched to the more expensive paper/card-based food containers rather than fibre-based, an additional £0.6 million would be added to the net NPV under Option 1. If 20% switched, £2.9 million would be added.
116. Presenting the results by item also allows identification of where the most significant differences lie in carbon impacts. These results are presented in Table 7.

**Table 7: Carbon costs of individual items**

<b>Item</b>	<b>NPV under Baseline (£)</b>	<b>NPV under Option 1 (£)</b>	<b>Net change to NPV (£)</b>
<b>Cutlery</b>	534,575	197,694	336,881
<b>Plates</b>	769,961	586,329	183,632
<b>Stirrers</b>	8,846	7,245	1,602
<b>Straws</b>	190,326	125,012	65,313
<b>Balloon sticks</b>	8,667	5,028	3,640
<b>EPS containers</b>	966,436	659,503	306,933
<b>EPS cups</b>	354,149	236,877	117,271
<b>Total</b>	2,832,960	1,817,688	1,015,272

117. In terms of carbon emissions, EPS containers lead to the greatest reduction under Option 1. Cutlery is the next most significant item when carbon reductions are considered.

118. Changes to the indirect costs of littering are a significant environmental benefit of the policy, and Table 8 below demonstrates how each item contributes to this.

**Table 8: Indirect littering costs for individual items**

<b>Item</b>	<b>NPV under Baseline (£)</b>	<b>NPV under Option 1 (£)</b>	<b>Net change to NPV (£)</b>
<b>Cutlery</b>	-16,074,123	-15,204,803	869,320
<b>Plates</b>	-2,608,828	-2,472,676	136,152
<b>Stirrers</b>	-111,003	-105,126	5,877
<b>Straws</b>	-17,751,376	-16,781,639	969,737
<b>Balloon sticks</b>	-89,157	-81,252	7,905
<b>EPS containers</b>	- 6,333,858	-3,354,452	2,979,406
<b>EPS cups</b>	-2,389,747	-1,930,544	459,203
<b>Total</b>	-45,358,092	-39,930,492	5,427,600

119. The greatest economic benefit from reduced littering impacts comes from the restriction on EPS food containers, at nearly £3 million. A further £1 million results from restricting single-use plastic straws, and £0.9m from cutlery. There is a significant benefit in this cost category because non-plastic alternative items degrade much faster than the single-use plastics items they are replacing.

120. Many plastics, including EPS, are resistant to photodegradation and are buoyant, meaning that plastic litter eventually accumulates along coastlines,

becoming an increasingly large component of marine debris. It is estimated that plastics contribute towards 50-80% of beach litter,<sup>52</sup> and that food containers comprise 1% of plastic beach litter in the UK.<sup>53</sup>

121. The analysis above demonstrates that while society is likely to face some additional costs from restrictions on EPS food containers and cups, these are also the items for which restrictions are expected to result in the largest environmental benefits.
122. Looking at the cost-benefit analysis more broadly, it is worth noting two limitations to the methodology, which mean that the costs of the policy change may be overstated while the benefits are understated.
123. First, the assumptions regarding the prices of alternative single-use products may be too high, particularly in the later part of the time period under consideration. This is because as market demand for alternative single-use products rises, their prices are likely to fall owing to economies of scale and product innovation. If the prices were to fall, the net NPV of Option 1 would become less negative.
124. Second, the indirect costs of plastic pollution (which are avoided through this policy change) are largely uncounted. Robust data and methodologies are lacking to enable cost estimates for the avoided damage to Scotland's terrestrial and marine natural capital, which has knock-on benefits for the tourism, transport and fisheries industries as well as human health.<sup>54</sup>

## **6.0 Scottish Firms Impact Test**

125. The Scottish Firms Impact Test considers the impact of the market restrictions on specific single-use plastic items on key sectors and groups by consulting relevant businesses and business associations, representing businesses of varying sizes and from different sectors.
126. The table below summarises the businesses interviewed for the Scottish Firms Impact Test. The stakeholders were selected to represent the breadth of the sectors and activities potentially affected by the restrictions along the supply chain.

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<sup>52</sup> ISWA (2017). [Prevent marine plastic litter – now!](#)

<sup>53</sup> [OSPAR survey on most commonly found identifiable microplastic items in beach litter in the UK.](#)

<sup>54</sup> Beaumont, N. et al. (2019) [Global ecological, social and economic impacts of marine plastic. Marine Pollution Bulletin.](#) Vol. 142, pp. 189-195; and Hodal, K (4 Apr 2019) [Marine plastic pollution costs the world up to \\$2.5tn a year, researchers find.](#) The Guardian.

**Table 9: Summary of organisations interviewed for the Scottish Firms Impact Test**

Organisation name	Description	Sector
Food and Drink Federation Scotland (FDF Scotland)	Membership body for food and drink manufacturers	Food and drink
Scottish Wholesale Association (SWA), and the following members: Bidfood Braehead Foods Dunn's Food & Drinks	Trade association for food and drink wholesalers in Scotland	Wholesalers; Food and drink
Bio-based and Biodegradable Industries Associates (BBIA)	Trade association representing producers of biodegradable polymers and end-products	Plastics/materials
British Plastics Federation (BPF)	Trade association representing the UK plastics industry	Plastics/materials
Federation of Small Businesses (FSB)	Business organisation representing small businesses across the country	N/A

127. In addition to engaging with the stakeholders listed in the table above, Zero Waste Scotland undertook a telephone survey with a sample of Scottish takeaway outlets in late May 2021. A summary of the views expressed is presented at the end of this section.

## 6.1 Scottish Firms Impact Test results

128. Below we summarise the responses given by the stakeholders interviewed for each of the twelve core questions that were developed for the Scottish Firms Impact Test. These interviews were conducted as part of the development of the final BRIA.

129. **Question 1** “The Scottish Government is currently consulting on legislation aimed at restricting the sale of specific single-use plastic items in Scotland. Are you supportive of the introduction of these restrictions? Why (not)? Please give your reasons.”

130. **Generally supportive of restrictions** Two respondents (BBIA and FDF Scotland) stated that they were generally supportive of the proposed market restrictions. FDF Scotland cited aligning Scottish policy with the EU Single Use Plastics Directive (SUP Directive) as a reason for its views.
131. **Supportive of restrictions with some concerns**
- **Concerns over impact on small businesses** One organisation (FSB) noted that while it understood the general objectives of the market restrictions and their importance for advancing the circular economy, at the same time it noted some concerns around the potential impacts on smaller businesses who may rely more on single-use plastics in their operations than their larger counterparts. Further, as the impacts of the COVID-19 pandemic were still being felt by businesses, it noted that consideration should be given to allowing businesses, and in particular small businesses, time to recover from the effects of the pandemic and crisis, for example through a moratorium on new legislation affecting small businesses.
  - **Concerns that definitions could limit alternative options** SWA also noted that the proposals included items with plastic or bioplastic lining, as well as bio-based and compostable plastic items. The SWA was of the view that if these were banned, it would limit availability of alternatives. (Note: the items listed here are all considered to be single-use plastic items, not alternatives, under this proposal as well as the SUP Directive.)
132. **Question 2** “In your opinion how has the use of single-use plastic items covered by the market restrictions changed over recent years (e.g. in the last 5 years)? How would you expect the use of these items to change in the next 5-10 years in the absence of the market restrictions being introduced?”
133. **Over recent years there has been a shift away from single-use plastic items** Four organisations (BBIA, FDF Scotland, FSB and SWA) noted that there had been a shift away from single-use plastic items to alternatives. BPF did not have a view on market trends.
134. **Larger businesses have seen a greater shift to alternative products** Two organisations (FSB and SWA) reported observing a split between smaller and larger organisations in terms of the shift to alternative, non-plastic products (including re-usable items), with larger businesses generally seeing a greater shift.
135. **The decline in the use of single-use plastic items is driven by both consumers and businesses**
- FDF Scotland noted that businesses tended to respond to consumer needs, whether or not this led to environmentally-friendly outcomes. Pressures such as branding, ethical considerations and the introduction of similar measures in other parts of the UK were identified as factors potentially driving the decline in the use of single-use plastics on consumers’ side.

- The SWA noted that the shift away from single-use plastics was also affected by business decisions, for example, to stock and invest in what are viewed as more environmentally-friendly products. BBIA stated that consumer and retail pressure both played an important role in disincentivising the use of plastics, especially where these were readily substitutable.
136. **The COVID-19 pandemic may impact demand for single-use items** Two stakeholders (FSB and BPF) suggested that the current COVID-19 pandemic may have altered the downward trend in the use of single-use plastic items, though did not provide evidence in support of this assertion. (Note: there is insufficient evidence at present to assess trends in single-use items during Covid, or to forecast future post-Covid trends.)
  137. **Question 3** “In your opinion what will be the biggest potential impacts (both costs and benefits) of introducing the market restrictions on your business or on those which you represent? Which businesses, in your opinion, will be most affected by the restrictions? Please provide evidence where possible.”
  138. **Concerns around the additional costs of manufacturing alternative items are limited, as the market has already started to adjust** One organisation (FDF Scotland) believed that for food and drink businesses, the cost impacts associated with changing manufacturing and production processes were likely to be the biggest potential impacts. However, in response to Question 4, it further stated that some of its larger members had already taken mitigating steps in response to the SUP Directive, suggesting that further impacts may be limited. The BPF noted that the impacts were likely to be limited for its members, including EPS manufacturers, as there was not a big manufacturing sector in the UK.
  139. **Smaller businesses have concerns about additional costs of alternative products** The FSB stated that the most significant impact on its members was likely to be costs related to higher prices, as alternative single-use items were generally more expensive than single-use plastics. The FSB noted that these additional costs may be passed onto customers. (These concerns are addressed in the Competition Assessment section).
  140. **Businesses dependent on single-use plastic items, including the hospitality sector, likely to be most affected** The FSB was of the view that businesses producing or relying on single-use plastic items within the scope of the restrictions would experience the biggest impacts. The FSB highlighted the impact on the hospitality sector, which made use of most of the products in question.
  141. **Some firms which produce single-use items marketed as alternatives to conventional plastic may also be affected** Two organisations (BBIA and SWA) noted that due to the proposed list of single-use plastic products to be



restricted (which are in line with the SUP Directive), some firms which produce single-use products marketed as environmentally-friendly alternatives to conventional single-use plastic products may also be affected. This included businesses whose product range includes some items made fully or partially from compostable plastic, which fall within the scope of the market restrictions, though industry has tended to market them as alternatives to plastic.

142. **Customers may face higher costs as a result of the restrictions** One respondent (BPF) suggested that consumers may be most affected by the restrictions, as the increased costs to businesses resulting from the higher price of alternatives, could be passed onto consumers. These concerns are addressed in the Consumer Impact section.
143. **Question 4** “Has your business or have the businesses you represent taken any steps to mitigate any anticipated impacts or costs associated with the market restrictions? If so, please expand your answer.”
144. **Some larger food and drink businesses have already taken mitigating steps** One respondent (FDF Scotland) stated that some of its members had already taken mitigating actions in response to the market restrictions. FDF Scotland explained that these actions had—at least in part—been motivated by the introduction of the SUP Directive, which had led some larger firms to start adapting their production processes elsewhere in Europe. Given the complexity around supply chains, these changes would also affect the Scottish market.
145. **No mitigating steps taken, or none known** Four organisations (BBIA, FSB, SWA and BPF) stated that the organisations they represent either had not taken any mitigating steps or that they were not aware of such actions. The FSB noted that mitigation was unlikely to be a top priority for businesses, since due to COVID-19 most small businesses were focused on survival. In addition, it suggested that there was probably not much awareness around the market restrictions. Nonetheless, it noted that some individual businesses could have taken mitigating steps. Similarly, the SWA was not aware of any mitigating steps taken, citing lack of clarity regarding the scope of legislation. However, it noted that businesses may have started to bring in more environmentally-friendly containers. BPF was not aware of significant mitigating steps that had been taken among the limited number of EPS manufacturers in the UK.
146. **Question 5** “Does your organisation or association have specific concerns on how the restrictions might impact businesses in more remote areas of Scotland? Please expand on your answer.”
147. **Small businesses in remote areas may struggle to deal with additional costs on top of existing delivery charges** FSB stated that small businesses in more remote areas of Scotland would be in a weaker position to absorb any additional costs associated with the market restrictions, as they already faced higher delivery charges than businesses in less remote areas. Any potential

impacts on more remote areas in Scotland will be addressed in the Island Communities Impact Assessment that accompanies this BRIA.

