Explanatory Memorandum to the Single Use Carrier Bag Charge (Wales) Regulations 2010

This Explanatory Memorandum has been prepared by the Directorate for Environment and Sustainability and is laid before the National Assembly for Wales in conjunction with the above subordinate legislation and in accordance with Standing Order 24.1.

Minister's Declaration

In my view, this Explanatory Memorandum gives a fair and reasonable view of the expected impact of the Single Use Carrier Bag Charge (Wales) Regulations 2010. I am satisfied that the benefits outweigh any costs.

Jane Davidson
Minister for Environment, Sustainability and Housing

1. Description

These Regulations require sellers of goods to charge for single use carrier bags provided to customers. The Regulations set the charge at a minimum of 5p.

They also require sellers of goods to keep and publish records in relation to the number of chargeable single use carrier bags they sell in Wales in a reporting year and how the proceeds of the charge have been used.

The Regulations also appoint local authorities in Wales as administrators and confer powers on local authorities to use civil sanctions to deal with breaches of the Regulations.

2. Matters of special interest to the Constitutional Affairs Committee

These draft Regulations are the first in the UK to make use of the power to require sellers to charge for single use carrier bags under the Climate Change Act 2008.

These draft Regulations are also the first to confer powers on local authorities in Wales in relation to the use of civil sanctions. Civil sanctions will provide local authorities with the flexibility to enforce the Regulations in a way that is proportionate to the nature and severity of the breach and any benefit derived from non-compliance. The civil sanctioning powers are accompanied by duties to publish guidance on how the powers will be used and this will provide transparency and consistency to the business sector.

3. Legislative background

The Regulations are made under powers contained in sections 77 and 90 of, and Schedule 6 to, the Climate Change Act 2008 ("CCA").This instrument is subject to approval of the Assembly.

Schedule 6 to the CCA enables the Regulations to confer powers on administrators to impose fixed monetary penalties and discretionary requirements for breaches of the Regulations:

- **fixed monetary penalties** are penalties of fixed amounts which are set out in regulations;

- **discretionary requirements** are requirements of two types: variable monetary penalties and non-monetary discretionary requirements;

- **a variable monetary penalty** is a penalty of an amount which the administrator determines. The maximum amount which an administrator can impose as a variable monetary penalty in relation to any particular kind of breach is set out in the draft Regulations;

- **a non-monetary discretionary requirement** is a requirement to take particular steps which an administrator specifies, in order to secure that a breach does not continue or recur. The steps must be taken within a period which the administrator specifies.

Schedule 6 to the CCA also enables the Regulations to deal with the imposition of penalties for failures to comply with civil sanctions and for the recovery of unpaid penalties and enforcement costs:

- **non-compliance penalties** are monetary penalties which administrators can impose if a seller fails to take some or all of the steps required under a non-monetary discretionary requirement by the date due for completion

- **late payment penalties** are automatically incurred under the Regulations if fixed penalties, variable monetary penalties or non-compliance penalties are not paid by the date they are due;

- **enforcement costs –** administrators can require sellers to pay the costs incurred in connection with imposing discretionary requirements;

- **fixed and variable monetary penalties, non-compliance and late payment penalties and enforcement costs** can be recovered as a civil debt.

County and county borough councils in Wales are the administrators of the provision made by the Regulations. The work of councils has been assessed by the Local Better Regulation Office ("LBRO") On the basis of the report of the LBRO and discussions with the WLGA, the Welsh Ministers are satisfied that county and county borough councils in Wales will exercise the civil sanctioning powers in accordance with the principles set out in paragraph 23 of the CCA. Those principles are that:

- regulatory activities should be carried out in a way that is transparent, accountable, proportionate and consistent;
- regulatory activities should be targeted only at cases in which action is needed.

The CCA also requires appeals against a civil sanction to be made to the First-tier Tribunal or other tribunal or another tribunal created under an enactment. The Regulations provide that appeals will be to the First-tier Tribunal.

The Welsh Assembly Government has decided that in order to ensure that no meritorious appeal is inadvertently precluded by the Regulations, it would be appropriate to allow an appeal under the Regulations to be made for "any other reason". The First-tier Tribunal has powers to strike out proceedings if it considers that there is no reasonable prospect of an appellant's case, or part of it, succeeding.

4. Purpose & intended effect of the legislation

Single use carrier bags represent an iconic symbol of our throwaway society and are an environmental problem. In Wales we took home an estimated 350 million carrier

bags last year from the major supermarkets alone, equivalent to 273 bags per household in Wales. And this figure under-represents the full picture since it does not include the millions of bags given out on the high street, corner shops and other retail outlets.

Carrier bags make up an estimated 2.7% of litter by weight and costs approximately £1 million annually to remove in Wales, which is a cost burden directly on the people of Wales. Carrier bag litter may seem insignificant in terms of weight, but carrier bags are light, highly visible and dangerous to wildlife. They blight towns, urban areas and the rural landscape in Wales, lowering the value of what we see and damaging the reputation of Wales in the eyes of our visitors.

In recent years, single use carrier bags have attracted a great deal of public, political and media attention, with a demand to reduce the number of single use carrier bags given out. By May 2010 the British Retail Consortium and the 7 main grocery retailers, in a voluntary agreement with the UK Government, succeeded in achieving a 50% reduction in Wales on the number of single use carrier bags given out (against a 50% target) compared to 2006 figures.

However, there are still at least 350 million carrier bags being given out in Wales by those signed up to the voluntary agreement alone. Whilst the Welsh Assembly Government appreciates and congratulates the BRC and supermarket retailers on the current reduction levels, it is clear that voluntary action only goes so far and there are many people in Wales who have not yet adapted their shopping habits. Whilst voluntary action has resulted in a 50% reduction, charging options have seen reductions of over 85% . This indicates that further action is needed and will have a greater impact in reducing the number of single use carrier bags in circulation.

The main purpose of introducing a charge is to substantially reduce the amount of these bags that are taken away from shops each year in Wales, significantly beyond the levels already achieved through voluntary action.

We also want to:

- encourage consumer behaviour change towards more sustainable consumption
- cut down on the wasteful use of resources
- improve local environment quality by reducing the highly visible litter from single use bags and reduce the potential contaminants left behind from fragments of bags
- protect wildlife from the potential hazards of discarded bags or fragments of bags
- encourage waste reduction/prevention

The requirement to charge will apply to all sellers of goods who sell goods in the course of trade or business to customers in Wales or who sell goods to people in Wales. The Regulations will require sellers to charge 5p for each single use carrier bag (subject to certain exemptions detailed below).

The Regulations are in seven parts:

Part 1 deals with definitions and, amongst other things, defines the meanings of ‘single use carrier bag’ and ‘seller’ for the purposes of these Regulations.

Part 2 sets the minimum amount that a seller must charge for a single use carrier bag. The minimum amount will be set at 5p.

Part 2 also deals with the types of bags that are not subject to the requirement to charge (these are set out in Schedule 1). In framing the exemptions to the requirement to charge, we have looked at common practice, health and safety, similar legislation in other countries, responses to the first and second consultations, discussions with our stakeholders and other government departments, and have sought to balance these with the desired aims of this policy.

Part 3 of the Regulations sets out the record keeping requirements relating to the charge. The purpose of these requirements is to ensure we have accurate data on the sale of single use carrier bags in Wales and to ensure public accountability and transparency.

Part 4 of the Regulations sets out the circumstances which constitute a breach of the regulations. A seller will breach the regulations if they fail to comply with a requirement imposed by the Regulations as a result of having failed to take all the steps necessary to enable them to comply with the requirements of the Regulations.

Part 5 of the Regulations deals with civil sanctions and makes provision for fixed monetary penalties and discretionary requirements (set out, respectively, in Schedules 2 and 3). Civil sanctions provide a flexible and proportionate range of sanctions for breaches of the law, enabling action to be taken which more closely matches the offence and which are proportionate and appropriate to the circumstances.

Local authorities will determine discretionary requirements so that they will be proportionate to the facts of each case in accordance with published guidance. Civil monetary penalties will vary from low level fixed penalties of £100 for lesser but still significant non-compliance, to more substantial variable monetary penalties for more serious or repeated offences. The approach to determining a variable monetary penalty is designed to approximate the penalty to the minimum level necessary to deter future non-compliance, and remove any financial benefit from the seller from non-compliance.

Part 6 deals with enforcement and non-compliance. It sets out the administrator’s enforcement powers which includes, amongst other things, to make test purchases of goods for the purposes of determining whether the Regulations have been complied with. It also provides for an administrator to give a publicity notice to a seller on whom a civil sanction has been imposed.
A publicity notice requires the seller to publish the details of any enforcement action taken against them.

Part 7 deals with various administrative matters. For example, it sets out that an administrator may withdraw or amend a notice of intent or a final notice in relation to a civil sanction. It also sets out that an appeal under these Regulations may be made to the First-Tier Tribunal. Part 7 also sets out that an administrator must publish

guidance about its use of civil sanctions under these regulations and sets out the relevant information that the guidance must contain.

5. Consultation

Proposals to introduce a charge on single use carrier bags have been the subject of two consultations. The first ran for 12 weeks between June and September 2009 and sought views on the general policy. Views received as a result of this consultation fed into the further development of the policy and the preparation of draft regulations for a second consultation. The second consultation on the draft Single Use Carrier Bag Charge (Wales) Regulations ran for 8 weeks between June and August 2010.

The Welsh Assembly Government has sought views from as many people and organisations as possible in drafting these Regulations. In particular, we have consulted:

- supermarkets and other retailers;
- environmental organisations;
- consumers and consumer organisations;
- small businesses; BRC and FSB
- local authorities, including trading standards officers

In addition, the consultation was widely publicised through the media in Wales and the launch of the second consultation made headline news on both BBC Wales' Wales Today and ITV Wales' Wales Tonight news programmes. The Daily Mail, Daily Telegraph and the Western Mail also ran in-depth reports.

A number of other press and publicity avenues were employed during the consultation period. An e-mail was sent directly to our list of stakeholders inviting them to respond to the consultation and direct electronic mail was sent to all those who responded, and provided an e-mail address, to the first consultation.

The final Regulations include a number of changes as a result of this second consultation exercise. For example, we have reviewed and amended the list of exemptions to the charge and revised the penalties for non-compliance.

A summary of the replies and the Assembly Government's response is publicly available.
http://new.wales.gov.uk/consultations/environmentandcountryside/environmentalenforcement/?lang=en&status=closed

The Regulatory Impact Assessment below sets out the costs and benefits of the Regulations

PART 2 – REGULATORY IMPACT ASSESSMENT

Title: **Proposal for the Introduction of a Charge on Single-Use Carrier Bags through the Draft Single-Use Carrier Bag Charge (Wales) Regulations 2010** **Lead department or agency:** Welsh Assembly Government **Other departments or agencies:**	Impact Assessment (IA) **IA No:** WAG **Date: 19/10/2010** **Stage:** Enactment **Source of intervention:** Domestic **Type of measure:** Secondary legislation **Contact for enquiries:** Julie Osmond, 02920 82 5592, Julie.Osmond@wales.gsi.gov.uk

Summary: Intervention and Options

What is the problem under consideration? Why is government intervention necessary?

