

Business and Regulatory Impact Assessment
Carrier Bag Charge

The Scottish Government, Edinburgh 2014

The Scottish Government
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EH1 3DG

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Purpose of this document

‘Safeguarding Scotland’s Resources – Blueprint for a More Resource Efficient and Circular Economy’ (October 2013) includes a commitment to require retailers to charge at least 5p for single use carrier bags from 20 October 2014 – to promote reuse and reduce litter.

This is the associated Business and Regulatory Impact Assessment (BRIA).

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Abbreviations and document references

BRIA	Business and Regulatory Impact Assessment
IA	Impact assessment
WRAP	Waste & Resources Action Programme
SUCB	Single Use Carrier Bag
BfL	Bag for Life
NPV	Net Present Value
EA	Environment Agency
SEPA	Scottish Environment Protection Agency
LDPE	Low-density polyethylene
PP	Polypropylene
CO2 eq	Carbon dioxide equivalent

Wales Memorandum: “Explanatory Memorandum to the Single Use Carrier Bags Charge (Wales) (Amendment) Regulations 2011, September 2011”

<http://www.assemblywales.org/bus-home/bus-business-fourth-assembly-laid-docs.htm?act=dis&id=222300&ds=9/2011>

AEA Single Use Bag Study: Welsh Assembly Government, Single Use Bag Study, AEA, August 2009

http://wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/substance/carrierbags/singleusestudy/?jsessionid=qTLyTj0cL3KZc1LWNW0rLpYbfyGQGVPKWJJ4NFGS1jCLTL54Gv1L!-630957411?lang=en&ts=2

Life cycle assessment of supermarket carrier bags: a review of the bags available in 2006, Environment Agency

<https://publications.environment-agency.gov.uk/skeleton/publications/ViewPublication.aspx?id=0b4944e8-7d5b-4422-9878-14c55f710e8b>

1. Title of proposals

This Business and Regulatory Impact Assessment (BRIA) covers Action 10 of the ‘Safeguarding Scotland’s Resources’ consultation paper, proposing to phase out free single-use carrier bags in Scotland.

The title of the proposal is ‘Introduction of a carrier bag charge’ and is consistent with the aims of the Zero Waste Plan, in particular with respect to litter and waste prevention. They support the Scottish Government’s wider national outcome: “we reduce the local and global environmental impact of our consumption and production”.

2. Purpose and intended effect

2.1. Phasing out free single-use carrier bags

Background

Single-use carrier bags are seen as a symbol of a throw-away culture in Scotland. They are also a highly visible aspect of litter and have a disproportionate impact on marine wildlife in particular. There has been significant progress in reducing uptake over the past few years from supermarkets and consumers. Data from the Waste and Resources Action Programme (WRAP) show a 40% reduction in the number of single-use carrier bags (SUCB) used by supermarket customers in the UK between 2006 and 2010¹. However, it appears that bag use is now remaining steady in Scotland (up 0.8% between 2008 and 2012, the latest datapoint), with more bags per person used here than in other parts of the UK².

Objective

The objective of these Regulations is to cut the number of SUCBs distributed by retailers in Scotland by providing an incentive for reuse. This would have the dual effect of reducing this component of litter and promoting reuse with potential to influence other related behaviours.

Rationale for government intervention

The Scottish Government deems that there is a rationale for government intervention in order to consolidate the past progress achieved by a voluntary approach from retailers and to achieve significant further reductions in the use of single-use carrier bags.

The Scottish Government therefore proposes to make regulations under the Climate Change (Scotland) Act 2009 to require retailers to charge for single-use carrier bags. The aim is to phase out free single-use carrier bags in Scotland. The intended effect is to reduce the use of single-use carrier bags, promoting greater re-use of bags and reducing litter.

¹<http://www.wrap.org.uk/content/new-figures-carrier-bags-use-released-wrap>

² [http://www.wrap.org.uk/sites/files/wrap/Carrier%20bags%20results%20\(2012%20data\).pdf](http://www.wrap.org.uk/sites/files/wrap/Carrier%20bags%20results%20(2012%20data).pdf)

3. Consultation

3.1. Background

The Scottish Government consulted widely on proposals for Scotland's Zero Waste Plan from August to November 2009. The consultation paper can be found on the Scottish Government web site at:

<http://www.scotland.gov.uk/Resource/Doc/282143/0085295.pdf>

239 responses were received from a broad range of stakeholders. These responses were published on the Scottish Government web site and can be found at:

<http://www.scotland.gov.uk/Publications/2010/01/25155012/0>

The responses received shaped the final form of Scotland's Zero Waste Plan, which was formally published in June 2010. To assist in the delivery of the Scottish Government's Zero Waste agenda, the Zero Waste Scotland Programme Board was established in June 2010. Business interests are represented on this Group by the Scottish Retail Consortium and the Scottish Environmental Services Association.

'Safeguarding Scotland's Resources - Blueprint for a More Resource Efficient and Circular Economy' (October 2013) was developed to address one of the actions from the Zero Waste Plan: "to develop a Waste Prevention Programme for all waste, in line with the EU Waste Framework Directive, in order to place prevention at the heart of zero waste policy and action".

<http://www.scotland.gov.uk/Publications/2013/10/6262>

3.2. Consultation on 'Safeguarding Scotland's Resources'

Within Government

The Scottish Government worked closely with the Scottish Environment Protection Agency (SEPA) and Zero Waste Scotland in developing the programme. Scottish Government officials also liaised with the Convention of Scottish Local Authorities (COSLA) officials over the proposals. Regarding the carrier bag charge, Scottish Government officials have also liaised with colleagues in Wales who implemented similar legislation in 2010.

Public consultation

From July 2012 to September 2012, the Scottish Government consulted on proposals within 'Safeguarding Scotland's Resources'. The consultation was reopened during February 2013 to allow for additional comments alongside a Strategic Environmental Assessment. The consultation paper is available on the Scottish Government web site:

<http://www.scotland.gov.uk/Publications/2012/06/4215/downloads>

In total, 665 respondents addressed the question of support for the carrier bag charging proposal (594 of which responded via a campaign). Overall, 94% of all those commenting voiced outright support for the proposal. The seventy one standard responses (72% of all standard responses) addressed this question directly with forty three agreeing or partially agreeing, twenty six disagreeing and two providing commentary only.

The Single Use Carrier Bags Charge (Scotland) Regulations 2014 were also published in draft form for public representations from September to December 2013.

Engagement with the business sector

Since the publication of Scotland's Zero Waste Plan, Scottish Government officials have engaged and met with representatives from across Scottish business sectors. During the consultation period on the 'Safeguarding Scotland's Resources' programme, further contact took place with Scottish businesses, local authorities and the community sector.