148. **No concerns** FDF Scotland did not have any specific concerns affecting businesses in more remote areas of Scotland, as the alternative items replacing single-use plastic items would go through existing supply chains.
149. **No fixed view** Two respondents (BBIA and BPF) did not express a view on how businesses in more remote areas may be affected by the restrictions.
150. **Question 6** “To what extent do you expect the market restrictions to put your business, or those which you represent, at a disadvantage, nationally or internationally? Please provide evidence where possible.”
151. **No disadvantage nationally or internationally** Three organisations (FDF Scotland, FSB and BBIA) stated that the introduction of market restrictions was unlikely to put Scottish firms at a disadvantage either nationally or internationally, as similar restrictions were being considered and implemented in other parts of the UK (England and Wales) and in the EU. Similarly, the SWA noted that the restrictions would only put wholesalers at a disadvantage if no similar restrictions were introduced in the rest of the UK. This was because if restrictions were only introduced in Scotland with the rest of the UK unaffected, then manufacturers may decide not to produce and supply alternative, non-plastic single-use products for wholesalers operating in Scotland.
152. **Restrictions could somewhat disadvantage the UK plastics industry** The BPF commented that the introduction of market restrictions should avoid penalising plastic single-use items without a detailed analysis of the potential detrimental environmental impacts of the alternatives, to avoid the restrictions unfairly disadvantaging the UK plastics industry.
153. **Question 7** “Do you have any concerns about these restrictions affecting competition amongst your suppliers, or those of the businesses which you represent? If so, could you elaborate?”
154. **Some concerns around smaller producers** One organisation (FDF Scotland) noted that the restrictions may affect small producers more than larger ones. Further, it suggested that smaller manufacturers attaching straws to carton soft drink boxes could be particularly affected.
155. **No concerns** Two respondents (BBIA and SWA) did not state any concerns regarding how the restrictions may affect competition amongst suppliers.
156. **No fixed view** Two organisations (FSB and BPF) did not have a particular view about how the restrictions may affect competition amongst suppliers. The BPF noted that it did not foresee a big impact on competition within the UK plastics industry.
157. **Question 8** “When the market restrictions come into force, will your business or the businesses you represent switch to alternative products, or do you

anticipate stopping the use, sale or production of the products affected by the restrictions altogether? What alternative products will you be producing, using or selling instead of single-use plastics? Please expand your answer.”

158. **A significant switch to alternative products** Three organisations (BBIA, FDF Scotland and BPF) noted that once the restrictions were in force, there would be a significant shift to alternatives such as paper. Nonetheless, the BBIA noted that these alternatives would also need some form of lining to ensure that they provided appropriate grease and moisture protection.
159. **Switch depends on the alternatives available** The SWA noted that the extent of the switch would depend on what the available alternatives were once the restrictions came into force. For example, it noted that some businesses may use bagasse instead of plastic, but single-use items usually required some form of plastic lining.
160. **Extent of the switch will vary by nature of business** The FSB was of the view that the extent to which businesses would switch to using alternative products would vary across different types of business. For example, take-away restaurants and businesses serving people on the go would need to provide alternative single-use items to customers buying food and drink, while businesses involved in home delivery would have the option to ask customers whether or not some of these products were needed, reducing their overall use.
161. **Question 9** “If your business or the businesses you represent will be substituting single-use plastic items covered by the restrictions with alternative products (as part of your sales or production), how quickly do you expect this transition to take place? Do you anticipate any difficulties prior to or during this transition? Please expand your answer.”
162. **Short transition period** One organisation (BBIA) was of the view that the industry had the capacity to transition quickly, in a matter of months, once the restrictions were introduced.
163. **Grace period needed to allow businesses to sell existing stock** Three organisations (FDF Scotland, FSB, and SWA) did not have a fixed view on how long the transition from single-use plastic items to alternatives may last. Both FDF Scotland and the FSB noted that businesses affected by the restrictions would need time to sell their existing stocks of single-use plastic items. Both organisations were in favour of introducing a grace period, in particular for small companies.
164. **No specific views on transition period** The BPF had no specific views around transition times as it did not have many members involved in the manufacturing or use of these items.
165. **Question 10** “If you are planning to switch to alternative products, do you expect final consumers to notice the change and adjust their purchasing behaviour as a result of the change? For example, would you expect them to

buy less (e.g. because of reduced convenience) or more (because of increased environmental friendliness) of the final product or be willing to pay less or more for it?”

166. **Consumers likely to notice change; reaction may depend on performance of alternatives** Two respondents (FDF Scotland and BPF) cited anecdotal evidence around the alternative straws already on the market as evidence that consumers were likely to notice and adjust their purchasing behaviour in response to a switch to alternatives. FDF Scotland noted that the carton straws introduced by McDonald’s did not receive positive feedback from customers initially.
167. **Changes in consumer behaviour would depend on price impacts** Two organisations (FSB and BPF) noted that the extent to which consumers would notice the change and adjust their purchasing behaviour may depend on the price impacts of the switch to alternatives.
168. **Media campaigns could help consumers to adjust** The FSB considered that appropriate media campaigns were needed to ensure that customers understood why the change was happening and what the change would mean for them (for example, which single-use plastic items would no longer be available). It believed that such campaigns would ease the transition for consumers and businesses alike.
169. **No fixed view** One organisation (BBIA) did not have any specific views on how consumers may change their behaviour as a result of the restrictions.
170. **Question 11** “What unintended consequences do you anticipate for your business or the businesses you represent as a result of the restrictions?”
171. **Ensuring access to single-use plastic products by vulnerable customers** The BBIA noted potential issues around ensuring that vulnerable customers reliant on single-use plastic items, such as straws, for medical reasons would continue to be able to access these. For example, the BBIA thought that linking medical straws to prescriptions may help to ensure that vulnerable customers could continue to be served. (This issue has been addressed in the Equalities Impact Assessment.)
172. **Increased environmental impacts** The BPF noted that one potential unintended consequence could be a bigger environmental impact, for example if alternatives were less recyclable and had a higher footprint. Further, the BPF also commented that consumers may assume that biodegradable materials were safer for the environment, and therefore these items may be more likely to be littered. (See the Strategic Environmental Assessment for information on this point.)
173. **Finally, the businesses interviewed were also given the chance to add anything that was not covered by the questions above.**

174. The following additional considerations emerged:
175. **Need to evaluate the cumulative burden and cost of the policy:** FDF Scotland noted that when the market restrictions were introduced, any assessment would need to look at the cumulative burden and cost of this and other related policies which may have impacted similar groups of stakeholders, for example the Scottish deposit return scheme.
176. **Scope to find suitable alternative products:** The SWA noted that the introduction of market restrictions would need to give enough scope for the businesses and sectors affected to find suitable alternatives to single-use plastic products. It was keen for the restrictions to align with the EU SUPD, and also suggested considering the examples of Italy and Portugal, which have exempted more compostable single-use plastic items when implementing the EU SUPD. (Note: the research for this BRIA and the Strategic Environmental Assessment identified suitable alternatives for all the items without including compostable single-use plastics.)

## 6.2 Supplementary business research on EPS food containers

177. In addition to the business consultation, a telephone survey of Scottish takeaway outlets was conducted to provide insight into the switch away from EPS food containers to most-likely alternatives. This supplementary research was conducted owing to the importance of EPS food container prices, and the prices of their alternatives, to the overall cost impact of the proposed policy change.
178. In total, 47 takeaway outlets were contacted in various locations across Scotland. There was a relatively low response rate but 7 agreed to share information on their use of food containers. The respondents were a mix of takeaway owners, managers, and staff. Therefore, the applicability of certain questions varied from outlet to outlet.
179. **Question 1.** “Were you aware of the ban on EPS food containers due to come into force in 2022?”
180. In response, 4 out of the 7 takeaways were aware of the ban and had considered some of the implications for their business.
181. **Question 2.** “What materials do you use for your takeaway food containers?”
182. The 2 takeaways that were using EPS for all their products had never used non-plastic alternatives. 5 takeaways were using non-plastic alternative products of a range of materials including cardboard, bagasse, and other biodegradable materials.
183. Of the 5 takeaways which were using alternative materials:

- 1 takeaway said they used biodegradable boxes for fish and chicken meals but clear plastic tubs for curries and other liquids.
- 1 takeaway said they had been using EPS previously but switched to alternatives in the past 6-8 weeks.
- 1 takeaway said it used biodegradable boxes from a leading supplier of bagasse containers and had never used EPS. Every single-use item sold was (as far as possible) biodegradable material including cutlery and ice cream tubs.
- 1 takeaway said it used recycled cardboard boxes for food containers and had never used EPS.
- 1 takeaway said it used biodegradable boxes only.

184. **Question 3.** “Have you looked at what alternative food containers might be suitable for your business?”
185. One of the 2 takeaways who were currently using EPS was able to provide information on what alternative products might be available for their business. They stated that “bio-boxes” were the most suitable alternatives for EPS, as others, made from basic cardboard for example, were not a suitable replacement for EPS in terms of functionality.
186. **Question 4.** “What do you typically pay for your EPS food containers and how does this compare with the price for non-EPS alternatives?”
187. The takeaways contacted were reluctant to reveal specific data on the prices paid due to the commercially sensitive nature of this information, but 3 out of 7 respondents said that non-EPS containers were more expensive. One respondent, who used to use EPS and has recently switched to biodegradable containers, indicated that for his business, paper/card-based food containers were around twice the price of equivalent EPS containers.
188. In addition to specific information on container prices, 3 takeaways commented on the extent to which any additional costs could be passed onto consumers if there was a switch in container type. One respondent said that it would pass on the price of an increase in container costs by 5-10p per meal. One takeaway said it would not pass on any price increase to consumers, as it saw meal prices as being exclusive of packaging prices and would therefore absorb the cost. One takeaway said that they would expect the cost of meals to rise somewhat from a change from EPS to alternative containers but were not concerned about the impact on their levels of business or profitability.
189. Three takeaways cited environmental concerns in relation to EPS containers. One takeaway (which used only EPS containers) was supportive of the policy as they wanted to help the environment and disliked the litter impact of EPS containers in the area surrounding their business. One takeaway (which formerly used EPS containers) stated that it had switched to alternative

products due to customer complaints about the environmental impact of EPS containers. One takeaway (which formerly used EPS containers) said they had made the switch to alternative products as the business owner wanted to help the environment by doing so.

190. Two respondents expressed an opinion on the proposed policy. One said that it didn't have any issues with the policy itself but hoped that the Scottish Government would provide financial support to small businesses such as their own to alleviate any potential negative impacts on business. One said it was not concerned about any potential negative impacts of the policy.

## **7.0 Competition Assessment**

191. This assessment follows the BRIA toolkit for the Competition Assessment, which is based on the Competition Checklist component of the Competition and Markets Authority's (CMA's) Competition Impact Assessment guidelines.<sup>55</sup> These guidelines recommend considering four key questions in order to assess whether a proposed policy would have an impact on competition. These are:

- Will the measure directly or indirectly limit the number or range of suppliers?
- Will the measure limit the ability of suppliers to compete?
- Will the measure limit suppliers' incentives to compete vigorously?
- Will the measure limit the choices and information available to consumers?

192. The questions are answered with reference to a set of sub-questions defined by the CMA that are considered relevant for each level of the supply chain (upstream, distribution and downstream).

### **7.1 Identifying relevant markets**

193. The markets and stakeholders that may be affected by the restrictions can be divided into three levels of the supply chain:

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<sup>55</sup> Competition and Markets Authority (2015) [Competition impact assessment: guidelines for policymakers](#).

**Table 10. Identification of relevant markets**

Supply chain level	Definition	Example of stakeholder types
Upstream	Firms that support the manufacture and import of single-use plastic products to be restricted and alternative items, as well as suppliers of raw materials, equipment, and plastics additives.	Manufacturers, importers.
Distribution	Firms involved in distributing single-use items to those that need them. This includes packaging wholesalers as well as high street retailers.	Catering wholesalers, supermarkets, convenience stores.
Downstream	Firms that use single-use items in their provision of goods and services. There may also be a small number of innovative firms that convert plastic products for other uses that may be affected.	Hospitality sale of food and drinks, chain restaurants, cafes, mobile food services, and catering businesses.