The single-use carrier bag (SUCB) represents a cost to society; it is often used for shopping only once and yet can persist in the environment for hundreds of years to come. Furthermore, the total cost to the environment of producing each bag outweighs the private cost to retailers of purchasing each bag, thereby imposing a negative 'externality', or cost, on society and the environment. It has thus been proposed by the Welsh Assembly Government to introduce a charge on all single-use carrier bags (including both plastic and paper bags, with some exemptions), in order to encourage the use of reusable alternatives.

What are the policy objectives and the intended effects?

There are currently around 445 million single-use carrier bags consumed annually in Wales, imposing a cost on society of an estimated £31 million each year through production emissions and improper waste disposal. The objective of a policy intervention is thus to reduce the number of SUCBs consumed per annum and, hence, to reduce the cost to society of producing and disposing of these bags.

What policy options have been considered? Please justify preferred option (further details in Evidence Base)

1. No intervention ('do nothing');
2. Introduction of a charge on all single-use carrier bags (with some exemptions);
3. Introduction of a ban on all single-use carrier bags (with some exemptions);
4. Extension of the existing voluntary agreement to encompass more retailers.

The preferred policy option is (2), the introduction of a charge on all single-use bags, since this option yields the highest net benefit to society.

When will the policy be reviewed to establish its impact and the extent to which the policy objectives have been achieved?	It will be reviewed by June 2013
Are there arrangements in place that will allow a systematic collection of monitoring information for future policy review?	Yes

Ministerial Sign-off For enactment stage Impact Assessments:

I have read the 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.

Signed by the responsible Minister: ***Date:***

Summary: Analysis and Evidence

Policy Option 1

Description: No intervention ('Do Nothing')

Price Base Year 2010	PV Base Year 2010	Time Period Years 15	Net Benefit (Present Value (PV)) (£m)		
			Low:	**High:**	**Best Estimate: - 390**

COSTS (£m)	**Total Transition** (Constant Price)	Years	**Average Annual** (excl. Transition) (Constant Price)	**Total Cost** (Present Value)
Low		0		
High				
Best Estimate	0		31	**390**

Description and scale of key monetised costs by 'main affected groups'

With around 445 million single-use carrier bags consumed annually in Wales, the ongoing cost to the environment is estimated to be around £31 million per annum. This cost to the environment results from production processes, transportation and improper waste disposal.

Other key non-monetised costs by 'main affected groups'

Single-use carrier bags represent a waste of resources since it is assumed they are used only once and then discarded.

BENEFITS (£m)	**Total Transition** (Constant Price)	Years	**Average Annual** (excl. Transition) (Constant Price)	**Total Benefit** (Present Value)
Low		0		
High				
Best Estimate	0		0	**0**

Description and scale of key monetised benefits by 'main affected groups'

It is estimated there are no benefits resulting from the 'do nothing' option. Consumption of single-use carrier bags at the current level will generate an ongoing cost to society, with no benefits.

Other key non-monetised benefits by 'main affected groups'

There are no non-monetised benefits from doing nothing.

Key assumptions/sensitivities/risks 3.5

The 'do nothing' option assumes that consumption of single-use carrier bags in Wales will continue at the current level of around 445 million per annum. The ongoing cost per annum of the current level of consumption is estimated to be £31 million, based on the social cost per bag (estimated at around 7p).

Impact on admin burden (AB) (£m):			**Impact on policy cost savings**	**In scope**
New AB:	**AB savings:**	**Net:**	**Policy cost savings:** N/A	No

Summary: Analysis and Evidence — Policy Option 2

Description: Introduction of a charge on all single-use carrier bags

Price Base Year 2010	PV Base Year 2010	Time Period Years 15	Net Benefit (Present Value (PV)) (£m)		
			Low: 110	**High:** 190	**Best Estimate: 110**

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low		1	8	**100**
High			12	**150**
Best Estimate	2		8	**100**

Description and scale of key monetised costs by 'main affected groups'

Estimated cost to Consumers of between £7m and £10m per annum arises from loss of convenience in switching to bags-for-life (BfL) if not willing to pay the charge. Retailers will incur set-up costs in altering till-points to process the charge (£1m), and ongoing annual publishing requirement costs of around £1m. Government will incur one-off costs through advertising/communication (£0.4m) and introducing the legislation (£0.18m) and ongoing annual enforcement costs (£0.45m) and management costs (£0.18m).

Other key non-monetised costs by 'main affected groups'

Domestic producers of single-use bags might incur one-off costs in switching production to bags-for-life, though these are thought to be minimal since most single-use bags are imported.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low		0	17	**210**
High			27	**340**
Best Estimate	0		17	**210**

Description and scale of key monetised benefits by 'main affected groups'

A net environmental benefit of between £4m and £6m per annum is estimated to arise from reduced production and consumption of SUCBs following the introduction of a charge. Consumers are estimated to receive a monetary benefit of between £14m and £21m per annum, from switching to reusable BfL instead of purchasing the equivalent volume of SUCBs, since BfL are assumed to be relatively cheaper over the lifetime of the bags.

Other key non-monetised benefits by 'main affected groups'

With a well-defined policy, a charge on SUCBs will reduce plastic bag litter and may yield revenue for environmental projects, creating additional environmental benefits which are not quantifiable at this stage. Indirect effects on consumer behaviour could also result, leading to increased awareness of waste and recycling.

Key assumptions/sensitivities/risks	Discount rate	3.5

Key sensitivity is that a 5p charge per SUCB could reduce overall demand by an estimated 59% relative to the baseline level (445m), and that this corresponds to a 170% increase in demand for bags-for-life. A reduction of around 90% has also been calculated for and forms the basis of the 'high' values in the summary sheet. However, the best estimate of the NPV is based on evidence from Ireland and is therefore given by the 'low' value (i.e. a 59% reduction in SUCB demand). It is assumed that the 10p BfL accounts for 90% of the composition of BfL demand. Further explanation of key assumptions is provided in the evidence base.

Impact on admin burden (AB) (£m):			Impact on policy cost savings	In scope
New AB:	**AB savings:**	**Net:** 0.8	**Policy cost savings:** N/A	No

Enforcement, Implementation and Wider Impacts

What is the geographic coverage of the policy/option?				Wales	
From what date will the policy be implemented?				1st October 2011	
Which organisation(s) will enforce the policy?				Welsh Local Authorities	
What is the annual change in enforcement cost (£m)?				£0.5m	
Does enforcement comply with Hampton principles?				Yes	
Does implementation go beyond minimum EU requirements?				Yes	
What is the CO_2 equivalent change in greenhouse gas emissions? (Million tonnes CO_2 equivalent)				**Traded:**	**Non-traded:**
Does the proposal have an impact on competition?				Yes	
Annual cost (£) per organisation (excl. Transition) (Constant Price)	**Micro** £90	**< 20** £90	**Small** £90	**Medium** £90	**Large** £80
Are any of these organisations exempt?	No	No	No	No	No

Specific Impact Tests: Checklist

Does your policy option/proposal have an impact on…?	**Impact**	**Page ref within IA**
Statutory equality duties	Yes	29
Economic impacts		
Competition Competition Assessment Impact Test guidance	Yes	27
Small firms Small Firms Impact Test guidance	Yes	28
Environmental impacts		
Greenhouse gas assessment	Yes	28
Wider environmental issues Wider Environmental Issues Impact Test guidance	Yes	28
Social impacts		
Health and well-being Health and Well-being Impact Test guidance	Yes	29
Human rights Human Rights Impact Test guidance	No	29
Justice system Justice Impact Test guidance	Yes	28
Rural proofing Rural Proofing Impact Test guidance	No	29
Sustainable development Sustainable Development Impact Test guidance	Yes	28

Summary: Analysis and Evidence

Policy Option 3

Description: Introduction of a ban on all single-use carrier bags

Price Base Year 2010	PV Base Year 2010	Time Period Years 15	Net Benefit (Present Value (PV)) (£m)		
			Low:	High:	Best Estimate: 80

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low		1		
High				
Best Estimate	1		5	60

Description and scale of key monetised costs by 'main affected groups'

Consumers are estimated to incur costs of around £4.5 million per annum through loss of convenience in having to remember their own shopping bags. Government is estimated to incur one-off costs through advertising the ban, of around £0.4 million, and through introducing the legislation (£0.18 million). Ongoing management and enforcement costs for Government are estimated at around £0.18 million and £0.5 million per annum, respectively.

Other key non-monetised costs by 'main affected groups'

As with a charge on SUCBs, domestic producers of such bags might incur one-off costs in switching production to bags-for-life, though these are thought to be minimal since most single-use bags are imported.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low		0		
High				
Best Estimate	0		12	140

Description and scale of key monetised benefits by 'main affected groups'

A net environmental benefit of approximately £6m per annum is estimated to arise from the eliminated production and consumption of SUCBs following the introduction of a ban. Consumers are estimated to receive a monetary benefit of around £5m per annum from switching to reusable BfL instead of taking the equivalent volume of 'free' SUCBs, since BfL are assumed to be the relatively cheaper option over the lifetime of the bags. This assumes the cost of 'free' SUCBs is currently priced into goods by retailers.

Other key non-monetised benefits by 'main affected groups'

As with a charge, a ban on SUCBs will reduce plastic bag litter and create additional environmental benefits (e.g. reduced threat to marine wildlife, aesthetic benefits etc.) which are not quantifiable at this stage. Indirect effects on consumer behaviour could also result, leading to increased awareness of waste and recycling.

Key assumptions/sensitivities/risks **Discount rate (%)** 3.5

The key sensitivity is that a ban on SUCBs will completely eliminate their production and consumption, and that this will lead to an equivalent increase in BfL demand of approximately 290%. It is also assumed that retailers currently price the private cost of 'free' SUCBs (estimated at 2p per bag) into the goods they sell, such that consumers are essentially paying for the bags they use. It is therefore assumed that retailers will lower their prices accordingly if a ban on SUCBs is introduced.

Impact on admin burden (AB) (£m):			Impact on policy cost savings	In scope
New AB:	AB savings:	Net:	Policy cost savings: N/A	No

Summary: Analysis and Evidence — Policy Option 4

Description: Extension of existing voluntary agreement to encompass more retailers

Price Base Year 2010	PV Base Year 2010	Time Period Years 15	Net Benefit (Present Value (PV)) (£m)		
			Low:	High:	Best Estimate: 20

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low		1		
High				
Best Estimate	1		1	10

Description and scale of key monetised costs by 'main affected groups'

Consumers estimated to incur annual costs of around £1 million through loss of convenience where retailers voluntarily place a charge on SUCBs. Participating retailers choosing to impose a charge on all SUCBs are assumed to incur one-off costs in altering till-points to process a charge, and ongoing admin costs of around £0.3m. One-off costs assumed to be £0.3 million, although this is an approximation based on 30% of remaining retailers participating; not all participating retailers will necessarily charge for SUCBs.