Since then, a structured approach to the engagement process was undertaken, in order to ensure that all segments of the business sector were consulted.

Engagement with retailers and trade bodies

Early discussions with retail trade bodies and an analysis of existing databases on retail activities revealed that robust information on carrier bag use in the retail sector was limited to a small number of retailers (mostly in the grocery sector), who use high volumes of carrier bags. As an alternative approach, the retail sector was segmented using turnover/sales, based on the SIC classification outlined in the Scottish Government report Assessing the contribution of retailing in Scotland: Final Report <http://www.scotland.gov.uk/Publications/2011/03/21112734/10>. This report summarises information on sales based on retail units and enterprises in Scotland in 2010 across the various retail segments.

Of the 38 retail segments initially identified to be potentially affected by the regulations, the segments were grouped into 10 key categories. This proved an effective and manageable approach to engaging with the retail segments, allowing all key categories to become involved in the consultation process and fulfilling the requirement to engage with "hard to reach" retailers, or with the "less obvious" retailers. In addition, target numbers of consultations with the various categories were also assigned. These targets were met or exceeded, the exception being market and market stalls, which were contacted through their trade association, but were unable to provide feedback before compiling this report.

The 10 categories are:

Retail Segment	Target number of retailers
Food retail e.g. supermarkets	14
Retailers likely to have significant exemptions e.g. butchers, bakers	2
Large bulky items e.g. furniture, electrical items and sporting equipment	4
Non-food small items e.g. jewellery retailers, music and video, DIY	7

Textiles and clothes	6
Pharmacies and cosmetics	2
Markets and market stalls	3
Charities	4
Takeaways	4
Non-traditional retail (e.g. like Historic Scotland or the NHS hospital shops where retail is not the primary activity)	4
Total number of contacts with retailers	50

The approach for engagement was threefold:

Face-to –face meetings and discussions with retailer trade bodies and other relevant trade associations and selected representative organisations;
 Telephone calls and email correspondence with retailers and interested organisations; and
 Visits to retail premises to understand the practical aspects of implementing the draft regulations.

The number of trade bodies and retailers who were actively engaged can be summarised as:

Description of retail engagement	Number of contacts
Meetings with trade bodies/associations	11
Meetings with traditional retailers	13
Meetings with public sector/non-traditional retailers	8
Visits to small and medium sized retailers	25
<i>Visits to large food retailers</i>	<i>(7)</i>
<i>Visits to large non-food retailers</i>	<i>(1)</i>
Total number of contacts with retail organisations	57

Note: Number of contacts in italicised categories are included in “Meetings with traditional retailers”.

Visits to 33 retailers covered small and medium sized organisations, as well as larger grocery food and non-food retailers. The purpose was to understand how the regulations may work in practice and assess the level of awareness of retailers. The visits also provided a valuable source of feedback regarding the communications requirements for both retailers and consumers surrounding the introduction of the carrier bag regulations.

Visits were made to the following types of retailer:

- Baker
- Butcher
- Charity Shop
- Charity Shop
- Confectionary
- Dentist – retails tooth brushes and dental products
- Fishmonger and delicatessen
- Footwear specialists (retail and repair)
- Fuel sales
- Gallery and gifts
- Garden Centre
- Gift shop and local crafts
- Grocery/food supermarket
- Hardware
- Jewellery
- Music (CD’s and DVD’s)
- Musical instruments and
- Newsagents
- Non-food department store
- Organic grocery store
- Pharmacy
- Stationery

Engagement with carrier bag manufacturers and distributors

Research carried out for the Scottish Government and as documented in this Business and Regulatory Impact Assessment suggested that there are 23 Scottish-based companies involved in the supply of carrier bags, supplying the Scottish market and/or the rest of the UK. Only one of these actively manufactures (paper) carrier bags. Although the policy will not directly limit the number or range of suppliers of carrier bags, since it does not favour particular suppliers or types of bags, it may indirectly limit the number or range of suppliers by reducing overall demand for bags. In order to minimise any effect, the Scottish Government committed to work with carrier bag manufacturers and distributors by offering support through enterprise agencies, particularly to help plan for any effects following the introduction of the regulations and explore opportunities for diversification.

All 23 companies were offered support from Scottish Enterprise of which seven requested business support, and three have been followed through already.

Zero Waste Scotland and its representatives also continue to have regular engagement with the Scottish business community through a number of stakeholder networks and organisations.

These include:

- Zero Waste Board
- Product Sustainability Forum
- Federation of Small Businesses Scotland
- Confederation of British Industry Scotland
- Scottish Council for Development and Industry
- Scottish Chambers of Commerce
- Scottish Business in the Community
- Green Business Fife
- Environmental Association of Universities and Colleges
- Scotland Food and Drink
- Scottish Food and Drink Federation
- Scottish Retail Consortium
- Scottish Grocers Federation
- Scotch Whisky Association
- Visit Scotland
- Institute of Hospitality

4. Options

4.1. Option 1 - Regulation requiring retailers to charge for single-use carrier bags

The Scottish Government consulted on the introduction of a regulation requiring retailers to charge for single-use carrier bags. The detail of the proposed regulation is set out in Annex 2 of the ‘Safeguarding Scotland’s Resources’ Consultation document. The scope is set out as follows.

- The regulation would cover all retailers.
- The regulation would cover all single-use carrier bags, irrespective of the material they are made from.
- The minimum charge for a single-use carrier bag would be set at 5p.
- Some uses of the carrier bags would make them exempt from the fee requirement, for instance bags used solely to carry raw unpackaged meat or vegetables.

The costs and benefits of the proposed regulation, taking account of the scope set out above have been estimated in section 4.4.

4.2. Approach to cost and benefit assessment

A guiding principle underpinning BRIA is the proportionality of the assessment to the scope, impact and stage of advancement of the proposed regulatory changes. In line with this principle, the assessment builds on the work developed by the Welsh Government for the 5p Welsh carrier bag charge implemented in October 2011, and adopts a similar methodology, adapted to provide estimates relevant for Scotland.

The methodology and high level principles followed in the work for the Welsh carrier bag charge are set out in “Explanatory Memorandum to the Single Use Carrier Bags Charge (Wales) (Amendment) Regulations 2011, September 2011”³.

Sensitivity analysis was carried out to assess the impact of variations in some of the key assumptions.

The option of introducing the single-use carrier bag charge is assessed against a ‘Do nothing’ baseline. The costs and benefits are estimated separately for six main categories of affected parties, namely consumers, retailers, manufacturers/distributors of carrier bags, environment, government and wider economic impact.

The partial BRIA followed this methodology and this BRIA essentially updates the estimates from the partial BRIA in the light of the most recent data, including the latest carrier bag data and data on changes in bag use in Wales following the introduction of the carrier bag charge in Wales in 2011.