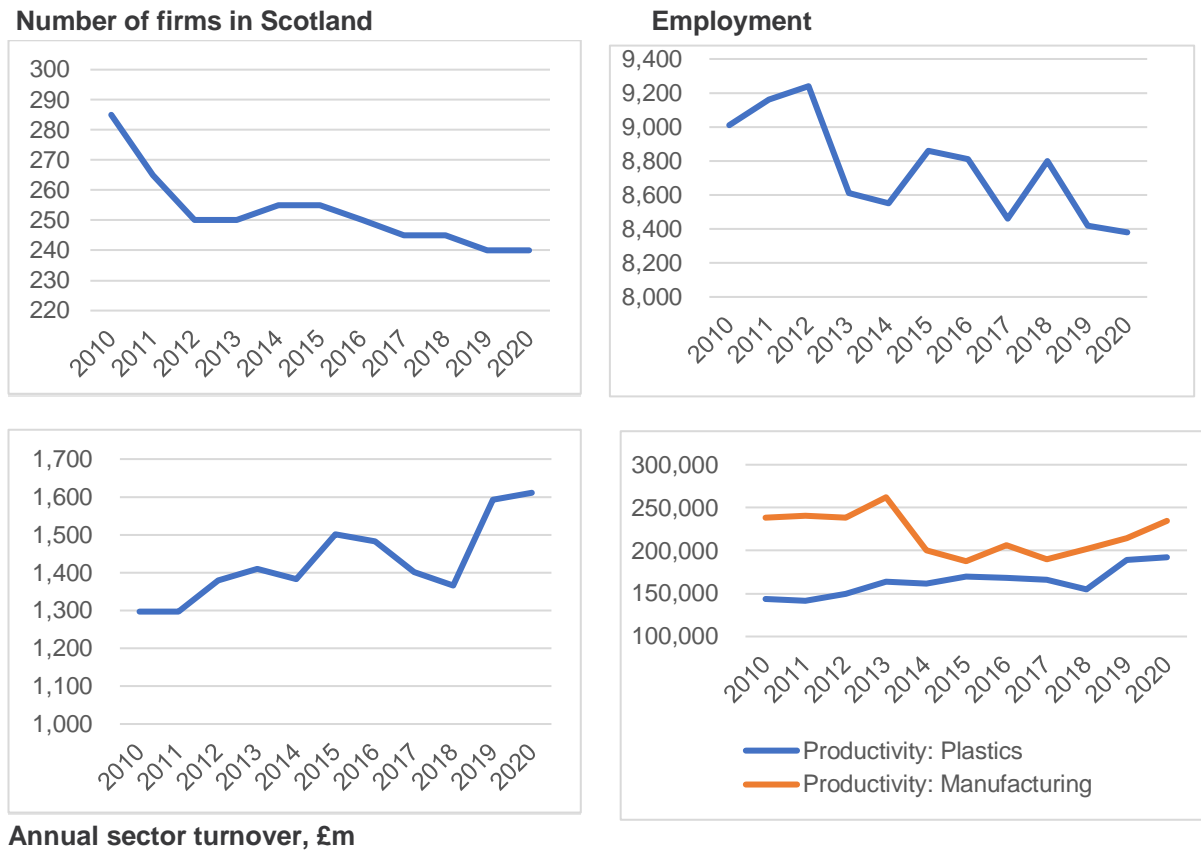
## 7.2 Overview of markets affected by single-use plastic restrictions

194. This section looks at the value chain of the Scottish market for the relevant single-use plastic products, and for their most-likely alternatives. It presents data, to the extent that it is available, on whether Scottish businesses are active stakeholders at each stage of the value chain, enabling the identification of the stakeholders which are most likely to be impacted by the policy change.
195. **Upstream:** The manufacturing of single-use plastic products in Scotland takes place within the wider manufacture of plastic and rubber products sector. This sector is tracked by the Scottish Government and has aggregate data published in the annual “Businesses in Scotland” publication (2020). More granular data on the production of specific single-use plastic product types are not available.
196. A summary of the available data showing trends in the Scottish plastic and rubber products sector is provided in



197. **Figure 1**, below. The number of Scottish firms in this sector declined sharply between 2010 and 2012 before levelling off and beginning a slower decline to 2020. The size of the workforce has decreased somewhat in step with the reduction in firms.

**Figure 1: Scottish plastic and rubber sector summary (all plastic products, including single-use plastics)**



Source: Europe Economics analysis, based on Scottish Government (2020) "Businesses in Scotland"<sup>56</sup>

198. The following analysis looks at three main segments: producers of polymers which could be used as inputs for the relevant single-use plastic items; producers of the single-use plastic items excluding EPS products; and producers of EPS products.
199. **Producers of polymers for single-use plastics:** In 2017, Scotland was responsible for approximately 30 per cent of relevant polymers made in the UK,<sup>57</sup> though it accounted for just 5 per cent of plastics and rubber firms in the UK.<sup>58</sup> This raises a question around whether Scottish polymer producers could be impacted by the restrictions. According to the British Plastics Federation (BPF), just two firms in Scotland may be driving this polymer production: Ineos Olefins and Polymers (capacity: 615,000 tonnes p.a.) and PET Processors

<sup>56</sup> Scottish Government (2020) [Businesses in Scotland: 2020](#).

<sup>57</sup> Law, P. (2017) [Scotland's plastics industry: Crucial to the overall sector](#), *Interplas Insights*.

<sup>58</sup> British Plastics Foundation (2021) [Members Directory 2020-21](#).

(UK) LLC (capacity: 20,000 tonnes p.a.). Both produce a range of products in addition to potential inputs to the single-use plastic items in question.<sup>59</sup>

200. It was not possible to find data on the extent to which polymers produced domestically are used for the production of the relevant single-use plastic items in Scotland, nor the extent to which end products produced from them are consumed domestically. However, the evidence suggests that local producers of relevant items only represent a small share of demand for locally-produced polymer.
201. First, there is only a small single-use plastic manufacturing presence in Scotland (see below: 'Producers of single-use plastic items excluding EPS'). Second, research conducted for Defra indicates that a majority of the relevant single-use plastic products consumed in the UK are imported.<sup>60</sup> Finally, the volumes involved are considered. According to the Strategic Environmental Assessment for this policy change, the total weight of relevant single-use plastic items used in Scotland in 2020 was 1,848 tonnes,<sup>61</sup> equivalent to just 0.3% of the total weight of polymers produced each year by the two domestic producers noted above. It is concluded that Scottish polymer producers are unlikely to experience significant impacts from the policy change.
202. **Producers of single-use plastic items excluding EPS** Recent research conducted for Defra indicated that imports of single-use plastic products into the UK as a whole accounted for:<sup>62</sup>
- 90% of cutlery, plates, balloon sticks.
  - 95% of straws, cotton buds and stirrers.
203. Desk research identified a number of manufacturers of relevant single-use plastic items, as well as some firms that manufacture alternatives. Both types of firm are shown in the following table. This information was retrieved via online searches for manufacturers in Scotland, manually reviewing the items they produce. In all cases, the products listed in column three appear to account for

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<sup>59</sup> British Plastics Foundation (n.d.) [About the British Plastic Industry](#). The two polymer manufacturers are Ineos Olefins & Polymers (Grangemouth; polymers include Polyethylene High Density/Linear Low Density [HD / LLDPE swing], Polypropylene) and PET Processors (UK) LLC (Dumfries; polymers include Polyethylene Terephthalate [PET]).

<sup>60</sup> Resource Futures on behalf of Defra (2018a): [A preliminary assessment of the economic impacts of a potential ban on plastic cutlery, plastic plates and plastic balloon sticks](#), [A preliminary assessment of the economic, environmental and social impacts of a potential ban on plastic straws, plastic stem cotton buds and plastics drinks stirrers](#), and Resource Futures on behalf of Defra (2019) [A preliminary assessment of the economic impacts of a potential ban on expanded polystyrene food and beverage containers](#).

<sup>61</sup> Scottish Government (2020) [Introducing market restrictions on problematic single-use plastic items in Scotland: Strategic Environmental Assessment \(SEA\)](#).

<sup>62</sup> Resource Futures on behalf of Defra (2018a): [A preliminary assessment of the economic impacts of a potential ban on plastic cutlery, plastic plates and plastic balloon sticks](#), [A preliminary assessment of the economic, environmental and social impacts of a potential ban on plastic straws, plastic stem cotton buds and plastics drinks stirrers](#), and Resource Futures on behalf of Defra (2019) [A preliminary assessment of the economic impacts of a potential ban on expanded polystyrene food and beverage containers](#).

a small proportion of the offering of each firm, though it is not possible to identify the precise relative importance of sales of the single-use plastic items.

**Table 11. Manufacturers of single-use plastic and alternative products identified in Scotland**

<b>Company</b>	<b>Materials</b>	<b>Products</b>	<b>Area</b>
<b>Tri-Star</b>	Polypropylene, cardboard, wood	Cups, food boxes, and cutlery	Glasgow
<b>Kimberly Watson Packaging</b>	Plastic	Trays for baked goods	Livingston, West Lothian
<b>Streetfood Packaging</b>	Plastic, alternative materials (cardboard, palm leaf)	Food and beverage cups, trays and boxes	Aberdeen
<b>Vegware</b>	Wood, paper, bagasse, products coated in plastics	Straws, plates, cutlery, food containers, and cups	Edinburgh
<b>Cullen</b>	Moulded pulp, corrugate	Food and beverage containers	Glasgow
<b>Eco Pack Scotland</b>	Bagasse, recycled plastics	Food and beverage containers	Edinburgh
<b>Verona Eco</b>	Paper, board	Food and beverage containers, trays, and pots	East Kilbride

204. Given that 90-95% of single-use plastic cutlery, plates, balloon sticks, straws and stirrers are imported into the UK (and we found no evidence that this differs materially for Scotland), it is concluded that manufacturing of the relevant products does not form a significant part of the Scottish value chain for single-use plastic products. One firm which was identified through stakeholder engagement as being affected was Vegware, which produces some lines of cutlery and straws that fall in scope of the regulations but a significant proportion of its business is production of non-EPS food and beverage containers which will benefit from the market restrictions.

205. **Producers of EPS items:** The Defra research cited above found that imports into the UK accounted for just 5% of EPS food and beverage containers.<sup>63</sup> This suggests that a large share of the relevant EPS items is produced within the UK. A 2019 Defra impact assessment found that there were just four EPS plants involved in the manufacture of relevant single-use plastic items in the UK as a whole.<sup>64</sup> We sought to identify whether any Scottish EPS manufacturers would be affected. This involved two main streams of research.
206. First, via desk research we explored whether we could identify relevant EPS manufacturers operating in Scotland. We did find a number of firms operating in Scotland that produce EPS products, but their product offerings covered larger items, such as EPS products for large-scale insulation, that did not fall within the scope of the restrictions.<sup>65</sup> It is possible that some of these firms have side-lines in producing smaller EPS items, but this could not be verified.
207. Second, we asked stakeholders to identify any manufacturers of relevant EPS products operating within Scotland. The British Plastics Federation was not aware of any producers of single-use items in Scotland and suggested that if there were any such producers, their share of total plastics production in Scotland would be very small.
208. Third, Zero Waste Scotland discussions with representatives from the Scottish EPS manufacturing sector<sup>66</sup> revealed that virtually all manufacturing of the target EPS containers had ceased in Scotland due to the low economic returns available for producing these items domestically and a growing acceptance that market restrictions on problematic single-use plastic items would be implemented.
209. It is concluded that the majority of in-scope EPS items are imported into Scotland from elsewhere in the UK.
210. **Distribution:** Further down the value chain are distributors and retailers of single-use plastic items and their alternatives to consumers, both in the hospitality trade and in private households. The table below shows a selection of distributors and retailers known to be operating in Scotland based on online research. The market includes three smaller, family-run businesses (Morrison's

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<sup>63</sup> Resource Futures on behalf of Defra (2018a): [A preliminary assessment of the economic impacts of a potential ban on plastic cutlery, plastic plates and plastic balloon sticks](#), [A preliminary assessment of the economic, environmental and social impacts of a potential ban on plastic straws, plastic stem cotton buds and plastics drinks stirrers](#); and Resource Futures on behalf of Defra (2019) [A preliminary assessment of the economic impacts of a potential ban on expanded polystyrene food and beverage containers](#).

<sup>64</sup> Resource Futures on behalf of Defra (2019) [A preliminary assessment of the economic impacts of a potential ban on expanded polystyrene food and beverage containers](#).

<sup>65</sup> The BPF Expanded Polystyrene Group (n.d.) [Find a supplier](#). Producers identified are: Engineered Foam Products (Livingston), Moulded Foams (Cumbernauld, Stornoway, Peterhead), Sundollitt (Corpach, Montrose, Stirling), Thulecraft (Lerwick). Email correspondence with the firms confirmed that Sundollitt does not produce any of the items in scope (the others were contacted but did not respond to our request).

<sup>66</sup> Sundollitt. 19/04/2021

Food Services, Scottish Disposable Supplies and RBR Supplies) competing alongside large multinational firms.

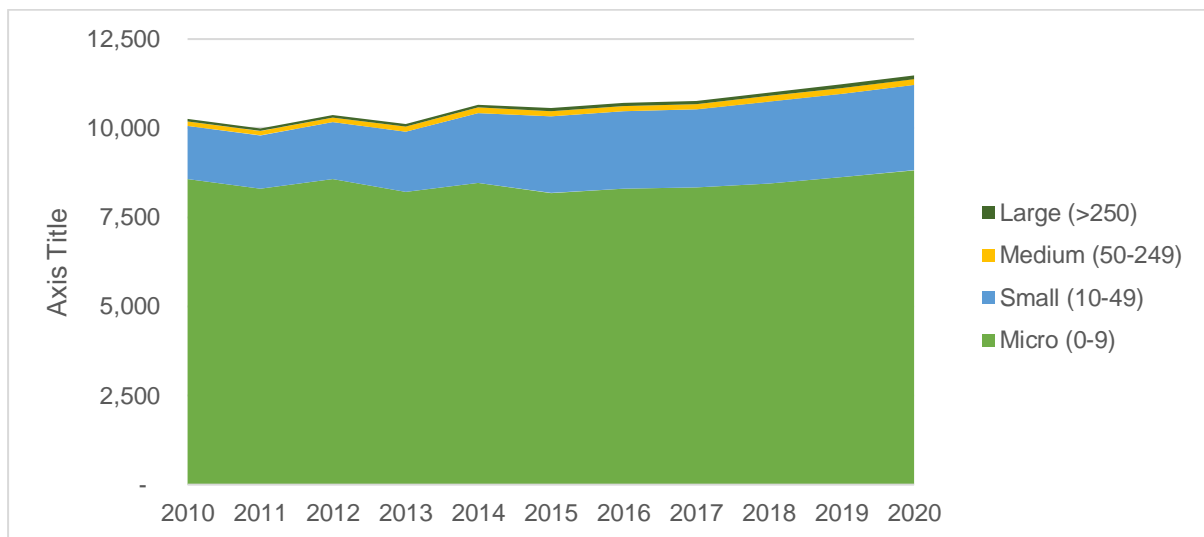
211. The single-use plastic items in the scope of the restrictions, the majority of which are provided to customers alongside food products, tend to comprise only a small part of the catalogues of catering distributors. Many of these firms also currently sell alternatives to single-use plastic items. It is concluded that a handful of actors of different sizes at this level of the value chain in Scotland will be affected by the restrictions, though it will only affect a small part of their overall business.