Other key non-monetised costs by 'main affected groups'

Domestic producers of single-use bags might incur one-off costs in switching production to bags-for-life, though these are thought to be minimal since most single-use bags are imported.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low		0		
High				
Best Estimate	0		2	30

Description and scale of key monetised benefits by 'main affected groups'

A net environmental benefit of approximately £1m per annum is estimated to arise from reduced production and consumption of single-use bags following the extension of the existing voluntary agreement. Consumers are estimated to receive a monetary benefit of around £1m per annum, from switching to reusable BfL instead of purchasing the equivalent volume of SUCBs in the participating retail units, since BfL are assumed to be the relatively cheaper option over the lifetime of the bags.

Other key non-monetised benefits by 'main affected groups'

Reduced plastic bag litter could result from an extended voluntary agreement, creating additional environmental benefits which are not quantifiable at this stage. Indirect effects on consumer behaviour could also result, leading to increased awareness of waste and recycling.

Key assumptions/sensitivities/risks — **Discount rate (%)** 3.5

Key sensitivity is that 30% of remaining retailers (not already in the existing voluntary agreement) will participate in the extended voluntary agreement; assumes this 30% is proportional to 30% of the consumer base. Estimates an additional reduction in SUCBs of 18% relative to the 445 million current consumption level. All participating retailers assumed to voluntarily impose a charge of 5p. However, in reality Option 4 might not generate an additional 30% participation, and some retailers may choose other methods to reduce SUCB consumption (or differing levels of charge). Even if these assumptions did change there is unlikely to be a significant effect on the overall NPV of the costs and benefits over time (i.e. the policy would still generate an ongoing cost to society).

Impact on admin burden (AB) (£m):			Impact on policy cost savings	In scope
New AB:	AB savings:	Net:	Policy cost savings: N/A	No

Evidence Base (for summary sheets)

References

No.	Legislation or publication
1	AEA Welsh Assembly Government Single-use Bag Study, 2009. *Welsh Assembly Government*. Available at: http://wales.gov.uk/topics/environmentcountryside/epq/waste_recycling/carrierbags/singleusestudy/?lang=en
2	Plastic Shopping Bags – Analysis of Levies and Environmental Impacts, 2002. *Nolan-ITU / Australian Government*. Available at: http://www.environment.gov.au/settlements/publications/waste/plastic-bags/analysis.html#download
3	The Most Popular Tax in Europe? Lessons from the Irish Plastic Bags Levy, 2007. *Environmental and Resource Economics* [online]. 38 (1) Available at: http://www.springerlink.com/content/92161h65144v2559/
4	Environment Group Research Report: Proposed Plastic Bag Levy – Extended Impact Assessment, 2005. *Scottish Executive*. Available at: http://www.scotland.gov.uk/Publications/2005/08/1993102/31039
5	The Use of LCAs on Plastic Bags in an IPP Context, 2004. *EuroCommerce*. Available at: http://www.repak.ie/files/PDFs/Life%20Cycle%20Analysis%20(LCA)%20on%20Plastic%20Bags.pdf
6	Environment and Rural Development Committee, 2005. *The Scottish Parliament*. Available at: http://www.scottish.parliament.uk/business/committees/environment/papers-05/rap05-28.pdf?page=3
7	Survey of Public Attitudes and Behaviours Towards the Environment, 2009. *Defra*. Available at: http://www.defra.gov.uk/evidence/statistics/environment/pubatt/index.htm
8	Consultation on proposals to introduce a charge on single-use carrier bags in Wales. Consultation dates: 29/06/09 to 21/09/09. Available at: http://wales.gov.uk/consultations/environmentandcountryside/singleusecarrierbags/?lang=en&status=closed
9	A consultation on the draft Single Use Carrier Bag Charge (Wales) Regulations 2010. Consultation dates: 04/06/10 to 02/08/10. Available at: http://wales.gov.uk/consultations/environmentandcountryside/carrierbagsregs/?lang=en&status=closed

Evidence Base (for summary sheets)

Background

1. In June 2009 the Welsh Assembly Government consulted[1] on the policy of introducing a charge on single-use carrier bags (SUCBs), considered in this Impact Assessment (IA) as Policy Option 2. A second consultation was undertaken between June and August 2010, to gather views on the draft Single Use Carrier Bags Charge (Wales) Regulations 2010. **The responses to the second consultation have thus been considered in the main body of this updated enactment-stage IA.**

2. The main objective of introducing a charge is to substantially reduce the number of single-use carrier bags (including paper and plastic bags) produced and consumed annually in Wales, beyond the levels already achieved through voluntary action undertaken by participating retailers. This is consistent with the vision set out in 'One Wales: One Planet' of a sustainable Wales that lives within environmental limits and uses only its fair share of the earth's resources.

3. The voluntary agreement currently in place encompasses seven participating retailers and achieved a reduction in SUCBs given out in Wales of 49% between 2006 and 2009. However, there is still an estimated 445 million SUCBs consumed each year in Wales[2], with an estimated ongoing cost to the environment – through production emissions and improper waste disposal – valued at around £31 million per annum. Policy action is therefore required, and is outlined in this Impact Assessment, since the ongoing cost to the environment of 'doing nothing' is deemed too high to be sustainable over the longer term. The policy thus aims to substantially reduce this ongoing 'social cost'.

Purpose and Intended Effect

4. The objective of the policy is to:

    - encourage consumers to adapt their behaviour towards achieving a more sustainable level of consumption, both in SUCB usage and indirectly through altering attitudes towards waste in other areas of daily life;
    - cut down on the wasteful use of resources in producing single-use bags;
    - improve the quality of the local environment by reducing the highly visible litter created from single-use bags; and
    - encourage waste reduction and prevention.

5. It is proposed that the charge will be introduced through regulations made under the powers provided in schedule 6 of the Climate Change Act 2008, to apply a charge to single-use carrier bags.

[1] See Reference 8.
[2] See Reference 1, Table 11. Estimates the number of bags used annually in Wales under the current voluntary agreement, following a 50% reduction in SUCBs from the 2006 baseline of an estimated 660 million.

6. The charge will apply to all those who sell goods in the course of trade or business to customers in Wales, including: supermarkets; high street retailers; small businesses; market stalls; internet grocery deliveries; and those that provide a service and also sell goods (e.g. a hairdressing salon which also sells hair products).

7. A description of bags to be covered by the proposed charge is contained at Annex 2, along with detailed exemptions from and rules for the application of the charge.

Rationale for Government Intervention

8. The rationale for Government intervention is represented by the ongoing 'social cost' of producing single-use bags (SUCBs).

9. The production of SUCBs imposes an external cost on society (estimated at 7p per bag), both through the emissions created during the production process and through the improper disposal of the bags. The cost to society could effectively be higher, since the damage to marine- and wild-life and the aesthetical cost to society of improper disposal could not be quantified.

10. Government intervention is necessary since the cost imposed on society of the production of SUCBs is not captured by the 'private cost' of each bag (estimated at around 2p), i.e. the price at which they are purchased by retailers. For the purpose of this IA it is assumed that the private cost of each SUCB is passed on by retailers to consumers through the price of their shopping.

11. The marginal (additional) cost of purchasing each bag therefore does not reflect the true cost to society of producing each bag. This is said to create a 'negative externality' – essentially an unfavourable side-effect – which Government intervention thus aims to correct through internalising the social cost, i.e. imposing a charge at point of sale to ensure those consumers who choose to purchase SUCBs are paying the full cost to society of their action.

Policy Options

12. Four policy options have been considered in this IA, in order to evaluate whether the introduction of a charge is the best approach to achieving the objective of a lower, more sustainable level of consumption of SUCBs in Wales. The Options are as follows:

    - **Option 1**: No intervention ('do nothing');
    - **Option 2**: Introduction of a charge on all single-use carrier bags (with some exemptions);
    - **Option 3**: Introduction of a ban on all single-use carrier bags (with some exemptions);
    - **Option 4**: Extension of the existing voluntary agreement to encompass more retailers.

13. The net present value (NPV) of each policy option represents the stream of costs and benefits over a 15-year period, and is appraised relative to a 'do-nothing' option (Option 1) which acts as a reference point for comparison. Doing nothing is not preferable since this option generates an ongoing cost to society related to the number of SUCBs still being consumed annually in Wales. The preferred option (Option 2) is the introduction of a charge on all single-use bags, with some exemptions, since this option generates the highest benefit to society in terms of NPV over a 15-year period.

14. The four options are outlined below, with further analysis of each presented in the subsequent section of the evidence base.

Option 1: 'Do Nothing'

15. Option 1 was evaluated as the reference case, and involves a 'do nothing' approach, whereby the current voluntary agreement encompassing 7 major retailers continues with no further intervention from Government. This option has already achieved a 49% reduction in SUCBs in Wales between 2006 and 2009, through a combination of removing bags from view at till-points and charging for SUCBs (1 out of 7 of the retailers imposed a charge).

16. However, this option still generates a consumption level of around 445 million SUCBs per annum in Wales (330 million plastic and 115 million paper), with an ongoing cost to society of an estimated £31 million per annum. It is anticipated that without further intervention this level of consumption is unlikely to fall substantially further.

17. The NPV of Option 1 is estimated to be around **-£390 million** and is the baseline cost to which all other options have been compared. This figure represents an **overall net cost to society**, since each bag has a 'social cost' attached to it (i.e. production and disposal of the bags creates negative environmental effects).

Option 2: Charge

18. Option 2 involves the introduction of a charge on all single-use carrier bags, **both paper and plastic** (with some exemptions – see Annex 2). Paper bags are included in the charge since they have an even higher detrimental impact on the environment than plastic bags. Although sometimes made from recycled materials – as is now the case for many plastic SUCBs – the emissions generated from the production and transportation processes are estimated to be much higher than for plastic bags. Paper bags are also less durable than plastic bags and are therefore more likely to only be suitable for single use.

19. Introducing a charge is intended to create a disincentive for use and therefore aims to reduce the number of SUCBs consumed annually. This would hence create a net benefit to the environment, through the reduction in both production emissions from, and waste disposal of, single-use carrier bags.

20. A charge on SUCBs was put forward in the second consultation as the preferred policy option since it was estimated to generate the highest net benefit to society, relative to the 'do nothing' option; the recommended level of charge was based on the estimated social cost per SUCB, of 7p. Following consultation, and consideration of all the available information , **the charge has been revised to 5p per SUCB.** The cost-benefit analysis in this IA has thus been re-worked since the 'Final' (Consultation) stage IA to incorporate a 5p charge per SUCB being implemented rather than a 7p charge.