³ See section ‘Abbreviations and document references’.

4.3. Main sectors and groups affected by the carrier bag charge proposal

4.3.1 Environment

The impact on the environment will arise from the net effects on the environment of the reduction in SUCB use and the increase in the use of Bags for Life (BfL⁴) and in the use of bin liners as a result of the charge. Throughout the report it is assumed that one BfL replaces 14 SUCBs. Although the environmental costs of a BfL are estimated to be about nine times higher than those of a SUCB there is a net environmental benefit from replacing SUCBs with BfLs (and bin liners) – which increases with the number of re-uses.

4.3.2 Retailers

The main impacts on retailers are the cost of administering the charge and the costs associated with the requirement to report carrier bag uptake and associated funds. However, it is the intention for the scheme to be cost neutral to retailers, allowing the latter to recoup their costs from the proceeds of the charge.

As set out below, it is assumed that retailers charge back to customers their costs associated with the logistics and purchase of carrier bags. For SUCB, this is assumed to be ‘hidden’ in the price of shopping paid by customers, both before the charge as well as after the charge, when there are fewer SUCB and the logistics and purchasing costs incurred by retailers are lower. For BfL, this is assumed to be reflected in the price charged to consumers for buying a BfL at the till point. As such, there is no impact per se for retailers from having to buy fewer SUCB and more BfL, and the impacts are instead modelled as impacts to customers.

4.3.3 Customers

Customers who currently receive ‘free’ bags would lose the convenience associated with these bags readily usable at the point of purchase.

Separately, the private cost per SUCB (paid by retailers to procure the bags) is assumed to be a ‘hidden’ cost charged back to consumers by retailers, included in the price of shopping. The Welsh Impact assessment estimates this cost at 2p per SUCB (Wales Memorandum⁵). After the charge is introduced, many consumers switch to reusable BfL instead of the equivalent volume of SUCBs necessary to carry their shopping. As a result, customers incur lower SUCB cost pass-through from retailers.

It is worth noting that, under the proposed carrier-bag charge, customers will pay 5p per single use carrier bag. In the context of this cost-benefit analysis, this is treated, from the point of view of society as a whole, against the environmental benefits achieved through the charge, as a transfer from those paying the charge to the charitable and environmental associations who receive the net proceeds of the charge from retailers.

4.3.4 Government

One-off and annual costs will arise for the Scottish Government to set up and manage the enforcement of the carrier bag charge.

4.3.5 Carrier Bag Manufacturers/distributors

These businesses will be impacted, mainly through the net impact of reduced activity as SUCB use reduces and increased activity as BfL use increases (and as bin liner use increases).

⁴ The term BfL is used in this impact assessment to mean carrier bags intended for re-use (e.g. LDPE bags, non-woven PP bags, and cotton bags).

⁵ See section ‘Abbreviations and document references’ for full reference

4.3.6 Wider economic impacts

The negative economic impact on carrier bags manufacturers and distributors is counterbalanced by a positive effect on other sectors. The reduction in SUBCs leads to a reduction in the hidden costs charged to consumers. While they are increasing their demand for BfLs and for bin liners, net demand for bags goes down. The overall reduction in demand for bags frees up funds that lead to an increase in private demand, creating a positive stimulus across the whole economy.

4.3.7. Charitable and environmental associations and associated impacts

As stated above, the net proceeds are treated here as a ‘transfer’ between economic agents: from consumers to charitable and environmental associations. As such, the transfer is not explicitly included in the total costs and benefits calculations.

It is expected that the funds received by charitable and environmental associations will be used to benefit environmental and social projects, amounting to, or potentially in excess of, the value of the funds received.

The scale and likelihood of benefits materialising in Scotland may vary significantly depending on which associations receive the net proceeds and how they choose to use the funds.

4.4. Costs and benefits assessment for the carrier bag charge proposal

There is some uncertainty over a number of estimates and assumptions. See the Appendix for sensitivity analysis on key parameters.

4.4.1 Benefits to the Environment/Society

A benefit of the proposed carrier bag charge regulation is lower ‘social costs’ associated with carrier bag use.

In this context, social cost is the cost to society as a whole from an event, action or policy change. Environmental pollution is an example of a social cost that is usually only partially borne by the polluter, but which the wider society also pays for i.e. through the impacts on air and the water environment.

Here the impact of the charge includes reduced costs to society arising from air pollution (including CO₂ emissions) and water pollution, as well as reduced costs from the disposal of bags and clearing of bag-related litter, in particular from beaches and streets.

The benefit to the environment is calculated as the change in the social cost associated with the use of SUCBs, BfL and bin bags before and after the introduction of the charge.

The Welsh Impact Assessment in the Wales Memorandum calculates the transfer rate at 14 SUCB towards 1 BfL (para 41):

“This transfer is based on the assumption used in a report by the Environment Agency on the life-cycle of supermarket carrier bags. The report indicates that in order to carry one month’s shopping (483 items) from the supermarket to the home (UK level, 2006/07), 82 SUCBs are required; hence, around 985 SUCBs are used per household, per annum (the same assumption has thus been applied to Wales, for simplicity). This compares with an average requirement of around 70 bags-for-life—consisting of LDPE bags, non-woven PP bags, and cotton bags – such that one BfL equates to 14 SUCBs, i.e. $985/70 = 14$.”

This transfer rate has also been observed following the implementation of the carrier bag charge in Wales. In Wales, the carrier bag charge was introduced partway through 2011. The carrier bag data collected by WRAP for Wales for the year before the charge (2010) and the year after the charge (2012) show that the number of SUCB fell by 221m while the number of BfL rose by 15.7m⁶. It is worth clarifying that this is not the whole of the Welsh data collected by WRAP, but the data for the five retailers providing Welsh data for both BfL and SUCB. This suggests 1 additional BfL for every 14 SUCB lost (221m/15.7m) – although it is possible that this masks more than the impact of the carrier bag charge itself, for instance, if householders bought goods that were less bulky in 2012 than 2010 then this may have influenced the replacement rate.

The introduction of the charge is estimated to reduce SUCB use by 790m, which is replaced by 56m BfLs. At an environmental cost of 5p per SUCB and 43p per BfL this reduces overall costs to the environment by £15m per annum – this is a net benefit to the environment (See Appendix A3-A4-A5 for calculations; Appendix 2 explains the 790m reduction in the use of SUCBs and the 56m increase in the use of BfL).

⁶ Source:

<http://www.wrap.org.uk/sites/files/wrap/Effect%20of%20charging%20for%20carrier%20bags%20on%20bin-bag%20sales%20in%20Wales.pdf>

In addition, the reduced SUCB uptake may also have a positive impact on demand for bin-liners, dog waste bags and other types of specific bags that are currently displaced by reuse of SUCBs, which may have an impact on social costs.