**Table 12: Examples of wholesalers and distributors operating in Scotland**

<b>Company</b>	<b>Description</b>	<b>Examples of items sold</b>
<b>James Kidd</b>	One of Scotland's largest independent distributors of catering supplies and equipment.	Packaging made of plastic, polystyrene, and alternatives including bagasse, paper/card and moulded fibre.
<b>Morrison's Food Services</b>	A family-run business originally established to supply food items to the food service sector, since expanding to provide a variety of food containers.	Polystyrene and cardboard food trays as well as bagasse items.
<b>Scottish Disposable Supplies</b>	An independent supplier of catering disposables.	Plastic and polystyrene food containers, paper plates.
<b>RBR Supplies</b>	A family-run distributor of catering cleaning supplies based in the West of Scotland that has begun to supply disposable cutlery and crockery.	Plastic cutlery and stirrers, plastic cups, Vegware compostables.
<b>Nisbets</b>	With three locations in Scotland, the largest supplier of catering equipment in the UK sells various catering and kitchenware to all end-consumers.	Wide range of plates, containers and cutlery, both plastic and non-plastic, as well as compostable products.
<b>Bidfood Scotland</b>	A subsidiary of the international Bidfood UK company, Bidfood Scotland sources items from large multinationals and small 'artisan' producers.	Expanded polystyrene food containers, newspaper boxes, bagasse items, plastic and wooden cutlery.

212. **Downstream:** Other Scotland-based firms impacted by the introduction of market restrictions are those in the food and beverage service sector. These firms provide food or drinks fit for immediate consumption in traditional, self-service or take-away restaurants and cafés, whether as permanent or temporary set-ups and with or without seating.<sup>67</sup> Many of these provide take-away food and beverages that are likely to be served in the single-use plastic products within the scope of the restrictions: there were 3,505 take-away businesses in Scotland as of 2018.<sup>68</sup> The Scottish Government’s *Businesses in Scotland* publication indicates that small and micro businesses account for 97.7 per cent of the firms in the food and beverage sector, the majority of these employing fewer than ten employees (see Figure 2).
213. Table 14 shows that take-aways account for 33% of the total number businesses supplying food and beverages in Scotland. Licensed restaurants and cafes account for 25% and unlicensed restaurants and cafes for 23%.

**Figure 2: Number of firms in the food and beverage service sector in Scotland, by size category**



Source: Europe Economics analysis of Scottish Government (2020) “Businesses in Scotland”. Food and Beverage Service Activities.<sup>69</sup>

214. Figure 2 also shows the steady growth of the number of firms in the food service sector. Prior to the Covid-19 pandemic, the takeaway food market had enjoyed significant growth in Scotland in recent years. Between 2010 and 2018, the number of takeaway firms in Scotland increased by 28 per cent, and in 2018

<sup>67</sup> ONS (2009) [UK Standard Industrial Classification of Economic Activities 2007 \(SIC 2007\), Main volume.](#)

<sup>68</sup> SPICe (Scottish Parliament Information Centre) [Spotlight \(2019\) Fast food booming – a cause for concern?](#)

<sup>69</sup> Scottish Government (2020) [Businesses in Scotland: 2020.](#)

the average household spent £244 on takeaways consumed at home.<sup>70</sup> In the three years to 2019, the UK takeaway sector doubled in size.<sup>71</sup> It is concluded that there is a sizeable market in Scotland at this level of the value chain, some of which will be impacted by the proposed restrictions.

**Table 13. Scottish food outlets and services (2018)**

SIC Sector	Number
56.10/3 Takeaways & food stands	3,505
56.10/1 Licensed restaurants & cafes	2,725
56.10/2 Unlicensed restaurants & cafes	2,440
56.2 Events & outdoor catering	1,220
56.21 Other food services	850
<b>Total</b>	<b>10,740</b>

Source: ONS, Nomis Database.

### 7.3 Detailed Competition Assessment

#### Will the measure directly or indirectly limit the number or range of suppliers?

215. This question aims to identify, and where possible quantify, potential impacts of the policy change on limiting the number and range of suppliers in Scotland, with a view to assessing potential impacts on the prices and available choices of the relevant single-use plastic items and their most-likely alternatives to consumers in Scotland.
216. The following paragraphs aim to answer this question in line with the CMA guidance. It considers the possibility of direct and indirect impacts separately, for which a set of relevant sub-questions are answered (based on the issues suggested by the CMA). The sub-questions are as follows:
217. **Direct impacts**
- Does the measure award exclusive rights to supply?
  - Does the measure require procurement from a single supplier or a restricted group of suppliers?
  - Does the measure create a licensing scheme that limits the number of suppliers?
  - Does the measure create a licensing scheme for quality standards?

<sup>70</sup> SPICe (Scottish Parliament Information Centre) [Spotlight \(2019\) Fast food booming – a cause for concern?](#)

<sup>71</sup> British Takeaway Campaign (2019) [Cooking up growth, Serving up talent.](#)



## 218. Indirect impacts

- Does the measure significantly raise the costs of incumbent firms, causing them to exit the market?
- Does the measure significantly raise the costs of new suppliers (including small businesses) relative to existing suppliers?
- Does the measure significantly raise the costs of some existing suppliers relative to other existing suppliers?

### Upstream

#### Direct impacts

219. The Scottish Government is restricting manufacture of all the relevant single-use plastic items except for straws and balloon sticks. However, neither the proposed restrictions on supply, nor any potential restrictions on manufacture, explicitly aim to restrict the number or range of manufacturers of any specific item through:

- Awarding exclusive rights of supply;
- Requiring procurement from a single supplier or a restricted group of suppliers;
- Introducing a licensing scheme for suppliers or quality standards.
- It is therefore concluded that there are no direct competition impacts

#### Indirect impacts

#### **Does the measure significantly raise the costs of incumbent firms, causing them to exit the market?**

220. The market restrictions are unlikely to significantly raise the costs of incumbent firms, causing them to exit the market. There may be some costs for adapting production to alternatives, but the small number of single-use plastic-producing firms in Scotland suggests that this would not affect many firms. These points are explained in what follows.

221. The high import share in the single-use plastic market in the UK, and the market overview in Section 6.2, suggests there are not many manufacturers of single-use plastic products in Scotland that would be affected. We can estimate the extent to which this is the case by combining the aforementioned import proportions with estimates of annual consumption quantities of the various single-use plastic products. We find that 19.8 per cent of domestically consumed single-use plastic products may be produced domestically, the majority of which are EPS containers (see table below). However, the EPS containers account for less than 15 per cent of the single-use plastics consumed in Scotland, and – given the research finding of there being zero manufacturers of EPS single-use plastics in Scotland – excluding them reduces the estimated proportion of consumed single-use plastics to 6.2 per cent. Moreover, these domestically produced single-use plastic products represent

just 0.29 per cent of the turnover of the plastics and rubber manufacturing sector in Scotland in 2020 (when EPS are excluded, this drops to only 0.1 per cent).<sup>72</sup> Therefore, it is reasonable to suggest that knock-on effects of a drop in demand for single-use plastic products would affect only a small number of Scottish manufacturers. These firms could choose to exit the market or adapt processes to alternative products.

**Table 14. Estimated quantities of single-use plastic products produced domestically**

Single-use plastic products	Estimated consumption in Scotland (million, per year)	Share of single-use plastics consumed in Scotland (%)	Estimated number produced domestically (million, per year)	Estimated number produced domestically (million, per year) assuming zero EPS/XPS manufacturers
Balloon sticks	1.7	0.2	0.17	0.17
Straws	300	38.6	15	15
Cutlery	276	35.5	27.6	27.6
Stirrers	9.9	1.3	0.495	0.495
Plates (incl. trays and bowls)	50	6.4	5	5
EPS food containers	66	8.5	62.7	0
EPS drinks containers	45	5.8	42.75	0
<b>Produced domestically (% of consumed single-use plastics)</b>	-	-	<b>19.8</b>	<b>6.2</b>

<sup>72</sup> Based on sector turnover data from Scottish Government (2020) [Businesses in Scotland: 2020](#); and unit price data from Welsh Government (2020) [Preliminary research to assess the impacts of a ban or restrictions in sale in Wales of items in the EU's Single Use Plastics Directive](#).

222. The restrictions are likely to indirectly accelerate the market for alternative products by encouraging existing manufacturers of single-use plastic items and alternatives to maintain their position in the production of these types of products by adjusting production towards alternatives more exclusively. Some existing manufacturers of single-use plastics may be able to adapt production to satisfy the demand for alternative products – at a cost. Two stakeholders who responded for the Scottish Firms Impact Test suggested that the cost impacts associated with changing manufacturing and production processes are likely to be the biggest potential impacts of the restrictions. Three studies for Defra on the impact of similar restrictions in the UK have estimated the total costs to business of implementing them over a ten-year period, during which manufacturers of single-use plastics experience a gradual reduction in sales. These are reported in Table 15 below.
223. The business implementation costs include the annual cost of implementing the restrictions over the period, as well as one-off capital costs for all but the EPS products (for which costs are reported separately in the table as significant capital investments). The annual costs of implementing the restrictions would be expected to involve the following for manufacturers:<sup>73</sup>
224. Transition costs: costs involved in refocusing production towards alternative single-use items, which may be low and involve relatively short timescales for existing suppliers of alternatives.
225. Overproduction costs: The costs of manufacturers sitting on redundant warehoused single-use plastics upon the implementation of restrictions, which could be minimised if clear timescales are provided in advance.
226. Scale costs: the costs involved in scaling-up production of non-EPS single-use items (these costs were not reported in the Defra study of EPS products, so we assume that they are not applicable to EPS producers; moreover, the lack of EPS single-use plastics producers in Scotland suggests that they are not relevant). Research for Defra suggests that economies of scale would be possible in the event of the single-use plastic ban being considered in England.<sup>74</sup> Consulted stakeholders did not indicate the nature of additional costs (e.g. labour, materials)
227. It has been previously highlighted that EPS single-use plastics are produced domestically in the UK (but not in Scotland), whereas the other single-use plastic items in scope are largely imported. The modelling for the UK assumed

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<sup>73</sup> Resource Futures on behalf of Defra (2018a): [A preliminary assessment of the economic impacts of a potential ban on plastic cutlery, plastic plates and plastic balloon sticks](#), [A preliminary assessment of the economic, environmental and social impacts of a potential ban on plastic straws, plastic stem cotton buds and plastics drinks stirrers](#); and Resource Futures on behalf of Defra (2019) [A preliminary assessment of the economic impacts of a potential ban on expanded polystyrene food and beverage containers](#).

<sup>74</sup> Resource Futures on behalf of Defra (2019) [A preliminary assessment of the economic impacts of a potential ban on expanded polystyrene food and beverage containers](#).

that a one-off capital investment would be needed to convert existing EPS packaging manufacturing capacity or establish new packaging production capacity for EPS-free products. Stakeholders suggested that capital costs could amount to £30m per plant.<sup>75</sup> The capital costs are displayed separately for the EPS product categories in the following table.

**Table 15. Business implementation costs of a ban over the period 2019-2028 in the UK**

<b>Item</b>	<b>Business implementation cost for all types of businesses NPV 2019-28 (£m)</b>	<b>One-off capital investment for manufactures (£m)</b>
<b>Cutlery</b>	3.1 <sup>a</sup>	
<b>Plates</b>	0.8 <sup>a</sup>	
<b>Straws</b>	2.3 <sup>b</sup>	
<b>Drink stirrers</b>	1 <sup>b</sup>	
<b>Balloon sticks</b>	0.2 <sup>a</sup>	
<b>EPS food containers</b>	2.4 <sup>c</sup>	47.7 <sup>c</sup>
<b>EPS beverage containers</b>	1.7 <sup>c</sup>	68.1 <sup>c</sup>

228. Based on the figures presented in Table 15, the cost to the few manufacturers of single-use plastics in Scotland of transitioning to alternative products is likely to be relatively low. This is because the business implementation costs are generally low (considering that the figures are spread across all businesses in the UK) and no EPS manufacturers have been identified in Scotland (so the one-off capital investment costs do not apply).
229. Furthermore, that plastic polymer production in Scotland does not appear to contribute to the Scottish manufacture of single-use plastics suggests that firms involved in polymer production would not face costs due to the market restrictions.