21. It should be noted that this policy is highly experimental and there are many uncertainties surrounding the assumptions used in this analysis. Hence, there is scope to raise the charge at a later date should the policy fail to reduce demand for SUCBs to a more sustainable level; or, indeed, to lower the charge should demand fall significantly.

22. The NPV of Option 2 depends upon the level of the charge introduced: under a **7p** charge the NPV is estimated to be **-£190 million** (an additional benefit of £200 million compared with doing nothing) and is based on a reduction in SUCBs of around 70% (or 300 million); under a **5p** charge the NPV is estimated to be around **-£280 million**, which is **a benefit of £110 million in addition to the reference case** (i.e. -£390m + £110m = -£280m) and is based on a reduction in SUCBs of around 59% (or 260 million). The NPV is still negative in both cases, representing an overall net cost to society; this reflects the fact that a charge of either 5p or 7p is lower than the estimated optimal level required to completely eliminate the cost to society of producing SUCBs. It is estimated that a charge set somewhere between 10p and 15p could potentially eliminate this cost.

23. The Welsh Assembly Government does not currently have the powers to determine where the net proceeds of a charge are directed, The Assembly Government has proposed the development of a voluntary agreement with retailers regarding the use to which the net receipts from a charge will be put. Under such a voluntary agreement, retailers will manage the collection of the charge and its distribution, having accounted for reasonable costs. The net receipts would then be passed from retailers directly to charities, environmental or other projects. The definition of 'reasonable' costs was a key issue in the consultation responses and is discussed later in this IA.

Option 3: Ban

24. Option 3 involves a ban on all single-use carrier bags (applying the same exemptions as set out for Option 2, outlined at Annex 2), such that it would be an offence to either produce or sell such bags under this option. Option 3 could therefore eliminate the estimated 445 million SUCBs currently consumed per annum in Wales, thereby removing the ongoing social cost associated with single-use carrier bags.

25. This option would result in a net environmental benefit through the reduced production of SUCBs. The NPV of Option 3 is estimated to be around **-£310 million**, which is **a benefit of £80 million relative to the reference case**. This is based on the total elimination of the estimated 445 million SUCBs currently

consumed per annum. Although a substantial environmental benefit would arise from eliminating single-use carrier bags, it is anticipated that an outright ban on SUCBs would result in a considerable increase in the number of bags-for-life consumed annually. Hence, this increase would generate a cost to the environment which is estimated to offset much of the environmental benefit gained from the reduction in SUCBs.

26. There was some support for a ban on SUCBs in the consultation responses, with the potential environmental benefit highlighted as a fundamental factor. Several responses considered that the figure quoted in the previous 'Final' (Consultation) stage IA did not fully reflect the true potential value of the environmental benefit arising from a ban. However, our best estimate was based on analysis of the social cost per SUCB which included an assessment of the environmental impact per bag. Whilst there exists a degree of uncertainty relating to the valuation of environmental effects, we feel the analysis gives a good representation of the social impacts per bag. Furthermore, it should be noted that the net environmental benefit arising from a ban also takes into consideration the increased environmental cost arising from the relative increase in bags-for-life following a ban on SUCBs.

27. A further key benefit highlighted by the consultation was the elimination of administration costs for retailers which would arise under a charge. However, for the purpose of analysis this would not be an additional monetary benefit relative to doing nothing, since retailers are not currently required to record the number of SUCBs given out to customers. Additional responses to the consultation indicated a ban would be clearer and simpler to understand, since there would be no need for a list of exemptions that could be open to interpretation.

Option 4: Extended Voluntary Agreement

28. Option 4 involves extending the current voluntary agreement through Government intervention, to encompass a greater number of retailers. The objective of Option 4 is thus to encourage a further reduction from the reference case in the number of SUCBs consumed annually. For the purpose of analysis, this additional reduction is estimated to be around 18% relative to the reference case (i.e. 445 million reduced by 18%); this is based on a similar achievement in Australia through an extended voluntary agreement to reduce the number of single-use bags consumed, although the precise extent to which retailers participated is not known.

29. Given that under the existing voluntary agreement the seven participating retailers hold around 75% of the market share[3] of food retailers in the UK, it is thus assumed that around a third (or 30%) of the remaining retailers would participate in an extended voluntary agreement. However, since there is no data available on potential participation rates this figure could ultimately be higher or, indeed, lower. For the purpose of this analysis it is also assumed that all participating retailers would voluntarily charge 5p per bag; although, in reality

[3] IGD Retail Analysis [online]. Data for 12 weeks to 21st February 2010. Available at: http://www.igd.com/analysis/news/index.asp?nid=6634

retailers might choose to reduce SUCB consumption using means other than a charge (e.g. removing SUCBs from view at till-points).

30. This option could also generate a net environmental benefit, albeit the lowest net nominal benefit of all the policy options. The NPV of Option 4 is thus estimated to be around **-£370 million**, which is **a benefit of £20 million relative to the reference case** and is based on a reduction in SUCBs of around 80 million.

31. Responses to the second consultation indicated that this option would be preferable to a charge since a majority of retailers feel that an extended voluntary agreement could achieve an additional reduction in SUCBs far greater to that outlined in this analysis. However, further evidence would be needed in order to quantify any additional benefit arising from this option, since the only robust evidence available is that of the 49% reduction already achieved by 2009 under the existing voluntary agreement. Although there is some evidence available from specific retailers regarding reductions achieved through their own voluntary agreements, broader evidence of such schemes is needed in order to undertake analysis which is fully representative of the consumer base in Wales.

32. For illustrative purposes, if Option 4 were able to reduce SUCB demand by a further 50% relative to the baseline (i.e. 445 million reduced by 50%, to 223 million) it is estimated that, provided 50% of remaining retailers took part and all voluntarily charged 5p per bag, this could create an additional benefit of around £50 million relative to the original estimated NPV, giving a new overall NPV of -£320 million. If participating retailers only charged 1p per SUCB on this voluntary basis the additional benefit relative to the original NPV would be smaller at around £10 million, generating an overall NPV of an estimated -£360 million. These adjusted NPV figures also account for the anticipated relative increase in bags-for-life that would arise under this option.

33. A description of the assumptions used in the calculation of the costs and benefits for each policy option is included at Annex 3.

Calculation of Costs and Benefits

34. The four policy options are evaluated in terms of the net present value of the stream of costs and benefits resulting from each, over a 15-year period. There are four main categories estimated to be affected by the introduction of each policy option:

    - Consumers
    - Retailers
    - Environment
    - Government

    For each policy option, both consumers and the environment incur annual costs and receive annual benefits, resulting in an overall annual net benefit (relative to doing nothing) in each case. One-off costs arise for both retailers and the

Government under Option 2, as do annual costs. The Government is estimated to incur one-off and annual costs under Option 3, whereas retailers are likely to incur zero or minimal costs under this option. Assuming all participating retailers impose a charge under Option 4, retailers are estimated to incur both one-off costs and annual costs under this option, whereas the Government does not incur any costs under Option 4.

Cost to Consumers

35. The aim of a charge is to bring about a change in consumer behaviour and to encourage people to use re-usable alternatives wherever possible; hence, this policy should not be seen as intentionally or unjustifiably impacting on lower- or fixed-income groups. Some consultation responses suggested that it is unfair to imply that this policy will affect lower-income groups more than others. Indeed, those people who are still willing to pay the charge in order to receive SUCBs are more likely to be those who can afford to do so.

36. The annual cost to the consumer of introducing a charge (Option 2) results from the inconvenience caused by switching to bags-for-life[4] (BfL), i.e. in having to bring the bags on each shopping trip. This inconvenience arises for those consumers not willing to pay the charge. Assuming consumers are perfectly rational, those not willing to pay the charge will use alternative bag types such as BfL – thereby incurring this inconvenience.

37. The total cost to consumers under Option 2 can therefore be estimated by the fall in demand for SUCBs following a charge (i.e. the convenience lost from the reduction in SUCB usage), multiplied by the price of a SUCB following a charge. For a charge of 5p per SUCB it is estimated there would be a fall of around 260 million SUCBs. This sum is then divided by two, since this is estimated to be approximately equal to the area under the demand curve for SUCBs. The total cost of this inconvenience to all consumers in Wales is estimated to equate to around £6.5 million per annum ([£0.05 x 260m] / 2).

38. The same method is used in calculating the cost to the consumer of both a ban on SUCBs (around £4.5 million per annum with a fall in SUCBs of 445m) and an extended voluntary agreement (around £0.5 million per annum with a fall in SUCBs of 80m). Whereas for Options 2 and 4 the price of a SUCB would equate to the level of charge per bag[5], under the ban the 'price' of a SUCB would equate to the 'private cost' of each bag (estimated at 2p).

39. **The private cost per bag is assumed to be a 'hidden' cost charged by retailers and included in the price of shopping**. This is assumed to be a cost already incurred by the consumer under the 'do nothing' option. For the purpose

[4] For the purpose of this IA, all reusable carrier bags used to carry shopping (food or otherwise) are termed 'bags-for-life'. In this case, this simply means they are intended for re-use. However, the term 'bag-for-life', coined by retailers, generally assumes that once this bag has been purchased (usually at a cost of around 10p) the retailer will replace it free of charge once it has reached the end of its life, and will continue to do so without limit.

[5] Under the extended voluntary agreement, it is assumed all participating retailers would charge 5p per SUCB (see Annex 3 for more detail).

of this IA it is assumed that retailers would lower their general prices under a **ban** on SUCBs, since they would no longer incur the cost of purchasing the bags. However, in reality this is not likely to be the case and consumers would therefore carry on paying for a good they are no longer able to receive.

40. The wholesale cost of a SUCB is not included under the definition of 'reasonable costs' which can be deducted from the gross proceeds of a charge. It is assumed that the wholesale cost of SUCBs is, and will continue to be, a cost which retailers pass on to consumers through the price of their shopping. Responses to the second consultation indicated that several retailers consider SUCBs to be a 'free' reward to customers in return for using their services. However, retailers are profit-making businesses and it is therefore deemed appropriate to assume for the purpose of this IA that the cost of SUCBs is somehow passed on to the consumer.

Benefit to Consumers

41. The annual benefit to the consumer of introducing a charge arises from the transfer of consumption, from 14 SUCBs towards one BfL. This transfer is based on the assumption used in a report by the Environment Agency[6] 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). The benefit to the consumer of this transfer is the difference between the price they would have paid for 14 SUCBs following the introduction of a 5p charge (i.e. £0.70), minus the price they actually pay for one BfL (£0.16 – see 163) if they are not willing to pay the charge. The total benefit to consumers is therefore the individual gain multiplied by the increase in the number of BfL demanded (around 24 million) under a charge; this is estimated to equate to around £14 million in total, per annum.

42. Under Option 3 (ban), the same method is used for calculating the benefit to consumers, i.e. the difference between willingness to pay for 14 SUCBs and willingness to pay for one BfL; this is estimated to amount to around £5 million in total, per annum. Consumers' willingness to pay for a SUCB under a ban is assumed to equate to the private cost per bag (estimated at 2p) which would have been priced into their shopping in the reference case (see paragraph 39).