The 2013 WRAP report ‘Effect of charging for carrier bags on bin-bag sales in Wales’⁷ found that following the implementation of the carrier bag charge in Wales, there was “a small increase in sales of some types of bin bag and this increase persisted for at least one-and-a-half years (to the end of the measurement period). The increase was only seen in swing-bin and pedal-bin liners...; no increase was seen for refuse sacks or nappy sacks.”

Extrapolating from the experience in Wales, calculations by WRAP using data underpinning the report mentioned above, suggest an increase of 23m bin liners in Scotland⁸ following the introduction of the carrier bag charge. At a social cost of 3p per bag⁹, this implies a social cost of around £0.7m per annum.

The overall environmental impact is therefore equal to the net benefit of £15.2m already calculated for SUCB and BfL, less the environmental cost associated with additional use of bin liners (£0.7m), yielded a rounded total of £15m.

Another key driver of this policy is behaviour change. Single-use carrier bags can be seen as being a symbol of our throw-away culture, and charging for them is intended to encourage customers to consider their consumption more generally. There may therefore be indirect effects on consumer behaviour, through increased awareness of waste and littering, leading to increased recycling, reuse and waste prevention. This has not been quantified and is therefore not included in the calculation of the social costs and benefits to the environment.

4.4.2 Costs to Retailers

We have had discussions with retailer representatives in developing these proposals, including the Federation for Small Businesses, Scottish Retail Consortium, and at the Grocery Retail Forum (involving major supermarkets and the Scottish Grocers Federation). The overall approach is designed to take account of their view that if a charge is to be introduced, it should take a light touch to regulation and minimise administration.

Building on the Impact Assessment (IA) for the Welsh carrier bag charge, one-off costs to retailers are estimated to amount to £1.7m¹⁰ of set-up costs to alter till-points to process and itemise the charge on receipts, train staff and communicate changes.

⁷ <http://www.wrap.org.uk/sites/files/wrap/Effect%20of%20charging%20for%20carrier%20bags%20on%20bin-bag%20sales%20in%20Wales.pdf>

⁸ The 23m increase is based on WRAP calculations (unpublished) taking account of existing levels of swing bin liners and pedal bin liners in Scotland, sourced from Nielsen for the 52 week period ending 08.06.2013. A percentage increase was used to calculate the additional demand for both swing bin liners and pedal bin liners post-charge, based on the experience in Wales as set out in the report referenced in footnote 7. The estimated percentage increase is the best known estimate available –although it is subject to uncertainty, partly due to the overlap in the regional data samples between geographical areas affected by the charge and those not affected by the charge. The report referenced in footnote 7 explains these in greater detail.

⁹ Given similar characteristics, the social cost per bin liner is assumed to be the same as the social cost per SUCB (5p, as set out in Appendix A3), but removing the costs that are not relevant to bin liners, namely the costs associated with street/beach cleaning (1p) and the landfill cost (1p) representing the opportunity cost of landfilling instead of recycling. 5p minus 1p minus 1p equals a social cost of 3p per bin liner.

¹⁰ The equivalent cost for Wales was £1 million. The estimate for Scotland is derived by up-scaling this cost by a factor of 1.7 to reflect the ratio between the number of retail outlets in Scotland versus Wales (respectively: 23,825 versus 13,670, source: Skills Priorities for the Retail Sector in Scotland, Skillsmart, 2011).

Annual costs to retailers of keeping records and reporting back are estimated at £1.5m¹¹. These costs should be seen in the context of around 24,000 retail outlets in Scotland with a total GVA of the retail sector of £5.8bn.

However, it is the intention for the scheme to be cost neutral to retailers. Rather than regulating to dictate how the proceeds are spent, we intend to negotiate an agreement with retailers whereby they would donate net proceeds to good causes, including environmental good causes after recovering costs of administering. The costs nevertheless still need to be counted as part of the overall cost-benefit analysis as they are borne by Society as a whole (in the form of reduced transfers from customers to charitable and environmental causes).

In line with the Welsh model, measures could be included to minimise the reporting requirements for small shops. For instance, under the Welsh Regulation, there is no record keeping requirements for sellers who employ less than 10 (full-time equivalent) staff at the beginning of any reporting year. The rationale is set out in the Wales Memorandum, page 4.

Following announcement of the decision to proceed with the charge, we will conduct further discussions with retailers on details before putting forward regulations.

4.4.3 Costs to Customers¹²

Customer convenience loss

Customers unwilling to pay the charge would lose the convenience associated with ‘free’ bags readily usable at point of purchase. This is estimated to be around £20m per annum, based on the consumer surplus loss associated with the reduction in quantity of SUCB used. The loss in consumer surplus is calculated as $-790m * 5p * \frac{1}{2}$ corresponding to the triangle under a linear demand curve. Appendix A2 explains the 790m reduction in the use of SUCBs.

Customer benefit

The introduction of a 5p charge reduces demand for SUCBs by 790m. This reduces hidden costs to consumers by £16m ($790m * 2p$) – it is assumed that the reduction in hidden costs is passed through to retail customers in its entirety. The consumer benefit is therefore the whole sum of £16m. If the pass-through is below 100%, some of the benefit will accrue to the retailers in the form of higher profits; the distribution of the benefit would change but not the amount. Appendix A9 explores the impact of the hidden cost per bag being lower than 2p.

The assessment makes the assumption that SUCBs are replaced by £9m of BfL purchases ($56m * 16p$). This is a new cost to customers – the cost of bags is not hidden any more. As with any element of their consumption basket customers make the decision whether or not to buy these bags but when they buy them, the utility they derive must be at least as high as the cost (and, generally, will be higher by the extent to which the consumer surplus exceeds the price). Therefore, the costs of BfLs are not deducted from the total consumer benefit but represent part of it – this is in line with the treatment of consumer costs, where the reduction in SUCB use was counted as a ‘convenience’ cost. The same treatment applies to the bin liner purchases. WRAP calculations suggest a 23m increase in the number of bin bags post-charge, at an average price of around 4p¹³, for total purchases of around £1m ($23m * 4p$).

¹¹As per previous footnote, scaled up by 1.7 from the estimate for Wales of £0.9m.

¹² This part of the analysis calculates the costs and benefits to customers in a different way from the Welsh Impact Assessment, following a different interpretation of the benefits to consumers of switching their bag use from SUCB to BfL.

¹³ Source: WRAP calculations (unpublished) based on Nielsen data. This takes account of both swing bin liners and pedal bin liners.

Appendix A2 explains the 790m reduction in the use of SUCBs and the 56m increase in the use of BfL.