<sup>75</sup> Resource Futures on behalf of Defra (2019) [A preliminary assessment of the economic impacts of a potential ban on expanded polystyrene food and beverage containers](#). The £30m figure is based on the sum of the capital costs for the two EPS product categories (47.7 + 68.1 = 115.8) distributed evenly between the four known EPS manufacturing facilities in the UK: £28.95m.

**Does the measure significantly raise the costs of new suppliers (including small businesses) relative to existing suppliers?**

230. The market restrictions are unlikely to significantly raise the costs of new suppliers relative to existing suppliers.
231. Recognising the potential profit to be made in the market for these types of products upon the market restriction of the single-use plastic variants, there may be market entry of new manufactures of alternatives. This may also offset any potential indirect reduction in the number of manufacturers caused by the restrictions. Scotland does not currently have a particularly large wood and paper products industry (it is the smallest manufacturing subdivision in terms of 2018 gross value added)<sup>76</sup> – a sector that could be expected to satisfy the demand for alternative packaging products when the restrictions begin. The sector is however nearly twice as productive per manufacturing sector worker as the same sector in England,<sup>77</sup> potentially giving it a competitiveness advantage over English manufacturers in satisfying the demand. And the current existence of successful eco-friendly packaging firms in Scotland, such as Cullen and Eco Pack Scotland, suggests that opportunities for new market entries could arise.

**Distribution**

**Does the measure significantly raise the costs of incumbent firms, causing them to exit the market?**

232. There would be a degree of familiarisation costs associated with the restrictions. The introduction of the legislative restrictions would cause a period of adjustment to the new regime for all firms involved in the sale of single-use plastic products domestically. This is unlikely to threaten the number of distributors in the market.
233. The number of wholesalers and distributors of single-use plastic products is unlikely to be significantly impacted by costs unless (directly or indirectly) any of these deal predominantly in the restricted single-use plastic products and face issues in sourcing alternatives or significant cost increases that they cannot pass on to customers. This assessment has identified a number of Scotland-based manufacturers of alternative products for food service activities, so difficulties in sourcing alternatives may stem from alternative manufacturers' capacity constraints rather than from difficulties in locating manufacturers. Balloon sticks may be harder to source, as the market overview did not identify any domestic manufacturers of them (plastic or otherwise), but

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<sup>76</sup> Scottish Government (2020) [Scottish Annual Business Statistics 2018](#).

<sup>77</sup> Manufacture of paper and wood products except furniture in England and Scotland (2018) of £6,317m and £959m, respectively, over manufacturing workforce jobs (Dec 2019) of 2.25m and 183,000, respectively. ONS (2019) [Regional GVA \(balanced\) by industry: all NUTS level regions](#); and ONS (2020) [JOBS05: Workforce jobs by region and industry](#).

the small number consumed annually suggests that this may not threaten the revenues of distributors to a great extent.

234. The single-use plastic items in the scope of the restrictions, the majority of which are provided to customers alongside food products, tend to comprise only a small part of the catalogues of catering distributors. Many of these firms also currently sell alternatives to single-use plastic items. It is unlikely that such firms would be significantly affected by the restrictions.

### **Downstream**

#### **Does the measure significantly raise the costs of some existing suppliers relative to other existing suppliers?**

235. Downstream firms, unable to produce the single-use products themselves, would be indirectly affected by any price and availability issues that emerge further up the supply chain. It is possible that the costs of some firms will rise relative to other existing suppliers.
236. In the study for Wales<sup>78</sup> it was reported that smaller downstream hospitality outlets and charities who are less able to absorb any cost increases caused by a move towards alternatives may be disproportionately affected. But that the overall impact (to these disproportionately affected groups and to larger companies alike) will be negligible because the price differential between the plastic product and the alternative is relatively small or non-existent in some cases.
237. Research<sup>79</sup> by Zero Waste Scotland on the price impact of market restrictions on single-use items looked at how additional costs are shared or passed along the supply chain with evidence from stakeholders suggesting that the first differentiation occurs when considering the relationship between the individual or entity purchasing the item and the individual using it.
238. Where the individual buying the item is also the person who will be making use of it, the additional cost is normally passed directly to the consumer. For example, when an individual purchases a box of paper straws for their personal use, they are directly impacted by the increased cost of the paper-based product. Stakeholder communication with one mid-range supermarket as well as an interview with a representative previously involved in another supermarket's sustainability strategy confirmed this finding. The latter added that when the sale was business-to-consumer, product price was heavily dictated by profit margin and there was therefore little scope for absorption of any additional costs.

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<sup>78</sup> Welsh Government (2020) [Preliminary research to assess the impacts of a ban or restrictions in sale in Wales of items in the EU's Single Use Plastics Directive](#).

<sup>79</sup> Zero Waste Scotland (2021): "Pricing impacts of single-use plastic bans: Assessing the impact of market-restrictive bans for single-use plastic products on product pricing". Not published.

239. The exception, however, was presented by a low-cost supermarket with a business built on ensuring that its product lines remain cheaper than those of its competitors. Its aim was to prevent customers from noticing any increases in price as a result of changes in the supply chain. As such, the representative of this supermarket stated that it absorbed any additional costs associated with transitioning to a new alternative product. This suggests that people shopping in low-cost supermarkets may be less likely to experience price increases as a result of the policy change than people shopping in mid-range or premium retailers.
240. In contrast, when an item is provided as an aspect of a service, for example a stirrer in a tea at a coffee shop or a straw in a drink from a takeaway outlet, the distribution of the additional costs becomes more varied and complex. In these scenarios, the product is passed through a greater number of nodes in the value chain, and there is therefore more opportunity for variation in approach.
241. The relatively large number of takeaway outlets in Scotland (3,505) suggests that the market is very competitive. Whereas cost shocks for individual firms or groups of firms could be disruptive to competition, a cost rise experienced by all firms – which could be expected among the smaller firms given the restrictions and a move towards some more costly alternative products – may be simply passed on to the final consumer in the price they pay for takeaway food products. On the other hand, more high-end and larger outlets might be more willing/able to absorb additional costs. Without detailed information on the distribution of cost margins across Scottish food outlets it is not possible to fully assess the extent to which any potential additional costs to businesses will be absorbed or passed on.
242. Table 16 below sets out the average prices for single-use plastic items and the most likely non-plastic alternatives. Plastic cutlery, stirrers and straws are, on average, the same price as non-plastic alternatives. Non-plastic plates and cups are 1-2 pence more expensive than equivalent plastic items. Non-plastic balloon sticks are 3 pence more expensive than plastic balloon sticks but the number of these in circulation is relatively small, accounting for 0.01 per cent of all items in scope. Compostable/bagasse food containers are on average 3.7 pence more expensive than EPS containers.

**Table 16. Average catering industry prices for single-use plastic items and non-plastic alternatives<sup>80</sup>**

Product	Material	Item Price £	Material	Item Price £
Cutlery	Plastic	0.04	Wood	0.04
Plates	Plastic	0.06	Paper	0.07
Beverage stirrers	Plastic	0.01	Wood	0.01
Straws	Plastic	0.01	Paper	0.01
Balloon sticks	Plastic	0.07	Paper/card	0.10
EPS Food containers	Plastic	0.08	Bagasse	0.12
EPS Beverage cups	Plastic	0.03	Paper/card	0.04

243. Research by Spice<sup>81</sup> found that the average Scottish household spends £244 annually on takeaway food resulting in a total market<sup>82</sup> for takeaway outlets of £579 million.

244. It has not been possible to present data on typical turnover or gross profit margins in the food takeaway sector but Table 17 below indicates the scale of additional costs that may arise as a result of switching all single-use plastic items to non-plastic. The relevant non-plastic items identified as currently being more expensive than their single-use plastic counterparts are plates, food containers and cups.

**Table 17. Additional costs associated with switching from single-use plastic items to non-plastic alternatives**

	Plates	Food Containers	Cups
Number (million)	50	66	45
Price Difference (£)	0.01	0.04	0.01
Cost (£ million)	0.5	2.64	0.45

245. Under this approach, total additional costs to the takeaway sector are estimated to be around £3.6 million which represents 0.6 percent of the total £579 million Scottish takeaway food market. It should be noted that the prices of alternative

<sup>80</sup> Same methodology applied as Resource Futures research for Welsh Government. Obtained by taking an average of prices found from different wholesaler websites, primarily: Catering24; Cater4you; Nisbets.

<sup>81</sup> SPICe (Scottish Parliament Information Centre) [Spotlight \(2019\) Fast food booming – a cause for concern?](#)

<sup>82</sup> Scotland's Census (2021) [Housing](#).



single-use products may be too high, particularly in the later part of the time period under consideration. This is because as market demand for alternative single-use products rises, their prices are likely to fall owing to economies of scale and product innovations for non-plastic alternatives.

**Does the measure significantly raise the costs of incumbent firms, causing them to exit the market?**

246. Incumbent firms may experience a small but insignificant cost rise through a degree of familiarisation costs associated with the restrictions. Smaller hospitality outlets without the resources to maintain close observation of legislative developments may be disproportionately affected,<sup>83</sup> but this alone is unlikely to threaten their number. Moreover, a programme of public engagement, as well as the transition period for the introduction of market restrictions, is likely to mitigate the extent of familiarisation costs.

**Will the measure limit the ability of suppliers to compete?**

247. This question investigates whether the market restrictions could affect the ability of firms to influence the characteristics that make their products stand-out relative to their competitors. Such characteristics may include: the price, quality, level of innovation, marketing strategy and sales channel. Inhibiting the ability of firms to establish their own combination of these characteristics can in turn hinder competition between them.

248. For this question, the CMA guidance suggests that the following sub-questions should be addressed, where relevant:

- Does the measure control or substantially influence the price a supplier may charge and/or the characteristics of the products supplied?
- Does the measure limit the sales channels a supplier can use, or the geographic area a supplier may supply in?
- Does the measure substantially restrict the ability of suppliers to advertise their products?
- Does the measure limit the suppliers' freedom to organise their own production processes or their choice of organisational form?

249. Discussions of the first and third sub-question for are considered relevant for the market restrictions on single-use plastics.

**Upstream**

250. Does the measure limit the sales channels a supplier can use, or the geographic area a supplier may supply in?

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<sup>83</sup> We note that there will be a programme of public engagement alongside the policy, which will mitigate this impact. Furthermore, the lead-in period allowing time for firms to adjust will give an opportunity for smaller firms to discover changes to the rules that they might otherwise have been unaware of.

251. Rest-of-UK manufacturers of single-use plastic items will no longer be competing for the sale of single-use plastic items in Scotland. Manufacturers that currently focus predominantly on exports to markets beyond the jurisdiction of the EU SUPD may thus be in a better position to compete than other manufacturers since they would be partly shielded from the restrictions. The high proportion of imported single-use plastics, however, suggest that the UK's share of the export market is not large and that this line of argument is unlikely to apply to many firms in Scotland. Therefore, there may not be any significant competition impacts on geographical areas of supply for manufacturers.
252. Does the measure controls or substantially influence the characteristics of the products supplied?
253. The characteristics of single-use items could be influenced by the restrictions. If alternative products are intrinsically different such that they require certain equipment to produce and significantly higher capital expenditure, this could pose a barrier to entry to smaller firms wishing to transition to non-single-use plastic production. It has not been possible to determine whether capital expenditure costs are significantly different between single-use plastics and non-plastic alternatives.

#### **Distribution**

254. Does the measure control or substantially influence the characteristics of the products supplied?
255. The market overview exercise noted three smaller distributors of single-use items in Scotland. Observing their catalogues of products currently on offer suggests that single-use plastics comprise a material proportion of their historic sales of single-use items for the food takeaway trade. These smaller firms may therefore experience greater frictions of transitioning to non-plastic alternatives than the larger multinational distributors that are more likely to be able to procure them, both domestically and from overseas. That larger firms can source inputs at lower prices than smaller ones is routinely noted in the literature (for example, larger firms can benefit from greater buyer power and can have teams of employees devoted to negotiating with suppliers).<sup>84</sup> However, this exercise also shows that the smaller distributors have managed to stock alternatives, suggesting that the competition impact would be minimal.

#### **Downstream**

256. Does the measure control or substantially influence the characteristics of the products supplied?

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<sup>84</sup> See, for example, Bernard et al. (2019) [The origins of firm heterogeneity: A production network approach, NBER working paper No. 25441](#).

257. The restrictions would directly control the characteristics of the single-use items that downstream firms can provide with their food services. However, research conducted for Defra concluded that despite stakeholder concerns, alternatives with equivalent functionality for consumers exist for single-use plastic cutlery and plates, and for EPS food containers and cups.<sup>85,86</sup> Wooden alternatives to single-use plastic beverage stirrers are already widely in use and do not affect functionality.
258. Card-based alternatives to single-use plastic balloon sticks are available. While these may be less durable than their single-use plastic equivalents, there will not be a significant impact on consumers given the short, in-use life of the items. An exemption exists for plastic balloon sticks used and collected for re-use by businesses and professionals.