Benefit to the Environment

43. The net environmental benefit is calculated by taking the social cost of producing 445 million SUCBs and 14 million BfL in the reference case, and comparing this

[6] Life Cycle Assessment of Supermarket Carrier Bags, Environment Agency (draft report – as yet unpublished).

with the social cost of production of both following the introduction of each policy option.

44. The net environmental benefit is estimated to be highest under Option 3 (a ban). Although the social cost of producing BfL is highest under this option – since the increase in BfL demand is estimated to be substantially higher than under Options 2 or 4 – there is a relatively large environmental benefit from eliminating the social cost of production of SUCBs, thereby increasing the net benefit.

45. There are also aesthetical benefits to the environment from reduced plastic bag litter, which could not be quantified at this stage. A description of the calculation of the social cost of production of both SUCBs and BfL can be found at Annex 3.

Cost to Retailers

46. One-off costs to retailers arise with the introduction of a charge under both Options 2 and 4 (assuming that Option 4 involves voluntarily imposing a charge on SUCBs). These set-up costs involve altering till-points to process the charge (estimated at around £1 million in total for the retail sector) and to ensure the number of bags sold with each purchase is itemised on receipts. Annual costs arise from having to administer the charge (estimated at around £0.9 million for the retail sector); i.e. to record and publish the number of SUCBs sold per annum (further detail of administration costs is provided at Annex 2). However, it is proposed that reasonable administration costs associated with processing the charge can be deducted from the gross proceeds, with the intention of minimising the annual running costs to retailers.

47. The cost to retailers is assumed to be lower under Option 4 than Option 2, since fewer retailers are assumed to participate under Option 4. Option 3 may involve minimal one-off costs to some retailers in terms of amending till-points to account for offering an alternative to SUCBs. However, since many retailers already offer alternatives, the cost to retailers is estimated to be far lower than for Options 2 and 4 (i.e. is estimated to round down to zero).

48. Responses to the second consultation indicated that a charge might impose additional costs on small businesses and on Quick Service Restaurants (QSRs). Since many items in QSRs or in greetings card shops, for instance, are priced at £0.99 or £1.99 a charge on SUCBs could take the price of a purchase over the next one-pound mark, substantially increasing the amount of change a customer would require if paying in cash. This could generate additional costs to business in terms of handling cash, staff time taken to process transactions and an increase in bank transactions. However, payments by credit or debit card are becoming more prevalent and it is anticipated that this could therefore minimise such impacts on businesses.

49. Additional security costs might also arise to retailers from the increased risk of theft that could be associated with the policy. For example, a purchase is usually verified by ensuring that the good is placed in a store carrier-bag; if a bag is not used it could create uncertainty as to whether goods have actually been purchased. There was some concern that this would place disproportionately

high costs upon smaller retailers who cannot necessarily afford to improve their security. On the other hand, it is anticipated that larger firms are likely to incur a higher incidence of theft overall, since they have higher volumes of both consumers and produce. It has not been possible to quantify such impacts at this stage since further information or evidence is required from retailers in order to do so. This could be obtained, for instance, when undertaking the Post Implementation Review following the introduction of a charge.

50. The second consultation indicated there is some concern that the policy could impact upon impulse purchases if consumers are not willing to pay the charge and do not have an alternative carrier bag with them. However, the policy is designed to encourage a fundamental change in consumer behaviour, with the intention of making people more aware of the need to re-use carrier bags and to carry them whenever possible. It is not anticipated that an additional 5p on the total cost of a purchase would substantially affect impulse buying, even in the case of low-cost goods. However, more evidence and research on impulse purchasing is needed in order to quantify this potential impact.

51. Since the total potential costs to retailers of a charge could not be fully quantified at this stage, the costs outlined in the IA could underestimate the true value to retailers on a per annum basis. However, although the impact of additional costs will vary between firms, it is not anticipated that the non-quantified costs outlined above will be substantial as to have a significant impact on the overall annual cost to retailers.

Cost to Government

52. The Government is estimated to incur both one-off and annual costs under Options 2 and 3 (i.e. the introduction of a charge or a ban), with costs assumed to be the same or similar under each policy. It is assumed Option 4 does not involve any costs to Government.
53. One-off costs of an estimated £0.4m arise from communicating / advertising the introduction of a charge, and £0.18m for introducing the legislation. Preparatory work on enforcement is estimated to cost up to £0.33m, with ongoing (annual) costs of around £0.45m assumed to arise from enforcing a charge thereafter (based on a complaint-led enforcement regime). Ongoing management within WAG is estimated to cost £0.18m per annum.

Costs and Benefits by Policy Option

54. Table 1.0 sets out the estimated total costs and benefits arising under each policy option for each of the categories listed previously (Consumers, Environment, Retailers and Government), and using four different levels of charge under Option 2 for comparison. Options 1, 3 and 4 would produce the same outcomes regardless of the level of charge introduced under Option 2.

55. The lowest level of charge considered under Option 2 was 5p and the highest 15p; this range was based on responses to the first consultation[7] process, which

[7] See Reference 8.

indicated that a majority would find it appropriate to apply a charge of between 5p and 15p per SUCB. Further consideration of the recommended level of charge to be introduced under Option 2 is outlined in the subsequent section.

Table 1.0 Estimated Costs and Benefits by Policy Option

Costs and Benefits (£ million)	CONSUMERS		ENVIRON-MENT	RETAILERS		GOVERNMENT		NPV £ million
	Benefit	Cost	Net Benefit	One-off costs	Annual Costs	One-off costs	Annual Costs	
Option 1: *'Do Nothing'*	0.0	0.0	-31.0	0.0	0.0	0.0	0.0	**-390.0**
Option 2: *5p Charge*	14.0	7.0	4.0	1.0	1.0	1.0	1.0	**-280.0**
Option 3: *Ban*	5.0	4.0	6.0	0.0	0.0	1.0	1.0	**-310.0**
Option 4: *Voluntary Agreement*	1.0	1.0	1.0	1.0	1.0	0.0	0.0	**-370.0**
Alternative Charge Levels Under Option 2								
7p	24.0	11.0	4.0	1.0	1.0	1.0	1.0	**-190.0**
10p	44.0	19.0	5.0	1.0	1.0	1.0	1.0	**-30.0**
15p	75.0	31.0	6.0	1.0	1.0	1.0	1.0	**220.0**

Note: All figures are rounded to the nearest £1 million; costs to Retailers under Option 4 are rounded up to £1 million for indicative purposes (i.e. would round down to zero). NPVs are rounded to the nearest £10 million.

56. The assumptions used in the calculations in Table 1.0 are outlined at Annex 3. Overall a net benefit arises for both Consumers and the Environment under each of the policy options 2, 3 and 4. Therefore, **undertaking *any* policy action is estimated to make both Consumers and the Environment better off, relative to the 'do nothing' option.**

57. However, the NPV represents the present value of the stream of costs and benefits over a 15-year period, for each policy option; hence, the higher the NPV, the better the expected outcome of the policy option. Each NPV is calculated relative to the reference case, i.e. Option 2 creates an additional benefit of £110 million, relative to the -£390 million baseline NPV under Option 1, resulting in a negative NPV for Option 2 of £280 million. Option 3, for example, would create a benefit to society of £80 million, but would result overall in an ongoing cost to society of approximately £310 million (-£390 + £80 = -£310).

58. It should thus be noted that Options 3 and 4 are estimated to result in an ongoing cost to society. Table 1.0 indicates that Option 2 might also result in an ongoing cost to society should the level of charge per bag amount to 10p or below; however, a level of charge in the range of 10p to 15p per bag is estimated to produce an overall benefit to society.

59. Regardless of the level of charge introduced under Option 2, Table 1.0 indicates that Options 3 and 4 generate the lowest relative NPVs. **Option 2 is thus preferable since it is estimated to produce the highest additional benefit relative to the reference case.**

60. The recommended level of charge to be introduced under Option 2 is outlined in detail in the following section.

Recommended Level of Charge on Single-Use Bags

Responses to the Consultation Process

61. The first consultation process (see Reference 8) highlighted the incidence of two retailers having achieved around an 85% reduction in SUCB usage through applying a 5p charge to each single-use bag; others had also achieved reductions through similar charges.

62. However, on balance this data should not be seen as representative for Wales as a whole, since the retailers in question do not represent the average consumer base. For instance, one of the retailers tends to have a clientele from higher income groups who may be more environmentally conscious so as to reduce their consumption of SUCBs, but at the same time could afford to purchase more bags for life which could potentially offset this reduction. If there is a substantial increase in the level of production of BfL (i.e. above that which is used in the calculations for this IA) 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.

63. The responses to the first consultation also indicated that a majority would find a charge per bag of between 5p and 15p preferable, with the lower end of the range proving the most popular. However, in attempting to achieve a reduction in the level of SUCBs consumed annually in Wales, **a charge is intended to challenge consumers' willingness to pay for each SUCB**. The preferable response to a 5p charge suggests, therefore, that this would be too low to prevent consumers from purchasing SUCBs. It was therefore originally proposed that the minimum level of charge should be 7p per SUCB, based on the estimated social cost per bag. This level of charge formed the basis for the second consultation, in 2010.

64. However, responses to the second consultation indicated that the majority of retailers would recommend a charge per bag of **5p or lower**, based on a desire to secure a positive response from consumers to the charge and existing evidence of charging. A level of charge of 7p – based in the estimated social cost per SUCB – was seen to be impracticable and 'odd', with either 5p or 10p being preferable.

65. According to the consultation responses, there is a general view that a level of charge which is too high could generate a negative reaction to the policy

altogether, and that gentle encouragement to adapt towards more sustainable behaviour is more likely to be effective in the first instance. A lower charge of 5p was therefore suggested, since this level is seen to be less of a 'punishment' to consumers (than a 7p charge) for needing a bag.

66. There was also some concern that several bags-for-life are offered for sale in Wales at 5p per bag; if the price of a SUCB were set higher than the price of a BfL this could simply encourage consumers to use BfL as a substitute for SUCBs and to throw them away after only one use. As outlined at Annex 3 the social cost of a BfL is estimated to be much higher than that of a SUCB; hence, if bags-for-life were simply to be substituted for SUCBs this could generate a greater environmental cost and would therefore reduce the net environmental benefit arising under Option 2. This would place downward pressure on the overall NPV of Option 2 and could make it a less desirable option overall.

67. There is, however, a difficult balance to strike in setting a level of charge, with the need to both fulfil the objectives of the policy whilst at the same time attempting to 'nudge' people towards re-usable alternatives to SUCBs. While economic theory suggests that in order to correct for an externality the 'external' costs of a good should be 'internalised' – i.e. in this case, the consumer should pay the full 'cost' to society should they choose to consume a SUCB – many uncertainties still persist at this stage; other important factors have thus been considered in setting the minimum level of charge.