4.4.4 Costs to the Scottish Government

One-off costs to the Scottish Government are estimated at (rounded) £1m - through advertising/communication (£0.3m), introducing the legislation (£0.18m) and preparatory work on enforcement (£0.33m).

The legislation and enforcement estimates assume the same costs to the Scottish Government as those assumed for the Welsh Government for the introduction of the carrier bag charge.

Additional annual management costs to the Scottish Government are estimated at below £0.5m and have been modelled as zero (rounded). Costs to the Scottish Government include on-going monitoring and assessment of the effectiveness of the charge, hoc provision of further guidance and updating of information sources, maintaining the voluntary agreement and any requirement to review the regulations in future. The sensitivity of the results to this assumption is relatively small. Including additional annual costs of up to £1m as per the Welsh impact assessment to account for potential enforcement costs and greater management costs, adds around £10m over the whole period in Net Present Value (NPV)¹⁴ terms.

4.4.5 Cost to Carrier Bag Manufacturers/Distributors

In Wales, the impact on carrier bag manufacturers was estimated to be minimal, since there are relatively few of these producers situated in Wales and was therefore not included.

WRAP/Zero Waste Scotland commissioned (unpublished) research to provide information for this assessment on the impact of the charge on carrier bag manufacturers/distributors in Scotland. This estimates that there are 22 Scottish based suppliers of SUCBs and BfL in Scotland with only one of these being involved in manufacturing (of paper SUCBs).

The majority of Scottish based SUCB and BfL suppliers have fewer than 10 employees with three having more than 100 employees. Of the three larger companies, two have a significant part of their business reliant on SUCB sales whilst the third does not.

In addition to supplying the Scottish market, some companies (typically those which are larger in size) also supply to markets outside Scotland. The majority of SUCBs and BfL used in Scotland are supplied by companies based outside Scotland. This is mainly due to the procurement practice of national accounts operating in Scotland but with headquarters in the rest of the UK (and beyond). In the situations where SUCBs and BfL are supplied from outside Scotland they reach the outlets via the company's internal distribution system or via distribution depots based in Scotland. In the latter case, these depots often have thousands of product lines, of which SUCBs and BfL are a small part.

Based on data provided by a survey of relevant companies, the study developed a model to assess the impact of a reduction in the use of SUCB and a corresponding rise in the use of BfL. This impact materialises through a scaling down of activities of the companies based in Scotland in response to the changes to the Scottish market demand. Some companies also stated they may relocate their operations outside of Scotland as a result of changes in Scottish market demand, although there is uncertainty around the likelihood and extent of this, particularly since a similar charge is proposed for plastic carrier bags from large retailers in England from 2015.

Taking account of both these effects, and using the same assumptions as in the rest of this Impact Assessment, in particular the number of SUCB and BfL before and after the charge, the model suggests a loss to the Scottish economy of £2.3m per annum, as measured by the loss in Gross Value

¹⁴ See the section 'Net costs and benefits' for further explanation of the NPV approach.

Added (GVA). This is against the baseline scenario, which assumes a constant number of SUCB per annum at current levels.

The ‘scaling down’ effect accounts for £1.3m of the potential overall £2.3m loss. If companies do relocate some of their activities outside, it is estimated the remainder of the GVA loss could reach up to around £1m.

Appendix A11 provides sensitivity analysis around these estimates, suggesting a smaller impact (£0.9m GVA loss based on the decreased demand for the retail and wholesale sector services including distribution. This estimate includes the increase in demand for bin liners.)

4.4.6 Wider economic impacts

As set out in 4.4.3, the reduced demand for SUCBs reduces hidden costs to consumers by £16m (790m*2p). At the same time, they are increasing their demand for BfLs by £9m (56m*16p) and for bin liners by £0.9m (23m*4p) – so the net loss of demand for bags is £6m – with the negative effect on Scottish GVA as estimated above in 4.4.5. While representing a reduction in demand for bags, these £6m are equivalent to an increase in private income and should lead to an increase in general household demand. Using Input-Output tables for Scotland, the estimated impact of a domestic demand increase by £6m on Scottish GVA is +£2.8m (direct and indirect effects of the demand increase but excluding any positive effects on the countries from whom Scotland imports).

4.4.7 Employment impacts

The employment implication of the combined impacts on the carrier bag distribution sector and on the wider economy is mostly redistributive. Estimates for employment reduction impacts range between 18 jobs (*caused by the reduction in demand for wholesale and retail sector services, including distribution - based on input-output analysis at referred to at 4.4.5 and A11*) and 84 jobs (*based on the survey discussed at 4.4.5 and made up of 36 as a direct effect of scaling down of operations in Scotland, 21 from potential relocation impacts and the remainder from supplier and income effects*). This is estimated to be counterbalanced by higher employment in the Scottish economy of 53 jobs (*due to increases in private budgets discussed at 4.4.6 - also estimated from input-output analysis*).

4.4.8 Net Costs and Benefits

To compare the costs and benefits that occur over time, a technique called discounting is used, using a discount rate of 3.5% (as recommended by HM Treasury, ‘The Green Book’), to account for time preference - the general public preference for receiving goods and services now than in the future. The discount rate is used to convert the costs and benefits into ‘present values’ so they can be compared.

Calculating the present value of the differences between the streams of costs and benefits provides the net present value (NPV) of an option. The NPV is typically used to inform policy decisions.

The analysis of the costs and benefits for each policy option is based on a 15-year forecast period (from year 0 to year 15, based on mid-year projections) and it is assumed that year zero is the year of implementation of the policy (i.e. the year in which the “set-up” or one-off costs would arise).

The starting point or ‘Do Nothing’ option can be thought of as having an NPV of around £600m, which reflects the social costs of SUCB. This is calculated as the discounted sum of the annual social costs of SUCB, based on SUCB use of around 975m (see Appendix – A1) times the social cost of SUCB of 5p (see Appendix A3). The benefits of the carrier bag charge act to reduce this cost.

Based on the estimates of individual impacts detailed above and summarised in Table 1, the carrier bag charge yields a net benefit of around £120m over the forecast period in NPV terms, compared with the ‘do nothing’ option.

Caveats, as noted before include the following.

This excludes additional environmental and social benefits that may arise from the use of the net proceeds, beyond the value of the net proceeds themselves, as well as additional benefits arising from indirect behaviour change impact with regards to recycling or waste prevention.

Table 1 – costs and benefits of the carrier bag charge introduction, £m

£m	One off	Annual
Change in social costs	-	15
change in costs to the Scottish Government	-1	0
Change in costs to customer, customer convenience loss	-	-20
Change in costs to customers, customer benefit	-	16
Change in costs to retailers	-2	-2
Change in GVA from change to bag sector in Scotland	-	-2
Change in GVA from changes to customers' costs	-	3
NPV of changes in costs and benefits, relative to the baseline		£120

NPV rounded to the nearest £10m multiple. A positive figure indicates a reduction in costs; a negative figure indicates an increase in costs compared with the 'do nothing' baseline.