It is acknowledged that no alternative to single-use plastic straws has exactly equivalent functionality—though innovation in this area is ongoing. A study for the Welsh Government identified a lack of readily-available alternatives to single-use straws capable of piercing through the film on drinks cartons/pouches.<sup>87</sup> However, at least two multinational manufacturers in Europe are introducing paper alternatives that are capable of piercing through drinks cartons.<sup>88</sup>

### **Will the measure limit suppliers' incentives to compete vigorously?**

259. The purpose of this question is to ascertain the extent to which firms may be incentivised to mutually agree to stop or reduce the extent of competition between them (e.g. in terms of the price and/or quality of a product, or the type of customers). In other words, firms may or may not be incentivised to coordinate their behaviour.
260. The CMA guidance suggests the following sub-questions may be answered in response to this question:
- Does the measure incentivise suppliers to coordinate their behaviour?
  - Does the measure exempt suppliers from competition law?
  - Does the measure introduce or amend an intellectual property regime?

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<sup>85</sup> Resource Futures on behalf of Defra (2018a): [A preliminary assessment of the economic impacts of a potential ban on plastic cutlery, plastic plates and plastic balloon sticks](#), [A preliminary assessment of the economic, environmental and social impacts of a potential ban on plastic straws, plastic stem cotton buds and plastics drinks stirrers](#); and Resource Futures on behalf of Defra (2019) [A Preliminary Assessment of the Economic Impacts of a Potential Ban on Expanded Polystyrene Food and Beverage Containers](#).

<sup>86</sup> Resource Futures on behalf of Defra (2019) [A preliminary assessment of the economic impacts of a potential ban on expanded polystyrene food and beverage containers](#).

<sup>87</sup> Welsh Government (2020) [Preliminary research to assess the impacts of a ban or restrictions in sale in Wales of items in the EU's Single Use Plastics Directive](#).

<sup>88</sup> Suntory Beverage and Food GB&I, owner of Ribena, began trialling paper straws on its cartons in retailers in the UK in September 2020. Tetra Pak began consumer trials of its paper straws in 2019. Sources: Suntory (2020) [The final straw: Ribena becomes first major UK juice drinks brand to trial paper straws on cartons](#); and Tetra Pak (2019) [Tetra Pak becomes first carton packaging company to launch paper straws in Europe](#).

261. The restrictions are unlikely to facilitate or encourage the coordination or collusion of firms in the manufacturing, distribution or downstream market segments. The market restrictions do not exempt suppliers from competition law nor introduce or amend an intellectual property regime.
262. The remaining sub-question is whether the measures would incentivise suppliers to coordinate their behaviour. The market restrictions would serve to create a new, but level, playing field for all participants in the supply chain, which does not present clear incentives for participants to coordinate. The downstream food service sector is especially competitive and extremely unlikely to experience any coordination of firm activity as a result of the restrictions.

### **Will the measure limit the choices and information available to consumers?**

263. The choice of product consumers make is key to driving competition between firms. A consumer making a decision informed with the relevant information of a firm's product will either reward the firm (by purchasing its product) or send a signal to the firm that its product does not meet the consumer's preferences. This question investigates whether consumers may become limited in their ability to make these choices.
264. The following sub-questions may be considered based on the CMA guidance:
- Does the measure limit the ability of consumers to decide from whom they purchase?
  - Does the measure change the information available to consumers but does not improve their ability to make informed decisions?
  - Does the measure reduce the mobility of consumers by increasing the cost of changing suppliers?
265. Of these sub-questions, the first is considered to be potentially relevant for the upstream, distribution and downstream levels of the supply chain.

### **Upstream**

266. Does the measure limit the ability of consumers to decide from whom they purchase?
267. Consumer choice would be limited by (a) the unavailability of restricted single-use plastic items and (b) if the choice of manufactured most-likely alternatives was more restrictive. Possibility (a) is largely unavoidable given the restrictions. Possibility (b) would only emerge if, for example, manufacturers were limited in their capacity to produce the quantity of alternatives required, but as we have discussed above, it seems likely that the range of alternatives available would expand. As discussed previously, there are a number of alternative products already being produced and distributed in Scotland, and it is likely that market incentives would encourage manufacturers to produce a greater variety of

alternatives in the longer-term. The end-consumption of existing single-use plastic products is generally not for its own benefit since these products are provided to consumers as complementary goods with other products, such as takeaway food and beverages. Their consumption choices are unlikely to be affected by the single use plastic material type. Therefore, if it were restricted at all, consumer choice would only be limited by alternative manufacturing capacity in the short-term, and this is unlikely to disadvantage consumers.

### **Distribution**

268. Does the measure limit the ability of consumers to decide from whom they purchase?
269. Factors that might lead to consumers in certain areas being limited in choice including questioning whether distributors of alternatives have the geographic distribution capacity to reach all downstream firms across Scotland. A question asked of stakeholders was whether consumers of takeaway food in the islands may be limited in their choice of food products if the food outlets are limited in what containers they have been able to procure.
270. Stakeholder responses indicated that alternative items could be sourced through existing supply chains, including the more remote areas of Scotland.

### **Downstream**

271. Does the measure limit the ability of consumers to decide from whom they purchase?
272. To the extent that downstream firms increase prices to match the increase in the costs of single-use plastic alternatives, this could limit the affordability and choice of certain end products for consumers. Assuming single-use plastic alternatives do increase the cost of end-products (with, for example smaller food outlets with tight margins), and if enough consumers turn away from them, downstream firms could, theoretically, experience a reduction in demand.
273. We can investigate whether consumers may turn away from the end-products with which single-use plastics are provided using price elasticities. Price elasticities measure the extent to which a change in price is associated with changes in demand for a product. In the case of “own-price elasticities” (changes in the product’s own price), values of less than -1 indicate elastic demand; between 0 and -1 indicate inelastic demand.
274. Research conducted for Defra in 2012 on the elasticities of different food products suggests that takeaway food is generally inelastic – that is, demand is relatively unresponsive to price. For example, a 10 per cent increase in the price of takeaway poultry would be expected to decrease demand by a proportionately-smaller 8 per cent.<sup>89</sup> The same increase applied to other

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<sup>89</sup> Tiffin, R. et al (2012) for Defra. [Estimating Food and Drink Elasticities](#).

takeaway meat would result in just 2 per cent lower demand. (Please refer to the Appendix for further detail of these elasticities.)

275. The elasticity estimates reported above relate to only takeaway meat items, and so the picture may be different for other popular takeaway foods. The booming takeaway market in the UK, and its expected steady growth in future years,<sup>90</sup> suggests that overall demand is unlikely to fall, and so any small price increments caused by the cost of single-use alternative items may be offset by overall revenue growth.
276. Zero Waste Scotland research on transfer of change in item costs found that some food outlets and retailers (higher-end ones) may instead absorb any cost increases,<sup>91</sup> thus leaving consumer prices unchanged.
277. Overall, the evidence from the elasticity estimates available suggests that if the additional costs of sourcing suitable alternatives to takeaway food packaging items are passed on to consumers in full, then downstream takeaway firms may not experience dramatically reduced demand given consumers' relative insensitivity to takeaway price changes.
278. In the case of balloon sticks, consumers could face a slightly more limited choice if a range of non-plastic alternatives are not forthcoming. However, exemptions exist for those used for industrial/professional uses.

## 8.0 Consumer Assessment

279. This section considers the extent to which the market restrictions may benefit or disadvantage consumers in Scotland. A consumer is defined following the Scottish Government's definition as "anyone who buys goods or digital content, or uses goods or services either in the private or public sector, now or in the future".<sup>92</sup> In this context, this includes end-consumers who use the single-use plastic items in question, either buying them from a retailer, or having them provided by food and drink outlets or retailers in conjunction with the purchase of food and beverages. Consumers may also include individuals and organisations that purchase and/or use the relevant single-use plastic items as part of their business model.
280. The BRIA toolkit sets out the following questions to consider in a consumer assessment:
  - Does the policy affect the quality, availability or price of any goods or services in a market?

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<sup>90</sup> British Takeaway Campaign (2019) [Cooking up growth, Serving up talent](#).

<sup>91</sup> Zero Waste Scotland (2021): "Pricing impacts of single-use plastic bans: Assessing the impact of market-restrictive bans for single-use plastic products on product pricing". Not published.

<sup>92</sup> Scottish Government (2018) [Business and Regulatory Impact Assessments \(BRIA\) toolkit](#).

- Does the policy affect the essential services market, such as energy or water?
- Does the policy involve storage or increased use of consumer data?
- Does the policy increase opportunities for unscrupulous suppliers to target consumers?
- Does the policy impact the information available to consumers on either goods or services, or their rights in relation to these?
- Does the policy affect routes for consumers to seek advice or raise complaints on consumer issues?

**Does the policy affect the quality, availability or price of any goods or services in a market?**

281. **Availability of the relevant single-use plastic items and their most-likely alternatives:**
282. The policy will almost entirely restrict the availability of the relevant single-use plastic items.
283. However, the impact on consumers will be mitigated by the following points.
284. **Single-use items made of alternative materials are readily available for these products.** Alternative items (typically made of paper or wood) are available in Scotland from larger bricks-and-mortar retailers as well as online retailers. There are a number of existing manufacturers of alternative single-use items in Scotland, such as Cullen, Vegware and Eco Pack Scotland, which could respond to higher demand for non-plastic single-use items. In addition, the fact that similar regulations have already been introduced in neighbouring countries means that market demand for—and therefore supply of—alternative items is expected to remain strong.
285. **Consumer demand is gradually switching away from all single-use items, and is switching away from single-use plastic items to alternative single-use items.** As noted in the Options section, previous research for Defra suggests that demand for single-use items (plastic and alternative) is gradually declining over time. This is driven by rising awareness of the population around the negative effects of single-use items, the desire of businesses to avoid the higher costs of non-plastic single-use alternative products, and a gradual shift towards reusable products. Levels of concern in Scotland about single-use items are already high. A recent survey commissioned by Zero Waste Scotland found that an overwhelming majority of people in Scotland (77 per cent) were very or fairly concerned about the quantity of items designed to be used only

once. Still more people (79 per cent) would support the introduction of regulations to reduce the use of single-use items and packaging.<sup>93</sup>

286. In addition, research conducted for Defra suggests that the market share of single-use plastic items compared to alternative single-use items is falling at around 10 percentage points per year in most cases. (The exception is EPS food containers and EPS cups, the share of which is falling by just 1 percentage point annually compared to their most-likely alternatives.)
287. **The policy includes exemptions for products where these are provided for medical use and to support independent living.** The EU SUPD provides explicit exemptions for straws used for medical purposes.<sup>94</sup> The Scottish Government has recognised that certain single-use plastic items are required for medical purposes or to support independent living.<sup>95</sup> Therefore, the availability of single-use plastic items required for these purposes, specifically single-use plastic straws, will be maintained. Exemptions will also apply for balloon sticks where they are used for professional purposes.

**Quality and functionality of alternatives:**

288. The impact on consumers in terms of quality and functionality will be minimal.
289. The majority of single-use plastics in scope have alternatives that can be substituted for them without compromising functionality.
290. Research conducted for Defra concluded that despite some stakeholder concerns, alternatives with equivalent functionality for consumers exist for single-use plastic cutlery and plates, and for EPS food containers and cups.<sup>96,97</sup> Wooden alternatives to single-use plastic beverage stirrers are already widely in use and do not affect functionality.
291. Card-based alternatives to single-use plastic balloon sticks are available. While these may be less durable than their single-use plastic equivalents, there will not be a significant impact on consumers given the short, in-use life of the

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<sup>93</sup> Zero Waste Scotland (2020) [Majority of Scots concerned over single-use items and packaging](https://www.zerowastescotland.org.uk/press-release/majority-scots-concerned-over-single-use-items-and-packaging). Available at: <https://www.zerowastescotland.org.uk/press-release/majority-scots-concerned-over-single-use-items-and-packaging>

<sup>94</sup> European Union (2019) [Directive \(EU\) 2019/904 of the European Parliament and of the Council of 5 June 2019 on the reduction of the impact of certain plastic products on the environment, Article 3\(3\)](#).

<sup>95</sup> The Scottish Government (2020) [Introducing Market Restrictions on Problematic Single-Use Plastic Items in Scotland: Strategic Environmental Assessment - Environmental Report](#).

<sup>96</sup> Resource Futures on behalf of Defra (2018a): [A preliminary assessment of the economic impacts of a potential ban on plastic cutlery, plastic plates and plastic balloon sticks](#), [A preliminary assessment of the economic, environmental and social impacts of a potential ban on plastic straws, plastic stem cotton buds and plastics drinks stirrers](#); and Resource Futures on behalf of Defra (2019) [A Preliminary Assessment of the Economic Impacts of a Potential Ban on Expanded Polystyrene Food and Beverage Containers](#).

<sup>97</sup> Resource Futures on behalf of Defra (2019) [A preliminary assessment of the economic impacts of a potential ban on expanded polystyrene food and beverage containers](#).



items. An exemption exists for plastic balloon sticks used and collected for re-use by businesses and professionals.