Internalising the Social Cost per Bag

68. The social cost of producing a single-use bag should be evaluated in assessing the level of charge required. The policy aims to reduce the ongoing cost to society of producing the 445 million SUCBs currently consumed annually in Wales. Therefore, the charge should be set at a level which 'internalises' the social cost of consuming a single-use bag.

69. The estimated social cost of producing each single-use bag is 7p: this consists of the emissions created in the production of each bag, and the disposal costs associated with the consumption of each bag. Further explanation of the calculation of the social cost can be found at Annex 3 (it was not possible to calculate the social cost of a paper bag at this stage; hence, for the purpose of this analysis it was assumed that the social cost is the same as for a single-use plastic bag).

70. Setting the charge at 7p or above could 'internalise' the negative externality created in the consumption of SUCBs, by ensuring consumers pay the 'full price' (i.e. the total external cost, consisting of private cost plus cost to society) of their action. The private cost to retailers (estimated at 2p per bag) is assumed to be already included in the price of shopping.

Generating a Net Benefit to Society

71. It is estimated, however, that any of the policy options outlined above would create an additional benefit to society relative to the reference case, such that any of the charge levels detailed in Table 1.0, including 5p, would be preferable to 'doing nothing'. Nonetheless, a higher level of charge is estimated to result in a greater net benefit to both Consumers and the Environment.

72. However, in terms of generating an *overall net benefit to society* (i.e. wholly eliminating the ongoing social cost), Table 1.0 indicates that a level of charge somewhere between 10p and 15p would be the minimum required out of the four charges evaluated; i.e. to create an additional net benefit to society, relative to the reference case, which takes the overall net present value of policy action to greater than zero.

73. The aim of the policy, however, is to achieve a more sustainable level of consumption and to cut down on the wasteful use of resources: although an overall net benefit to society would be preferable in terms of improving welfare, reducing the overall social cost would also contribute to achieving these objectives.

74. Furthermore, since it is estimated that the majority of bags-for-life are the heavy gauge 'LDPE'[8] type which tend to have an average price of 10p, setting the charge above this level could potentially cause a 'shift' in consumption patterns. Consumers could simply replace consumption of the now more-expensive SUCBs with that of BfL, effectively using bags-for-life as single-use bags. Since the estimated social cost of a BfL is higher than that of a SUCB, an increase in BfL demand could ultimately have a detrimental effect on the environment if a higher level of consumption was sustained over the longer term. However, any shift in consumption patterns will depend upon a number of factors, including personal preference, and will also depend upon the average price of an LDPE bag-for-life.

75. A level of charge of between 7p and 15p was therefore recommended in the previous IA, based on the objectives of the policy and the estimated social cost of producing the bags. However, other key factors such as public acceptability also need to be considered in setting the level of charge. Although willingness to pay would need to be challenged in order to reduce consumption of SUCBs to a desirable level, the responses to the second consultation indicated that the majority of larger retailers are confident that a minimum charge of 5p per SUCB would be sufficient to achieve a desirable reduction in demand for SUCBs..

Sensitivity Analysis

76. The estimates for the Costs and Benefits by Policy Option in Table 1.0 are based on a range of assumptions taken from varying sources, including data from

[8] Low-density polyethylene. Single-use carrier bags are generally HDPE (high-density polyethylene).

studies of the Irish levy on SUCBs (the 'PlasTax'[9]); the Scottish Executive[10]; and findings from the Environment Agency[11] on the life-cycle analysis of carrier bags.

77. Since the Irish 'PlasTax' is one of only a few real-world examples of a charge on SUCBs, and is the only known example which has produced robust findings, there exists some uncertainty surrounding the assumptions used in the calculations for this IA. It was therefore deemed necessary to undertake sensitivity analysis to determine whether varying the baseline assumptions would alter the outcome of each policy option.

78. The detailed assumptions used in the calculation of costs and benefits for each option are outlined at Annex 3. The main baseline variables used are as follows:

    - Percentage change in quantity demanded of SUCBs
    - Percentage change in quantity demanded of BfL
    - Composition of BfL demand
    - Average price of a BfL
    - Social cost of a BfL

    Using sensitivity analysis, these assumptions were varied under each policy option and evaluated against the four levels of charge shown in Table 1.0, in order to assess their relative impact on the costs and benefits and overall NPV for each option. The assumptions used under Option 4 were also amended for the purpose of sensitivity testing, in response to suggestions resulting from the second consultation (see paragraph 190 for results).

79. The only indicator which had any real effect on the overall ranking of the policy options (in terms of the overall NPV per option) was the composition of bag-for-life (BfL) demand, which altered both the average cost and, subsequently, the social cost of a BfL. The ranking of the policy options in each case also depended upon the level of charge under consideration. The outcome of the analysis is detailed in the following sections.

Percentage Change in Quantity Demanded of SUCBs

80. Using results from the experience in Ireland following the introduction of the 'PlasTax', regression analysis was undertaken in order to evaluate the percentage reduction in SUCBs associated with differing levels of charge. For instance, the Irish levy was €0.15 when it was first introduced in 2002, which corresponded to around a 94% reduction in quantity of SUCBs demanded, relative to the 2001 level, in the first year following implementation (averaging 91% overall by 2008). Using the 2008 exchange rate, which corresponds to the latest available Irish data, the results of the regression analysis showed that the following average percentage reductions in SUCBs demanded were associated with the relative levels of charge:

[9] See Reference 3 and Reference 5.
[10] See Reference 4.
[11] Life Cycle Assessment of Supermarket Carrier Bags, Environment Agency (draft report – as yet unpublished).

- 5p (€0.06) = 59% reduction in SUCBs demanded
- 7p (€0.08) = 68% reduction in SUCBs demanded
- 10p (€0.13) = 83% reduction in SUCBs demanded
- 15p (€0.17) = 92% reduction in SUCBs demanded

81. The original recommended level of charge to be introduced under Policy Option 2 was between 7p and 15p. The calculations for Policy Option 2 in the 'Final' (Consultation) stage IA therefore used an associated reduction in SUCBs demanded of 68%, based on the central recommendation of a minimum 7p charge. However, the minimum level of charge has now been proposed at 5p per SUCB, based on the responses to the second consultation. The Costs and Benefits outlined in the 'Summary: Analysis and Evidence' page for Option 2 are therefore now based on a charge per SUCB of 5p, rather than the 7p originally recommended in the previous IA. [Note that the differing levels of charge in Table 1.0 use the associated percentage reductions in SUCB demand].

82. The range of values given on the 'Summary: Analysis and Evidence' page for Option 2 was found by altering the relative percentage change in quantity demanded of SUCBs following the introduction of a charge, holding all other assumptions constant. Table 2.0 shows the percentage reductions used in the calculation of the ranges for Costs and Benefits on the 'Summary' page, based on a 5p charge.

Table 2.0 Effect of altering Percentage Reduction in Quantity of SUCBs demanded

£ million					
Reduction in, and New Quantity Demanded of, SUCBs	**Total Cost to Consumers**	**Total Benefit to Consumers**	**Average Annual Cost**	**Average Annual Benefit**	**Overall NPV**
59% (185m)	7	14	8	17	-280
68% (145m)	8	16	9	20	-260
83% (75m)	9	19	11	24	-220
92% (40m)	10	21	12	27	-200
100% (0m)	11	23	13	29	-180

Note: Figures are rounded to the nearest £1 million; overall NPV figures are rounded to the nearest £10 million. New quantities demanded of SUCBs are rounded to the nearest five million.

83. Table 2.0 indicates that altering the percentage reduction in quantity of SUCBs demanded affects both the net benefit to consumers and the overall NPV of the policy option. Hence, the outcome of Option 2 is estimated to be largely dependent upon the percentage reduction in demand for SUCBs achieved following the introduction of a charge.

84. For all four levels of charge evaluated in Table 1.0, altering the percentage reduction in quantity of SUCBs demanded had an effect on the overall NPV for Option 2. However, the relative ranking of each policy option was unaffected by

this change, i.e. the introduction of a charge had the highest NPV, followed by a ban, with the extended voluntary agreement having the lowest NPV.

Percentage Change in Quantity Demanded of BfL

85. Based on an estimate used in the AEA WAG Single-Use Bag Study, the quantity demanded of BfL was assumed to increase by around 170% following the introduction of a 5p charge. This relative increase corresponded to the percentage reduction in quantity demanded of SUCBs; hence, altering the reduction in SUCBs demanded simultaneously changed the percentage increase in BfL demand.

86. For each level of charge, altering the percentage increase in BfL demand in isolation affected the ranking of Options 3 and 4 after a point, but did not affect the ranking of Option 2 as having the highest overall NPV in each case.

Composition of BfL Demand

87. Based on discussions with retailers, it was estimated that the composition of demand for bags-for-life consists of around 90% heavy gauge LDPE (costing the consumer an average of 10p per bag) and around 10% of the stronger, more durable bags such as jute, cotton or hessian (costing the consumer an average of around 65p per bag). Based on data from the Environment Agency study the 10p (LDPE) bags were assumed to be re-used 5 times, whilst the 65p bags were assumed to be re-used an average of 94 times (i.e. 14 uses for a non-woven PP bag and 173 uses for a cotton bag). Altering this composition of demand for each level of charge had the largest effect on the overall NPVs of each policy option, and had the only real impact on the ranking of the policy options out of all the indicators which were varied in the analysis.

88. Assuming that the composition of demand is as described above (90% LDPE, 10% durable), the weighted average price of a BfL was estimated to be 16p. When the composition of demand was altered (e.g. to 50% of each, and then to 100% of the more expensive 65p bags), however, the weighted average price therefore also changed. In addition, the weighted average social cost increased as the composition of demand tended toward a greater proportion of the more expensive (65p) bags.

89. As a result of increasing both weighted average price and social cost, in most cases the NPVs for each option became increasingly negative, or worsened (i.e. indicating an even higher ongoing social cost of undertaking policy action). However, in the majority of cases, when composition of demand was altered to 50% of each type of BfL, Option 2 was still ranked highest (i.e. it was estimated to be the ‘best’ policy option in terms of the overall NPV).

Compliance with Hampton Principles

90. The Hampton Review[12] sets out the key principles that should be consistently applied throughout the regulatory system. The Climate Change Act 2008 requires that before any powers in relation to civil sanctions are conferred on local authorities in Wales, the Welsh Assembly Government (WAG) must be satisfied that they will act in accordance with the Hampton principles. The Local Better Regulation Office(LBRO) has been commissioned to establish this and will be reporting back to the Welsh Ministers during the consultation period.

91. For instance, WAG must ensure that enforcement activities are carried out in a fair and transparent manner and that actions taken are appropriate and proportional to the problem. It is anticipated that the enforcement regime relating to the proposed charge on single-use bags will be complaint driven, as has been the experience with the Irish PlasTax. Local Authorities will be required to investigate breaches of regulation related to:

    - Not charging for bags;
    - Not keeping records;
    - Not publicising records.