The net costs to consumers is shown to be negative. One would expect the real impact to be close to zero and it could even be positive. The reason for the negative result is that the calculation of the consumer benefit disregards consumer surplus in the consumption of other items (bags for life and other household goods and services) and therefore underestimates total benefit.

The net change in GVA shows a positive impact. Using the input-output analysis it can be explained by the differing 'import' content of the bag sector and general household demand. (In the input-output analysis, the bag sector was approximated by the retail sector; the GVA impact above is derived from survey analysis).

The key uncertainties in the analysis revolve around the social costs/benefits. Overall benefit is larger, the higher the environmental impact of SUCB (see Appendix A7), the lower the difference in environmental impact between SUCB and BfL (see Appendix A8), and the higher the replacement ratio of SUCB to BfL (see Appendix A2). With a much lower environmental costs of SUCB and/or a significantly lower replacement ratio than used in the assessment the NPV would be negative.

4.5 Other Options Considered

A number of other options were considered but are not recommended.

4.5.1 Do nothing

The costs and benefits of Option 1 above have been modelled against the 'do nothing' option. Under this option, the assumption is that the current usage levels of SUCBs will remain broadly constant, with the attendant impacts on littering, wildlife etc.

4.5.2 Voluntary agreement with major retailers to charge for bags

We would expect this approach to have lower administration costs than Option 1 and there would be no regulation. Under a voluntary approach, retailers would be able to tailor their own approaches to charging and reporting to minimise business impacts. However, without broad agreement from major retailers it has not been possible to pursue this approach.

4.5.3 Tax carrier bags

A tax on each carrier bag dispensed, with the proceeds being collected centrally as an addition to central government revenues has been introduced in Northern Ireland. This approach would lead to significant additional administration costs for both retailers and the tax collection agency when compared with Option 1 which is designed to minimise administration with retailers passing proceeds to good causes. There are also questions about the public acceptability of such a tax, as well as the potential for it to disrupt existing arrangements whereby retailers who already charge for bags donate the proceeds to charity.

5. Scottish Firms Impact Test

5.1. Impact on Businesses

There may be the potential for a disproportionate effect on SMEs should the charge lead to a reduction in impulse purchases from small retailers. However, we are not aware of evidence of such an effect elsewhere and it is hard to see why it would apply differently to larger retailers. Larger retailers may have an advantage with regards to economies of scale in the logistics of implementation of new charging systems.

The Scottish Government is therefore proposing steps to minimise the effect on smaller businesses. In line with the Welsh model, measures could be included to minimise the reporting requirements for small shops. For instance, under the Welsh Regulation, there is no record keeping requirements for sellers who employ less than 10 (full-time equivalent) staff at the beginning of any reporting year.

To understand the full impacts on both small businesses and larger retailers, Scottish Government officials have been in discussion with representatives of several trade groups, including the Federation of Small Businesses and Scottish Retail Consortium. As noted above, these discussions will continue in the lead up to the regulations and through the implementation period and involve direct engagement with a representative sample of retailers.

5.2. Competition Assessment

Research carried out for the Scottish government suggests there are 22 Scottish-based companies involved in the supply of carrier bags, supplying the Scottish market and/or the rest of the UK, and only one of these actively manufactures (paper) carrier bags. The policy might result in an adverse impact on single-use carrier bag suppliers, only partly offset by positive effects from the increased demand for reusable bags (BfL) and bin bags, as identified in section 4.5. Positive effects may also result from the development of other sustainable alternatives to single-use carrier bags.

The proposal will not directly limit the number or range of suppliers of carrier bags since it does not favour particular suppliers or types of bags. It may indirectly limit the number or range of suppliers by reducing overall demand for bags but we will work to minimise this by ensuring the enterprise agencies are ready to proactively contact those companies involved in carrier bag supply to help them plan for its effects, including exploring opportunities for diversification. The proposal will not in itself raise costs to smaller entrants relative to larger suppliers. It will not limit the ability of suppliers to compete or reduce incentives for them to compete vigorously.

The proposal will apply equally to all retailers, regardless of size, except for the reduced reporting requirements for smaller retailers to reduce administration. It will not directly or indirectly limit the number or range of retailers. It will not raise costs to smaller retailers relative to larger ones. It will not limit retailers' ability to compete or reduce incentives for them to compete vigorously.

5.3 Test Run of Business Forms

The only business forms we expect to be necessary will be for retailers reporting the number of bags they have dispensed and the amount of money they have donated to good causes from the proceeds. The exact nature of the reporting regime will be determined through discussion with retailers of the proposed voluntary agreement on donating proceeds to good causes and the forms will be test run in businesses at that stage.

6. Legal Aid Impact Test

There is potentially an impact on the Legal Aid Fund with respect to sole traders, however it is unlikely that this would be significant. This has been agreed in discussion with Scottish Government Access to Justice officials.

7. Enforcement, sanctions and monitoring

The proposed system, based on experience in Wales would rely in the first instance on self-regulation on the grounds that retailers would want to be seen to comply with their duties under a high-profile policy. Annual reporting on numbers of bags dispensed and proceeds being donated to good causes will be an important way for retailers to demonstrate their compliance. It is therefore anticipated that enforcement needs will be limited and with a low financial impact

8. Implementation and delivery plan

The Scottish Government announced in June 2013 that carrier bag charging would take effect from October 2014. It has ensured that the enterprise agencies have contacted those companies involved in carrier bag supply and offered help in planning for the effects of the charge, including exploring opportunities for diversification. The charge will come into effect on 20 October 2014 which should allow adequate time for retailers and businesses to prepare.

9. Summary and recommendations

As set out above, the financial and environmental net impacts of the charge for society are positive (+£120m) in NPV terms over the forecast period compared with a 'do-nothing option'. The refinements to the proposal intended to be made post consultation will, we believe, help minimise short term investment costs and provide the lead-in times necessary for businesses to adapt to the changes being proposed.

Table 2

£m	One off	Annual
Change in social costs	-	15
change in costs to the Scottish Government	-1	0
Change in costs to customer, customer convenience loss	-	-20
Change in costs to customers, customer benefit	-	16
Change in costs to retailers	-2	-2
Change in GVA from change to bag sector in Scotland	-	-2
Change in GVA from changes to customers' costs	-	3
NPV of changes in costs and benefits, relative to the baseline		£120

NPV rounded to the nearest £10m. A positive figure indicates a reduction in costs; a negative figure indicates an increase in costs compared with the 'do nothing' baseline.