292. It is acknowledged that no alternative to single-use plastic straws has exactly equivalent functionality—though innovation in this area is ongoing. A study for the Welsh Government identified a lack of readily-available alternatives to single-use straws capable of piercing through the film on drinks cartons/pouches.<sup>98</sup> However, at least two multinational manufacturers in Europe are introducing paper alternatives that are capable of piercing through drinks cartons.<sup>99</sup> Negative impacts on consumers related to supply of single-use plastic straws for drinks cartons/pouches are likely to be short-lived, as the market can respond by creating and adopting better alternatives as noted above, or by changing to another type of container.
293. The Equalities Impact Assessment for this policy change noted several qualities specific to single-use plastic straws which are important to people who require them for medical purposes or to support independent living. However, exemptions are in place to ensure that people with these requirements will continue to have access to single-use plastic straws, so no significant consumer impact is expected in this regard. The Scottish Government is working with stakeholders, including representatives of equalities groups and users of single-use plastic straws, to ensure that the exemption is implemented in a way that respects equality interests and the dignity of those needing to access single-use plastic straws.

**Price of alternatives:**

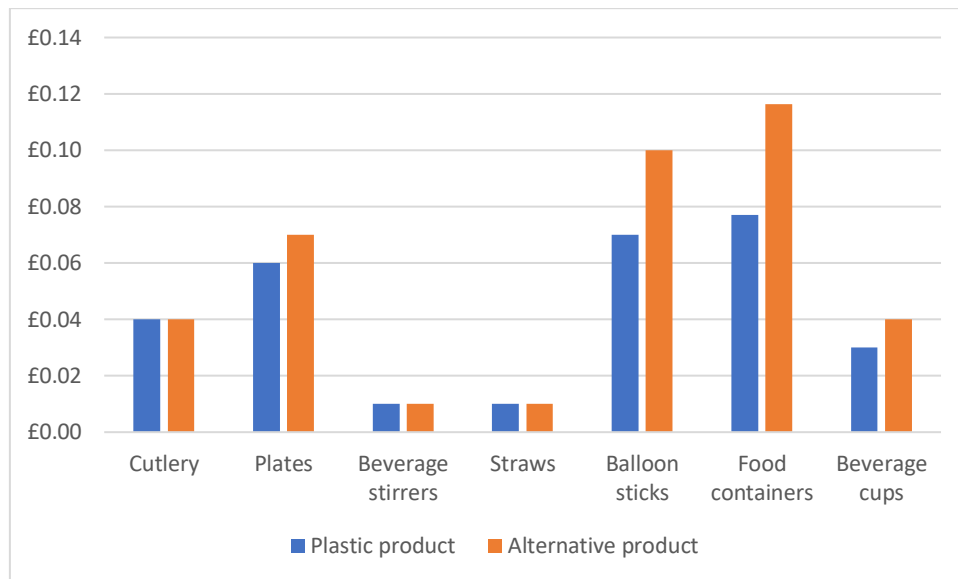
294. Consumers may experience a slight increase in the prices they pay for goods and services associated with some of the products in scope. However, the overall price impacts on consumers at an individual level will be very limited, often not noticeable, and sometimes avoidable.
295. At present, three out of seven of the most-likely alternatives are more expensive than the restricted single-use plastic products, as can be seen in Figure 3, below. This shows average per-unit market prices of the restricted single-use plastic items and their most-likely single-use alternatives, collected for the impact assessments of introducing market restrictions on the same single-use plastic items in Wales.

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<sup>98</sup> Welsh Government (2020) [Preliminary research to assess the impacts of a ban or restrictions in sale in Wales of items in the EU's Single Use Plastics Directive](#).

<sup>99</sup> Suntory Beverage and Food GB&I, owner of Ribena, began trialling paper straws on its cartons in retailers in the UK in September 2020. Tetra Pak began consumer trials of its paper straws in 2019. Sources: Suntory (2020) [The final straw: Ribena becomes first major UK juice drinks brand to trial paper straws on cartons](#); and Tetra Pak (2019) [Tetra Pak becomes first carton packaging company to launch paper straws in Europe](#).

**Figure 3: Prices of single-use plastic products and their alternatives**



Source: Welsh Government (2020) "Preliminary research to assess the impacts of a ban or restrictions on sale in Wales of items in the EU's Single Use Plastics Directive" Based on online UK wholesalers 100

296. The per-item cost increases range from £0 to £0.04, so the impact on the typical individual consumer in any given purchase will either be nil or limited. The per-item cost increases range from £0 to £0.04 so the impact on the typical individual consumer in any given purchase will either be nil or limited.
297. The extent to which additional costs will be experienced by consumers will depend on the willingness and ability of individual businesses in the supply chain to absorb them. This depends on factors such as profit margins and market positioning and will vary. For instance, stakeholder interviews conducted for Zero Waste Scotland found that some large retailers with a business model based on low prices would be willing to absorb the difference in price between single-use plastic and alternative items. However, smaller food and drink outlets with tight profit margins may be more likely to pass on costs to consumers.<sup>101</sup> This suggests that in many cases, consumers will be able to avoid additional costs by choosing to shop at retailers or outlets which have absorbed them.
298. Consumers' willingness to pay for non-plastic items may be increased by environmental concerns around the damage caused by single-use plastic items. It was found during telephone interviews with takeaway outlets that one business, in particular, received complaints from customers over the environmental damage caused through their use of EPS food containers. This

<sup>100</sup> Welsh Government (2020) [Preliminary research to assess the impacts of a ban or restrictions in sale in Wales of items in the EU's Single Use Plastics Directive](https://gov.wales/sites/default/files/statistics-and-research/2020-05/impacts-of-a-ban-or-restrictions-in-sale-of-items-in-the-eus-single-use-plastics-directive.pdf). Available at: <https://gov.wales/sites/default/files/statistics-and-research/2020-05/impacts-of-a-ban-or-restrictions-in-sale-of-items-in-the-eus-single-use-plastics-directive.pdf>

<sup>101</sup> Pricing impacts of single-use plastics bans. *Economia*. January 2021. Unpublished

was a key factor in them switching to alternative items. This factor will vary between different consumers and businesses, but it will be a factor in decision-making around item prices.

299. How noticeable the price increases are to an individual will also depend on the context of the purchase. Where a small number of items are provided along with a food or drink purchase, the additional costs to consumers are 'hidden' and limited. A £2 drink served with a straw would not necessarily see any price increase. A hot drink served in the alternative to a single-use EPS cup would only be around £0.01 more expensive, which is not a noticeable increase. Turning to the item with the biggest absolute per-unit price increase, EPS food containers: a meal for one person requiring up to two containers may increase in price by up to £0.08 when using alternative items, depending how much of the price increase the business is willing to absorb.
300. Cost increases to consumers buying items in bulk from retailers would vary by outlet type. For example, a pack of 20 single-use plates may not change in price if purchased from a budget retailer which prioritises price points for its products.<sup>102</sup> Higher-end retail outlets may be less concerned about price points and, for example, if 100 per cent of the cost increase was passed through, the price for 20 single-use plates would rise from £1.20 to £1.40 for single-use alternatives.
301. The higher cost of some alternative items is likely to incentivise both businesses and consumers to reduce their consumption of these single-use items in general. According to stakeholder interviews conducted for Zero Waste Scotland, some businesses in England found ways to significantly reduce the use of alternative single-use items following the introduction of similar restrictions there (e.g. handing out straws only when asked for them), thereby avoiding the need to pass on additional costs to consumers.
302. Prices are never static, and given rising demand for the alternative single-use items after the restrictions—not just in Scotland, but in countries across Europe which have implemented restrictions based on the EU SUPD—it is reasonable to expect that their prices could fall in coming years, or that other, cheaper alternatives could come onto the market. This would further limit price impacts on consumers.

**Does the policy affect the essential services market, such as energy or water?**

No.

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<sup>102</sup> Pricing impacts of single-use plastics bans. Eunomia. January 2021. Unpublished.

**Does the policy involve storage or increased use of consumer data?**

No.

**Does the policy increase opportunities for unscrupulous suppliers to target consumers?**

No.

**Does the policy impact the information available to consumers on either goods or services, or their rights in relation to these?**

No

**Does the policy affect routes for consumers to seek advice or raise complaints on consumer issues?**

No

## **9.0 Test run of business forms**

303. The introduction of these regulations will not result in the creation of new forms for businesses or result in amendments of existing forms.

## **10.0 Digital Impact Test**

304. Changes to policy, regulation or legislation can often have unintended consequences, should government fail to consider advances in technology and the impact this may have on future delivery. This digital impact test is a consideration of whether the changes being made can still be applied effectively should business/government processes change – such as services moving online. The below details the evaluation of the market restrictions on current and future digital developments. Overall, it is viewed that the legislation will not have an adverse impact on digital technology developments.

**Table 18. Digital Impact Test Questionnaire**

<b>Question 1. Does the measure take account of changing digital technologies and markets?</b>
Potential changes in digital technologies and markets are being accounted for during the development of this legislation.
<b>Question 2. Will the measure be applicable in a digital/online context?</b>
Any restrictions would apply equally to both online and offline suppliers.
<b>Question 3. Is there a possibility the measures could be circumvented by digital/online transactions?</b>
As the affected single-use plastic products are sold by both traditional and online suppliers, the legislation would also need to apply to online transactions in order to be effective and meet the stated objectives.
<b>Question 4. Alternatively, will the measure only be applicable in a digital context and therefore may have an adverse impact on traditional or offline businesses?</b>
The legislation would be applicable equally to both digital and traditional businesses and would therefore not result in an adverse impact on traditional or offline businesses.
<b>Question 5. If the measure can be applied in an offline and online environment will this in itself have any adverse impact on incumbent operators?</b>
No.

## **11.0 Legal Aid Impact Test**

305. The market restrictions will not have an impact on Legal Aid.

## **12.0 Enforcement, sanctions and monitoring**

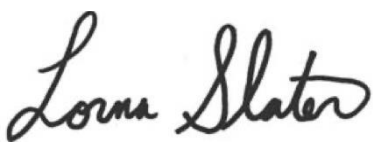
306. In order to achieve the objectives of market restrictions on several single use plastic products, enforcement, sanctions and monitoring systems will be put in place.

## 13.0 Implementation and delivery plan

307. The Scottish Government will set out a timetable for implementation and will work closely with businesses involved in the manufacture, import, trade and sale of the single-use plastic products under consideration. This includes exploring opportunities for diversification and the manufacture of affected products using alternative materials which will help support more circular business opportunities such as providing reusable alternatives.

## 14.0 Declaration and publication

308. I have read the Business and Regulatory Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options. I am satisfied that business impact has been assessed with the support of businesses in Scotland.

Signed: 

Date: 4/11/2021

Minister's name Lorna Slater

Minister's title Minister for Green Skills, Biodiversity and Circular Economy

Scottish Government Contact point: Shaun Taylor – [shaun.taylor2@gov.scot](mailto:shaun.taylor2@gov.scot)

## 15.0 Annex A: Indicative questions for Scottish Firms Impact Test interviews

Europe Economics, on behalf of Zero Waste Scotland, is supporting the development of a Business and Regulatory Impact Assessment (BRIA) for the introduction of market restrictions on certain single-use plastic items in Scotland.

A BRIA is used to analyse the cost and benefits to businesses and the third sector of any proposed legislation or regulation, with the goal of using evidence to identify the proposal that best achieves policy objectives while minimising costs and burdens.

Engagement with Scottish firms forms a central part of the BRIA process. For this, interviews are performed with a group of key stakeholders which may be impacted by the change in legislation. The findings of this engagement will be fed into the development of the proposed legislation.

The views expressed during this engagement process will be published as part of the BRIA process. However, your personal information will remain confidential; only the name of your organisation will be used. Additional information can be found at: <http://www.zerowastescotland.org.uk/content/data-protection-policy>.

Please note that the interview may not cover all of the questions below. These provide an indication as to the areas we are interested in exploring. If you feel only able to engage with us on certain questions please indicate that to us and we will focus the interview on the areas where you are most able to provide useful input.

1. The Scottish Government is currently consulting on legislation aimed at restricting the sale of specific single-use plastic items in Scotland. Are you supportive of the introduction of these restrictions? Why/ why not? Please give your reasons.
2. In your opinion how has the use of single-use plastic items covered by the restrictions changed over recent years (e.g. in the last 5 years)? How would you expect the use of these items to change in the next 5-10 years in the absence of the market restrictions being introduced?
3. In your opinion what will be the biggest potential impacts (both costs and benefits) of introducing the market restrictions on your business or on those which you represent? Which businesses, in your opinion, will be most affected by the restrictions? Please provide evidence where possible.
4. Has your business or have the businesses you represent taken any steps to mitigate any anticipated impacts or costs associated with the market restrictions? If so, please expand your answer.
5. Does your organisation or association have specific concerns on how the restrictions might impact businesses in more remote areas of Scotland? Please expand on your answer.
6. To what extent do you expect the market restrictions to put your business, or those which you represent, at a disadvantage, nationally or internationally? Please provide evidence where possible.