92. Hampton principles state that businesses should not have to give unnecessary information, nor give the same piece of information twice. Hence, in the case of reporting in relation to a charge on single-use bags, businesses (apart from those exempt from publishing requirements) will be required to produce the necessary information once a year.

EU Requirements

93. There is currently no specific EU requirement to limit the number of single-use bags in circulation. The current legislation of 'Directive 2006/12/EC of the European Parliament and of the Council' on waste states that member states should take measures to restrict the production of waste; in particular by promoting clean technologies and products which can be recycled and reused. However, single-use carrier bags are currently not mentioned in the list of recognised waste types under Decision 2000/532/EC.

94. The proposed charge on single-use carrier bags will therefore go beyond minimum EU requirements relating to waste.

Value of Offsetting Measures

95. When introducing new regulation the need for compensatory simplification measures should be considered, creating a balance between introducing new measures and simplifying or removing existing requirements.

[12] Hampton Review: http://www.hm-treasury.gov.uk/bud_bud05_hampton.htm

96. No offsetting measures have been introduced in this case since the proposed regulation relating to a charge on single-use bags does not overlap with any existing requirements.

Change in Greenhouse Gas Emissions

97. Production of single-use carrier bags creates carbon emissions of approximately 3p per bag. A proposed charge of 5p per bag on all single-use bags is expected to reduce their demand by an estimated 59%, leading to a corresponding reduction in production of SUCBs. This will lead to an anticipated reduction in carbon emissions of an estimated £8 million (i.e. a fall in SUCB demand of around 260 million, multiplied by carbon emissions from production of around 3p per bag).

Impact on Admin Burdens Baseline

98. In respect of the charge on single-use bags, it is proposed that all those who sell goods in the course of trade or business to customers in Wales will be required to keep records and provide returns relating to the number of bags sold annually. This requirement will impose an administrative burden on businesses which would otherwise not necessarily have existed in the absence of the charge; although, it is likely that retailers already keep a record of the number of bags given out, for stock-take purposes. Small businesses operating below a certain threshold and selling fewer than 1000 bags per annum are to be exempt from the requirement to publish records, so could be less affected by this additional administrative burden.

99. It is estimated that the total annual administrative cost of recording and reporting the number of bags sold each year in Wales will amount to around £1.0 million for all businesses combined. In 2005 prices, the additional administrative burden on retailers is estimated to amount to around £0.8 million (although this figure could be lower, since a portion of this admin burden will be accounted for by those businesses already recording the number of SUCBs given out as part of their normal stock control).

Specific Impact Tests

Competition Assessment

100. The policy might have an adverse impact on single-use bag manufacturers, although this is likely to be minimal since there are relatively few of these producers situated in Wales. Positive competition effects may result from the increased demand for reusable bags (BfL) such that manufacturers of these bags would benefit from producing a greater volume of bags-for-life. Positive competition effects may also result from the development of other sustainable alternatives to single-use carrier bags.

Small Firms Impact Test

101. The policy might have a disproportionate effect on SMEs, since a charge may lead to a reduction in impulse purchases from these retailers. However, this might also affect larger retailers, although such effects are not quantifiable at this stage.

102. Larger retailers might also have an unfair advantage with regard to non-compliance and possible court proceedings, and might find it logistically easier to implement new charging and administration systems. However, concessions are being made for small firms operating below a certain threshold and selling fewer than 100 bags per year, in order to reduce the administrative burden on these businesses.

Legal Aid

103. The policy would have a legal impact on firms in cases of non-compliance. The estimated resulting impact on Government of providing legal assistance is accounted for in the calculation of costs and benefits by policy option, in the evidence base; further detail regarding the derivation of the figures is outlined at Annex 3.

Sustainable Development

104. The policy contributes to the principles of sustainable development through both strengthening the emphasis on waste prevention and resource efficiency. The policy would create positive impacts in terms of: litter reduction; reuse of resources; increased awareness of packaging and its impact on waste disposal and climate change; and increased awareness of reuse and recycling. Concerns have been raised with regard to the impacts arising from the possible transfer of consumption, from single-use carrier bags to heavy-gauge LDPE reusable bags (i.e. the 10p bags-for-life). However, it is estimated that BfL consumption will fall, following an initial surge with the introduction of a charge on SUCBs, as consumers become more waste-aware and more likely to reuse carrier bags.

Carbon Assessment

105. The estimated greenhouse gas impacts are accounted for in the calculation of the social cost per bag and are included in the main evidence base.

Other Environment

106. Anticipated environmental impacts resulting from a charge on SUCBs are outlined in the evidence base. The main impacts on the environment will be the reduction in emissions from the production and disposal processes, along with the reduction in SUCB litter. However, wider environmental impacts could result if the policy encourages people to change their behaviour and to become more aware of other environmental issues, for example the need to recycle or to use ‘greener’ modes of transport.

Health Impact Assessment

107. The policy is expected to result in less single-use plastic bag litter, potentially reducing the number of accidents involving slippages on single-use plastic bags.

108. Responses to the second consultation indicated that a charge on SUCBs could add further complication to the relationship between pharmacists and patients. However, as indicated at Annex 2, to uphold patient confidentiality and safety an exemption has been placed on SUCBs which are used: solely to contain products sold or supplied in accordance with a prescription; provided free as part of other NHS services; or solely for Pharmacy medicines (i.e. restricted over the counter medicines from a qualified pharmacist or 'P medicines'). It is anticipated that a charge could impact upon patient-pharmacist relationships in certain circumstances, although this exemption seeks to minimise that impact.

Race Equality

109. We do not consider that the policy is relevant to the Government's responsibilities under the race equality duty.

Disability Equality

110. Around 30% of disabled respondents to the Office for Disability Issues' survey, 'Experiences and Expectations of Disabled People'[13], reported that they received assistance with shopping. In implementing the policy it would therefore be necessary to ensure that their support and carers were aware of the charge and considered reusing bags.

Gender Equality

111. According to Defra's (2009) Survey of Public Attitudes and Behaviours towards the Environment[14], there was a higher incidence of females (78%) than males (71%) claiming to have previously reused shopping bags and with the intention of doing so again. The policy might therefore have a slightly larger impact on males than females, since with a lower incidence of bag reuse males are more likely to have to purchase single-use bags following the introduction of a charge.

Human Rights

112. We consider that the policy is compatible with the European Convention on Human Rights.

Rural Proofing

113. We do not consider that the policy will have a significantly different impact in rural areas.

[13] http://www.officefordisability.gov.uk/research/research-reports.php
[14] http://www.defra.gov.uk/evidence/statistics/environment/pubatt/index.htm

Annex 1: Post Implementation Review (PIR) Plan

A PIR should be undertaken, usually three to five years after implementation of the policy, but exceptionally a longer period may be more appropriate. A PIR should examine the extent to which the implemented regulations have achieved their objectives, assess their costs and benefits and identify whether they are having any unintended consequences. Please set out the PIR Plan as detailed below. If there is no plan to do a PIR please provide reasons below.

Basis of the review: It is intended that a review of the policy will take place within three years of implementation. This policy review may, in turn, lead to a review of the statutory requirements.
Review objective: The review is intended to assess the effectiveness of the policy in achieving its objectives of reducing wasteful use of resources and adapting consumer behaviour. It should seek to evaluate the achievement of the policy objectives in terms of reduction in demand for single-use carrier bags against the 2008 level of consumption.
Review approach and rationale: The main approach for the review will be the monitoring of the number of single-use carrier bags being sold, since the overarching aim of the policy is to significantly reduce the number of SUCBs in circulation in Wales.
Baseline: The review should measure the reduction in the number of single-use carrier bags consumed in Wales, against the 2008 baseline figure of 445 million SUCBs.
Success criteria: Any reduction in the number of SUCBs consumed will be evaluated against the expected percentage reduction associated with the relevant level of charge, to assess the effectiveness of the policy in terms of reducing SUCBs. Should the number of SUCBs consumed begin to rise after an initial fall (as with the Irish 'PlasTax') the policy would need to be reconsidered; for instance, increasing the level of the charge.
Monitoring information arrangements: Retailers will be required to publish records on the number of bags sold. This will provide an evidence base for the review.
Reasons for not planning a PIR: Not applicable.

Annex 2: Details of the Charge

Contents:

Description of Bags to be Covered by the Charge

114. The draft regulations defines the term ‘single-use carrier bag’ (SUCB) as meaning a bag:

- Ø which is made wholly or partly of any type of plastic, paper, plant based material or natural starch; and
- Ø which is not specifically manufactured or intended for multiple reuse.

Therefore ‘Bags for Life’ and other reusable bags such as cotton, jute and hessian are not covered by the charge.

Exemptions from the Charge

115. It is proposed that the following types of bags will be exempt from the charge:

- Ø bags used solely to contain unpackaged food intended for human or animal consumption. This includes unpackaged meat or fish, unpackaged bread and loose items such as fruit and vegetables, bird seed or dog biscuits etc;
- Ø bags used solely to contain loose, unpackaged seeds, bulbs, corms, or rhizomes;
- Ø bags used solely to contain any unpackaged axe, knife, knife blade or razor blade;
- Ø bags used solely to contain packaged uncooked fish or fish products, uncooked meat or meat products or uncooked poultry or poultry products and the maximum dimensions of which are 205mm (width) x 125mm (gusset width) x 458mm (height including handles);
- Ø sealed bags supplied by a seller before the point of sale;
- Ø bags used to contain purchases made on board ships, trains, aircraft, coaches or buses;
- Ø bags used to contain purchases made in an area designated by the Secretary of State as a restricted zone under section 11A of the Aviation Security Act 1982 (i.e. the area of an airport once you pass through the security search point);

- Ø bags for packaging and delivery of mail or mail order goods;

- Ø bags which are made wholly of paper and the maximum dimensions of which are 175mm (width) x 260mm (height) or less

- Ø bags which are made wholly or partly of plastic and the maximum dimension of which are 125mm (width) x 125mm (height) and which do not have a handle;

- Ø bags which are made wholly of paper and the maximum dimensions of which are 80mm (width) x 50mm (gusset width) x 155mm (height) and which do not have a handle;

- Ø gusseted liners used either to line or cover boxes or other items;

- Ø bags used solely to contain live aquatic creatures in water;

- Ø bags used solely to contain products sold or supplied in accordance with a prescription, provided free as part of other NHS services or Pharmacy medicines (i.e. restricted over the counter medicines from a qualified pharmacist or 'P medicines').

Impact on Retailers

116. The charge will apply to all those who sell goods in the course of trade or business to customers in Wales. This includes: supermarkets; high street retailers; small businesses; market stalls; internet grocery deliveries; and those that provide a service and also sell goods (e.g. a hairdressing salon which also sells hair products).