10. Declaration and publication

I have read the impact assessment and I am satisfied that (a) it represents a fair and reasonable view of the expected costs, benefits and impact of the policy, and (b) that the benefits justify the costs I am satisfied that business impact has been assessed with the support of businesses in Scotland.

Signed:

Richard Lochhead MSP, Cabinet Secretary for Rural Affairs and the Environment

Date: 2 April 2014

Appendix. Assumptions and calculations underpinning the estimates of the impact of the carrier bag charge & sensitivity analysis

As set out in the main body of the report, the methodology used in this impact assessment has consisted of building on the analysis carried out for the impact of the introduction of the 5p carrier bag in Wales, adapting the input data and assumptions in line with orders of magnitude relevant to Scotland.

This appendix sets out the assumptions and calculations used to derive the estimates cited in the main body of the report.

A1. Number of bags in use before the introduction of the charge

Since the publication of the partial carrier bag BRIA, which was based on 2011 carrier bag data, WRAP has published 2012 carrier bag data. The data in this BRIA is updated accordingly, using the same methodology as before, as follows.

The number of carrier bags in Scotland is based on calculations to scale up supermarket carrier bag data from WRAP.

Since the end of the formal Voluntary Agreements on carrier bags, WRAP has carried on collecting data on carrier bags from retailers involved in continued monitoring of carrier bag use with the UK Governments.

WRAP estimates that the major UK grocery retailers providing bag data handed out 753m plastic SUCBs in 2012 in Scotland .

In addition, WRAP calculations based on unpublished data for BfL suggest that these same retailers handed out 45m BfL in Scotland .

As noted, this captures bag data only for those retailers participating in the data collection exercise between UK Governments and retailers. The number of bags above therefore does not capture the total number of bags in use in Scotland.

In order to derive an estimate at least for all grocery retailers, the number of bags above has been up-rated, based on the sales volume market share of participating retailers. The working assumption here is that the market share acts as a reasonable proxy for the bag volume share (there may be reasons why this is not always the case and it is noted that the resulting estimate must therefore be treated with some caution).

Sales volume data from Kantar suggests that the retailers providing bag data to WRAP hold an 81% volume share of the grocery market in Scotland, providing an up-scaling factor of 1.23 (1/81%). Up-rating the above bag data accordingly yields 929m plastic SUCB and 56m BfL.

In addition, a 2005 Scottish Executive / Environment Group Research Report on the then proposed bag levy¹⁵ suggested that paper bags account for around 5% of plastic carrier bag use.

Using this percentage, the number of paper bags is estimated at around 46m.

Therefore, SUCB (paper and plastic) are estimated at around 975m and BfL at 56m.

A2. Number of bags in use following the introduction of the 5p charge

SUCB

The partial BRIA assumed a given decrease in the number of SUCB, sourced from the Welsh carrier bag BRIA, based on regression analysis from the experience of the Irish Levy. New data is now available, based on the experience in Wales following the introduction of the 5p charge.

In Wales, the carrier bag charge was introduced partway through 2011. The carrier bag data collected by WRAP¹⁶ for Wales for the year before the charge (2010) and the year after the charge (2012) show an 81% drop in the number of SUCB.

For Scotland, this means SUCB falling by 790m, from 975m (see A1.1) to 185m.

BfL

The partial BRIA assumed an increase in the number of BfL proportional to the assumed decrease in SUCB, consistent with the assumption that one BfL replaces 14 SUCB, as described in section 4.4.1. There may initially be some ‘hoarding’ of BfLs as consumers are getting used to using BfLs but over the fifteen year assessment span such effects even out.

As described in section 4.4.1, this transfer rate has also been observed following the implementation of the carrier bag charge in Wales. In Wales, the carrier bag charge was introduced partway through 2011. The carrier bag data collected by WRAP for Wales for the year before the charge (2010) and the year after the charge (2012) show that the number of SUCB fell by 221m while the number of BfL rose by 15.7m¹⁷. It is worth clarifying that this is not the whole of the Welsh data collected by WRAP, but the data for the five retailers providing Welsh data for both BfL and SUCB. This suggests 1 additional BfL for every 14 SUCB lost (221m/15.7m) – although it is possible that this masks more than the impact of the carrier bag charge itself, for instance, if householders bought goods that were less bulky in 2012 than 2010 then this may have influenced the replacement rate.

At this level of SUCB replacement, there is a net benefit to the environment. As already noted in the Wales Memorandum, if there is a substantial increase in the level of production of BfL and this is sustained over the longer term, it could have a detrimental effect on the environment since the social cost of producing a BfL is estimated to be much higher than that of a SUCB – if a BfL replaces fewer than 9 SUCBs there is a net cost to the environment (given assumptions on current and post-charge levels of SUCB).

The 14:1 transfer rate translates into a 101% increase in BfL. Assuming this, the 5p charge is estimated to be associated with BfL use rising by 56m, from 56m (see Appendix A1) to 112m.

¹⁵ <http://www.scotland.gov.uk/Resource/Doc/57346/0016899.pdf>

¹⁶ ‘Effect of charging for carrier bags on bin-bag sales in Wales’, WRAP, 2013.

<http://www.wrap.org.uk/sites/files/wrap/Effect%20of%20charging%20for%20carrier%20bags%20on%20bin-bag%20sales%20in%20Wales.pdf>

¹⁷ Source:

<http://www.wrap.org.uk/sites/files/wrap/Effect%20of%20charging%20for%20carrier%20bags%20on%20bin-bag%20sales%20in%20Wales.pdf>

A3. Social cost of a SUCB

The assessment uses the same cost categories as the Welsh impact assessment¹⁸, covering the (monetised) environmental cost of greenhouse gas emissions at the production stage, air pollution, water pollution, as well as costs associated with littering (e.g. beach cleaning and street cleaning) and improper recycling.

Table A3

Production	Pence per bag
Greenhouse gas emissions	1
Pollution (Air)	1
Pollution (Water)	1
Littering	1
Improper recycling	1
Total social cost	5

The costs of Greenhouse Gas emissions are estimated to be 0.00208t per 82 SUBCs (the ‘reference flow’ in the EA report, that is the number of bags necessary to carry the functional unit (one month’s shopping), as per table 3.1 of the EA report). The number of tonnes of CO₂ associated with a SUCB is therefore calculated as 0.00208t (as per table 6.1 of the EA report) divided by 82. This is then multiplied by a carbon cost of £60/t of CO₂¹⁹ (in contrast with the Wales Memorandum, this analysis uses the non-traded carbon cost as per UK carbon appraisal guidance). This, rounded upwards, yields an estimate of 1p per SUCB.