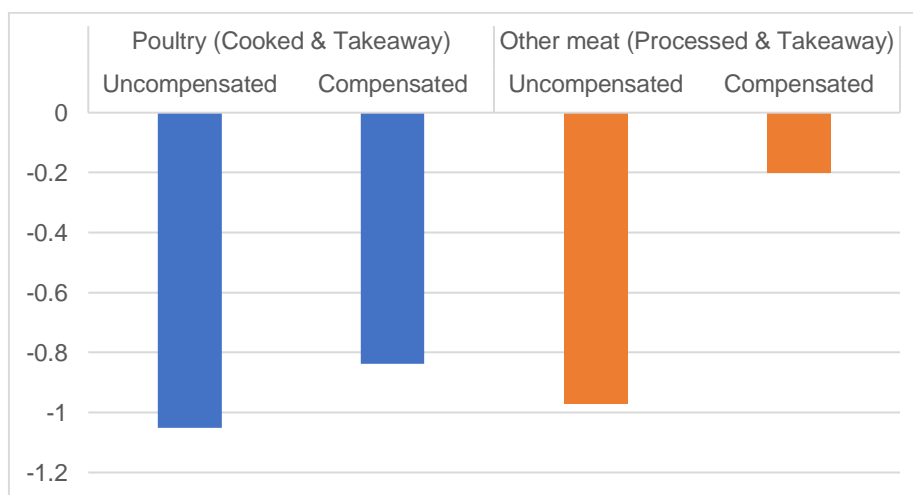
7. Do you have any concerns about these restrictions affecting competition amongst your suppliers, or those of the businesses which you represent? If so, could you elaborate?
8. When the market restrictions come into force, will your business or the businesses you represent switch to alternative products, or do you anticipate stopping the use, sale or production of the products affected by the restrictions altogether? What alternative products will you be producing, using or selling instead of single-use plastics? Please expand your answer.
9. If your business or the businesses you represent will be substituting single-use plastic items covered by the restrictions with alternative products (as part of your sales or production), how quickly do you expect this transition to take place? Do you anticipate any difficulties prior to or during this transition? Please expand your answer.
10. If you are planning to switch to alternative products, do you expect final consumers to notice the change and adjust their purchasing behaviour as a result of the change? For example, would you expect them to buy less (e.g. because of reduced convenience) or more (because of increased environmental friendliness) of the final product or be willing to pay less or more for it?
11. What unintended consequences do you anticipate for your business or the businesses you represent as a result of the restrictions?
12. Is there anything else you wish to add not covered by the above questions?



## 16.0 Annex B: Demand elasticities of food products

Research conducted for Defra on the elasticities of different food products suggests that takeaway food is generally inelastic – that is, demand is relatively unresponsive to price. This can be seen below, where the compensated elasticities for the available takeaway products clearly show inelastic demand. Compensated elasticities mean that the figures do not consider the income effect: the possibility that a lower price leaves consumers with more income at each quantity of consumption that they may then spend on the product. The authors note that at this high level of product disaggregation, the compensated elasticities are more informative because the substitution effect (switching consumption to/away from the product whose price changes) is stronger as households tend to be more sensitive to changes in the prices of individual products than they would be to changes in the prices of broad product categories.<sup>103</sup>

**Figure 4: Estimated own-price elasticities for takeaway products**



Source: Tiffin, R. et al (2012) for Defra “Estimating Food and Drink Elasticities”. Figures for 2009. Level 3 elasticities reported.

<sup>103</sup> See discussion on page 24. Tiffin, R. et al on behalf of Defra (2012) [Estimating food and drink elasticities](https://www.gov.uk/government/publications/food-and-drink-elasticities). Available at: <https://www.gov.uk/government/publications/food-and-drink-elasticities>

## 17.0 Annex C: Full NPV tables by individual item

### 1. Cutlery

<b>Stakeholder</b>	<b>Impact</b>	<b>NPV under Baseline (£)</b>	<b>NPV under Option 1 (£)</b>	<b>Net change to NPV (£)</b>
<b>Society</b>	Carbon impacts (production)	-445,384	-231,052	214,331
<b>Society</b>	Carbon impacts (recycling)	0	0	0
<b>Society</b>	Carbon impacts (composting)	16,607	20,701	4,095
<b>Society</b>	Carbon impacts (incineration)	-98,768	27,385	-126,153
<b>Society</b>	Carbon Impacts (Landfill)	-7,030	-14,728	-7,698
<b>Local Authorities</b>	Recycled material	0	0	0
<b>Local Authorities</b>	Composting costs	-77,652	-98,412	-20,759
<b>Local Authorities</b>	Energy from Waste costs	-490,166	-457,416	32,750
<b>Local Authorities</b>	Landfill costs	-21,072	-18,246	2,826
<b>Local Authorities</b>	Direct littering costs	-220,941	-216,690	4,250
<b>Society</b>	Indirect littering costs	-12,111,272	-11,435,373	675,899
<b>Local Authorities</b>	Residual waste	-368,507	-362,225	6,282
<b>Society</b>	Change in item costs	-98,013,011	-92,765,941	5,247,069
<b>Total</b>		-111,837,195	-105,551,998	6,285,198

2. Plates

<b>Stakeholder</b>	<b>Impact</b>	<b>NPV under Baseline (£)</b>	<b>NPV under Option 1 (£)</b>	<b>Net change to NPV (£)</b>
<b>Society</b>	Carbon impacts (production)	-765,250	-654,055	111,195
<b>Society</b>	Carbon impacts (recycling)	0	0	0
<b>Society</b>	Carbon impacts (composting)	36,844	38,618	-1,774
<b>Society</b>	Carbon impacts (incineration)	-16,787	57,184	-73,971
<b>Society</b>	Carbon Impacts (Landfill)	-24,768	-28,076	-3,308
<b>Local Authorities</b>	Recycled material	0	0	0
<b>Local Authorities</b>	Composting costs	-100,249	-105,216	-4,966
<b>Local Authorities</b>	Energy from Waste costs	-1,040,984	-1,022,876	-18,108
<b>Local Authorities</b>	Landfill costs	-45,153	-46,522	-1,369
<b>Local Authorities</b>	Direct littering costs	-220,859	-220,311	548
<b>Society</b>	Indirect littering costs	-1,965,927	-1,860,489	105,438
<b>Local Authorities</b>	Residual waste	-747,324	-745,515	1,809
<b>Society</b>	Change in item costs	-54,615,261	-52,484,477	2,130,784
<b>Total</b>		-59,505,718	-57,071,734	2,433,984

### 3. Stirrers

<b>Stakeholder</b>	<b>Impact</b>	<b>NPV under Baseline (£)</b>	<b>NPV under Option 1 (£)</b>	<b>Net change to NPV (£)</b>
<b>Society</b>	Carbon impacts (production)	-9,935	-8,801	1,134
<b>Society</b>	Carbon impacts (recycling)	0	0	0
<b>Society</b>	Carbon impacts (composting)	0	0	0
<b>Society</b>	Carbon impacts (incineration)	1,856	2,427	571
<b>Society</b>	Carbon Impacts (Landfill)	-767	-870	-104
<b>Local Authorities</b>	Recycled material	0	0	0
<b>Local Authorities</b>	Composting costs	0	0	0
<b>Local Authorities</b>	Energy from Waste costs	-25,217	-24,945	272
<b>Local Authorities</b>	Landfill costs	-749	-802	-53
<b>Local Authorities</b>	Direct littering costs	-928	-928	0
<b>Society</b>	Indirect littering costs	-83,774	-79,233	4,541
<b>Local Authorities</b>	Residual waste	-15,684	-15,684	0
<b>Society</b>	Change in item costs	-1,700,486	-1,609,517	90,970
<b>Total</b>		-1,835,685	-1,738,353	97,332

#### 4. Straws

<b>Stakeholder</b>	<b>Impact</b>	<b>NPV under Baseline (£)</b>	<b>NPV under Option 1 (£)</b>	<b>Net change to NPV (£)</b>
<b>Society</b>	Carbon impacts (production)	-166,332	-130,183	36,149
<b>Society</b>	Carbon impacts (recycling)	0	0	0
<b>Society</b>	Carbon impacts (composting)	0	0	0
<b>Society</b>	Carbon impacts (incineration)	-22,319	9,137	31,456
<b>Society</b>	Carbon Impacts (Landfill)	-1,675	-3,966	-2,291
<b>Local Authorities</b>	Recycled material	0	0	0
<b>Local Authorities</b>	Composting costs	0	0	0
<b>Local Authorities</b>	Energy from Waste costs	-201,149	-218,022	-16,872
<b>Local Authorities</b>	Landfill costs	-5,308	-6,794	-1,486
<b>Local Authorities</b>	Direct littering costs	-73,769	-81,529	-7,760
<b>Society</b>	Indirect littering costs	-13,397,519	-12,645,234	752,285
<b>Local Authorities</b>	Residual waste	-123,249	-136,478	-13,229
<b>Society</b>	Change in item costs	-27,120,992	-25,670,121	1,450,870
<b>Total</b>		-41,112,312	-38,883,191	2,229,121

5. Balloon sticks

<b>Stakeholder</b>	<b>Impact</b>	<b>NPV under Baseline (£)</b>	<b>NPV under Option 1 (£)</b>	<b>Net change to NPV (£)</b>
<b>Society</b>	Carbon impacts (production)	-7,562	-5,510	2,052
<b>Society</b>	Carbon impacts (recycling)	237	305	69
<b>Society</b>	Carbon impacts (composting)	0	0	0
<b>Society</b>	Carbon impacts (incineration)	-1,282	338	1,619
<b>Society</b>	Carbon Impacts (Landfill)	-60	-160	-100
<b>Local Authorities</b>	Recycled material	1,025	1,502	477
<b>Local Authorities</b>	Composting costs	0	0	0
<b>Local Authorities</b>	Energy from Waste costs	-7,829	-8,327	-499
<b>Local Authorities</b>	Landfill costs	-264	-298	-34
<b>Local Authorities</b>	Direct littering costs	-3,175	-3,499	-324
<b>Society</b>	Indirect littering costs	-67,177	-61,033	6,144
<b>Local Authorities</b>	Residual waste	-5,299	-5,851	-552
<b>Society</b>	Change in item costs	-1,168,467	-1,185,360	-16,893
<b>Total</b>		-1,259,853	-1,267,894	-8,041

6. EPS containers

<b>Stakeholder</b>	<b>Impact</b>	<b>NPV under Baseline (£)</b>	<b>NPV under Option 1 (£)</b>	<b>Net change to NPV (£)</b>
<b>Society</b>	Carbon impacts (production)	-686,977	-642,755	44,222
<b>Society</b>	Carbon impacts (recycling)	0	0	0
<b>Society</b>	Carbon impacts (composting)	76	270	194
<b>Society</b>	Carbon impacts (incineration)	-275,271	-1,519	273,753
<b>Society</b>	Carbon Impacts (Landfill)	-4,264	-15,499	-11,235
<b>Local Authorities</b>	Recycled material	0	0	0
<b>Local Authorities</b>	Composting costs	-2,188	-7,754	-5,567
<b>Local Authorities</b>	Energy from Waste costs	-494,641	-835,718	-341,078
<b>Local Authorities</b>	Landfill costs	-23,627	-60,445	-36,818
<b>Local Authorities</b>	Direct littering costs	-90,232	-153,884	-63,652
<b>Society</b>	Indirect littering costs	-2,025,479	-2,024,168	1,311
<b>Local Authorities</b>	Residual waste	-304,085	-518,176	-214,091
<b>Society</b>	Change in item costs	-71,763,128	-92,997,356	-21,234,228
<b>Total</b>		-71,763,128	-92,997,356	-21,234,228

7. EPS cups

<b>Stakeholder</b>	<b>Impact</b>	<b>NPV under Baseline (£)</b>	<b>NPV under Option 1 (£)</b>	<b>Net change to NPV (£)</b>
<b>Society</b>	Carbon impacts (production)	-268,325	-291,286	-22,960
<b>Society</b>	Carbon impacts (recycling)	4,929	17,495	12,566
<b>Society</b>	Carbon impacts (composting)	4,929	17,495	12,566
<b>Society</b>	Carbon impacts (incineration)	-94,219	24,729	118,949
<b>Society</b>	Carbon Impacts (Landfill)	-1,462	-5,311	-3,849
<b>Local Authorities</b>	Recycled material	23,509	82,770	59,262
<b>Local Authorities</b>	Composting costs	-13,125	-46,526	-33,401
<b>Local Authorities</b>	Energy from Waste costs	-210,749	-408,662	-197,913
<b>Local Authorities</b>	Landfill costs	-4,618	-8,358	-3,739
<b>Local Authorities</b>	Direct littering costs	-42,984	-91,029	-48,045
<b>Society</b>	Indirect littering costs	-1,381,008	-1,380,115	894
<b>Local Authorities</b>	Residual waste	-144,555	-305,551	-160,996
<b>Society</b>	Change in item costs	-18,284,626	-21,953,908	-3,669,281
<b>Total</b>		-20,412,306	-24,348,255	-3,935,949





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