Estimates for air pollution, water pollution, littering and disposal were kept as per the Welsh Impact Assessment. Tailoring some of the estimates to the Scottish circumstances was considered, for instance scaling up the cost of beach cleaning for the greater size of the coastline, but there was no robust evidence to do this and it is deemed likely to fall out within the rounding process.

There is uncertainty over the estimates of social costs. Appendix A7 tests the impact of assuming that the social cost of a SUCB is half the size assumed in this report.

A4. Social cost of a BfL

The Welsh Impact Assessment estimates that the social cost of a BfL is around 8.6 times higher than that of a SUCB. This report assumes the same, yielding an estimate of the social cost of a BfL at 43p. There is uncertainty over the estimates of the social costs. Appendix A8 tests the impact of assuming that the social cost of a BfL is only around 4 times higher.

¹⁸ See Wales Memorandum, Evidence Base section, paragraphs 129 to 140.

¹⁹ 2014 non-traded price of carbon (central assumption), see Table 3 of “Tables 1-20: supporting the toolkit and the guidance” (version: September 2013) for “Green Book supplementary appraisal guidance” at: <https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal>

A5. Environmental/social impact

The environmental/social impact of the 5p charge is estimated at around £15m per annum. This is calculated as the change in SUCB use times the SUCB social cost, plus the change in BfL use times the BfL social cost, plus the change in bin liners times the bin liners social cost ($-790m*5p + (+56m*36p) + (+23m*3p)$).

A6. Cost of a BfL

The cost of a BfL is estimated at 16p (Wales Memorandum, Evidence Base section, paragraph 163), reflecting the composition of demand for the different types of BfL and their respective prices. This was based on discussions with retailers. A12 discusses the impact of assuming a different price for BfL.

A7. Sensitivity analysis - Environmental/social impact under a smaller SUCB social cost

As set out in A3, there is uncertainty over the estimates of the social costs of SUCB. The impact of changing the current assumption is tested by halving it, such that the social cost of a SUCB is assumed to be 2.5p instead of 5p. This has the effect of reducing the social cost of a BfL accordingly (as the BfL social cost is assumed to be 8.6 times higher than the SUCB social cost), to 22p. Halving the social costs halves the social benefits associated with the charge, to around £7m per annum. All other costs and benefits are unaffected, such that the NPV of changes in costs and benefits is +£20m, compared with +£120m in the central scenario (both relative to a do-nothing baseline).

A8. Sensitivity analysis - Environmental/social impact under a smaller BfL social cost

As set out in A4, there is uncertainty over the estimate of the social costs of BfL. The assumption in this report is that the social cost of a BfL is around 8.6 times the social cost of a SUCB. The impact of changing the current assumption is tested by broadly halving this assumption, such that the social cost of a BfL is around 4 times the social cost of a SUCB. For a SUCB social cost of 5p, this means assuming a BfL cost of 20p. This results in larger social benefits associated with the charge (the post-charge social benefit from fewer SUCB is unaffected and the post-charge social cost from the increase in BfL is now smaller). This yields an NPV of changes in costs and benefits of +£280m, compared with +£120m in the central scenario (both relative to a do-nothing baseline).

A9. Sensitivity analysis – Wholesale cost of SUCB

As described in section 4.4.3, post-charge there is less demand for SUCB. This is assumed to reduce the hidden costs to consumers. The calculation of this reduction in cost to customers is based on both the decrease in SUCB (-790m) and an assumed wholesale cost of SUCB (2p). The latter is originally sourced from the Wales Memorandum. There is elsewhere a range of estimates now available depending on the supplier/data source. Costs will also likely vary across the different retailers. The original estimate of 2p has been retained in the main body of the BRIA but the range of estimates available suggest the actual wholesale cost may now be less than this.

At this level of wholesale cost (2p), there is a net benefit to society. For much reduced levels of the wholesale cost, there is less benefit. Given the framework of analysis used, a smaller wholesale cost means smaller customer benefits from the charge (in the form of a smaller reduction in hidden SUCB costs post-charge). Past a certain point, the customer benefits become small enough to be outweighed by the customer convenience loss (£20m). In that case, there is also no longer a GVA boost and the overall NPV might become negative, relative to a do-nothing baseline.

A10. Sensitivity analysis - Social cost & secondary reuse of SUCB

The social cost for SUCB is based on the assumption that SUCB have one primary use and no secondary use. The impact of changing this assumption to allow for secondary reuse (as bin liners for instance) was tested using an estimate from the EA report on carrier bags, suggesting the number of tonnes of CO₂ associated with SUCB was 0.001578 t CO₂ in this case (per reference flow of 82 SUCB), compared with 0.00208t CO₂ in the central case. This effect, due to rounding, did not impact the overall NPV.

A11. Sensitivity analysis - negative GVA impact using input-output analysis

Independent consultants have estimated the negative GVA impact on the Scottish distribution sector to be £2.3m (section 4.4.5). Using the same methodology as for the wider economic impacts (Input-Output tables, as per section 4.4.6), the impact of £6m lower spending on on bags (decrease in SUCBs, increases in BfLs and bin liners) is estimated to lead to an overall reduction in GVA of £0.9m (direct and indirect effects). Using these lower GVA costs, the NPV of the policy increases from £120m in the main case to £130m, both relative to the do-nothing baseline.

A12. Sensitivity analysis – price of a BfL

The BRIA assumes that the price of a BfL is 16p. This is sourced from the Welsh carrier bag BRIA and assumes, amongst other things and based on discussions with retailers, that around 90% of BfL are heavy-gauge reusable LDPE bags which have an average price of 10p.

The 2013 Zero Waste Scotland report “Consumer behavioural study on the use and re-use of carrier bags 2012” includes some observational data on the composition and price of BfL in Scotland. The data would suggest the average price of a BfL is higher than 16p, largely because it seems that less than 90% of the BfL are of the cheaper variety as assumed in the Welsh BRIA. This is despite the price of the cheaper BfL being now lower (6p) than the assumed 10p.

A change in the assumed level of the price of BfL affects the ‘private budgets’ (see section 4.4.6, which explains this is the difference, post charge, between the smaller hidden SUCB costs and the higher cost of purchasing more BfL) and the associated GVA impact.

Past a certain point (26p), everything else being equal, the increase in private budgets disappears, as the cost of buying the BfL offsets the avoided hidden costs of SUCB. At that level, the NPV of the policy reduces from £120m in the main case to £80m.

It is worth noting that a different distribution of the types of BfL also affects the social cost of BfL. Under the current modelling calculations, if there are fewer 10p plastic BfL and more cotton and PP BfL, the weighted average social cost of a BfL increases, and with that increase in social costs, the overall NPV benefit of the policy diminishes.