117. All retailers will be required to keep a record of:

- The number of bags sold in each year;
- The gross proceeds of the charge in each year;
- The net proceeds of the charge in each year;
- The breakdown of the reduction from gross to net proceeds in each year (e.g. amount spent on administration and communications etc.);
- The purposes to which the net proceeds have been put in that year.

118. Concerns have been raised about the administrative burden on small businesses. Particular concern was expressed with regard to the administrative burdens the charge will place on small businesses which give out very few bags in a year relative to the total number of free bags handed out.

119. It is therefore proposed that only retailers which operate above a certain threshold and sell over 1000 SUCBs a year should be required to publish information relating to bag sales.

120. It is intended that local authorities in Wales will be responsible for enforcement of the charge. Enforcement action will take the form of civil sanctions and we propose a range of penalties for breaches of the regulations dependant on size of business and turnover.

Annex 3: Assumptions used in the Calculation of Costs and Benefits

Contents:

Calculating the Social Cost of Single-use Bags (SUCBs)

Negative Externalities from Production and Consumption

121. Single-use carrier bags impose costs on the taxpayer for several reasons: firstly, due to improper disposal they are a source of littering to the environment and, thus, generate costs for local authorities through having to clean up streets, countryside and beaches. Secondly, they fill up land-fill sites due to the fact they can take hundreds of years to decompose. Thirdly they are a hazard to wild- and marine- life when not disposed of in an appropriate manner. Besides the more visible impacts, there are also social costs which arise from the production process, in the form of damage to health and the environment as a result of carbon dioxide emissions as well as air and water pollution.

122. Economists refer to these unfavourable by-products of consumption and production as ‘negative externalities’ - a source of market failure. For Governments there is a rationale to address the market failure, since the market will not produce the socially desirable quantity of the good or service in question.

123. In the case of single-use carrier bags, the market is deemed to be over-producing the bags, leading to an ongoing cost to society. Although single-use carrier bags are provided ‘free’, the private cost is essentially ‘hidden’ by being priced into the retailers’ products and is thus not visible to the consumer. Hence, no direct cost is attached to the bag and consumers will therefore demand a larger quantity than if faced with the ‘true’ cost.

124. Furthermore, even if the consumer were to be charged the cost of a single-use bag as incurred by the retailer (i.e. the ‘private’ cost), this would not be optimal since the price should be equal to the marginal social cost, reflecting the true cost to society of producing and consuming each additional bag.

125. A market-based approach can therefore be used to ‘internalise’ the externalities; i.e. to ensure that the full social cost of each bag is passed on to those consumers who choose to purchase them.

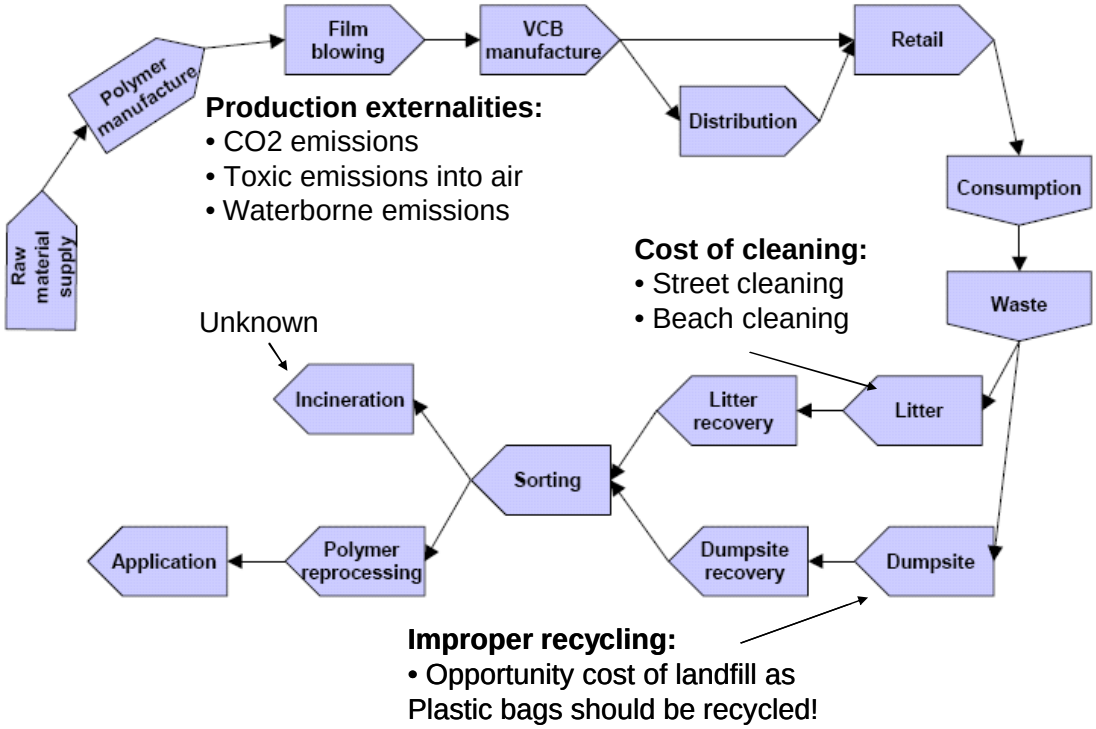
Calculating the Social Cost using Life-Cycle Analysis

126. The typical life-cycle of a single-use carrier bag can be considered using the following broad stages:

- Production processes (including extraction and production of raw materials);
- Transportation; and
- Consumption and disposal.

127. Diagram A outlines the life-cycle of a single-use plastic bag, which is the dominant form of carrier bag.

Diagram A – Life cycle of single-use carrier bag and possible sources of externalities



128. Academic literature was reviewed for each of the broad life-cycle stages in order to assess the externalities arising, and to evaluate the subsequent cost to society in order to provide a recommended minimum level of charge per bag.

129. For the purpose of this analysis it was necessary to evaluate the global warming potential of a SUCB in terms of carbon dioxide equivalence emitted throughout the life-cycle of a bag (i.e. during the 'production stage'). For simplicity the 'production stage' has been deemed to cover not only the production processes but also the extraction and production of raw materials; transportation; end-of-life; and avoided products and recycling. The consumption and disposal stage is evaluated separately and assesses the opportunity cost of improper disposal.

Production stage

130. At the 'production' stage the producer of single-use carrier bags would usually pay simply for the cost of inputs to production, such as raw materials and energy. What is omitted during the production process is the wider damage to the environment; this includes the carbon dioxide emissions from production, and pollutants emitted into the air and into water from chemicals used.[15]

131. The valuation of carbon emissions per bag is based on findings from a study by the Environment Agency (2010)[16], which concluded that the global warming potential of a single-use carrier bag is around 2.08kg carbon dioxide equivalent (CO_2e). This is based on the potential carbon emissions from each of the production processes listed in paragraph 126. The valuation of global warming potential (GWP) is based on a SUCB being used only once as a carrier bag (having only a 'primary' use) and does not account for any 'secondary' re-use (e.g. re-using a SUCB as a bin-liner in the home). However, if secondary re-use were to be accounted for in the GWP then the CO_2e could be lower, at around 1.58kg per bag (based on 40% secondary re-use); this is discussed in more detail in paragraph 144.

132. The Nolan-ITU Australian study (see Reference 2) estimates the level of global warming potential per bag to be higher than the 2.08kg CO_2e given by the Environment Agency, at 6.08kg carbon dioxide equivalent. This difference could partly be accounted for by differing assumptions having been made regarding the materials used in the production processes, along with the number of SUCBs consumed per household, per annum. Furthermore, production processes may have become more efficient over time (i.e. since the 2002 publication of the Nolan-ITU study).

133. There are difficulties in valuing 'embodied' emissions from the production processes of a product, compared with 'direct' emissions (for example, CO_2 emitted from a car) which can potentially be valued using the traded or non-traded prices of carbon. For the purpose of this analysis it was therefore necessary to use a proxy for the price of embodied carbon emissions. The cost per tonne of CO_2 used in the analysis (approximately £13 per tonne) is based upon the spot price of carbon dioxide given by the European Climate Exchange - a market place for trading carbon dioxide emissions. Based on the carbon dioxide equivalence per SUCB of around 2.08kg, the cost of the CO_2e emitted throughout the 'production' process is estimated to equate to around 3p per bag (see Table A).

134. Based on the global warming potential from the CO_2e emissions, along with the water and air pollutants released throughout the production stage, the proportion of the total external cost per bag owing to this stage is estimated to be around 5 pence (see Table A). The remaining proportion of the total external cost per bag arises from the consumption and disposal stage and is outlined in the following section.

[15] Information on the level of emissions by type was obtained from a range of different sources, including: the Environment Agency; the World Bank; and the European Commission.
[16] Life Cycle Assessment of Supermarket Carrier Bags, Environment Agency (draft report - as yet unpublished).

Table A - Estimated social costs arising from the production stage of Single-use carrier bags (pence)

Social cost of CO2 emissions from production per bag	
Cost per tonne of CO2 (£)	12.87
CO2 per bag (kg)	2.08
Subtotal	**3**
Social cost of air pollution	
Toxic gases released (kg)	0.01
Abatement cost per tonne (£)	234.27
Subtotal	**1**
Social cost of water pollution	
Waterborne waste per plastic bag (g)	0.1
Abatement cost per tonne (£)	30.98
Subtotal	**1**
Total	**5**

Consumption and Disposal Stage

135. Single-use carrier bags made from HDPE are usually intended for recycling; yet, according to a study from 'Resource Futures'[17], single-use carrier bags made from plastic alone make up approximately 3 per cent of landfill in terms of weight. To approximate the proportion of the external cost per bag owing to improper recycling, the proportion of SUCBs contained in municipal waste intended for landfill in Wales (approximately 1 million tonnes per annum) was multiplied by the current level of landfill tax[18] (£48 per tonne plus VAT). This 'opportunity cost' (i.e. the value of the next best option given up – in this case the opportunity to recycle a bag) equates to approximately 1p per bag (see Table B).

136. According to 'Keep Wales Tidy'[19] single-use carrier bags make up approximately 2.7 per cent of the total volume of littering in Wales. This results in additional costs to local authorities through having to clean up plastic bag litter from recreational areas such as sea- and country-side. According to the AEA WAG Single-Use Bag Study (see Reference 1) the proportion of the total annual cost of street cleaning in Wales (£37 million) associated with SUCB litter is around £1 million per annum.

137. To estimate the associated cost of dealing with plastic bag littering to beaches in Wales, the cost of cleaning UK beaches of such litter (around £290,000 per annum) was proportionately applied to Wales by equating for length of coastline in miles. Given that the UK coastline is approximately 19,500 miles and the Welsh coastline is approximately 1,300 miles, the proportionate cost to Wales of cleaning beaches is estimated to be £20,000 per annum (i.e. approximately 7% of the UK figure). Taking both the cost of street cleaning and the cost of beach cleaning, the cost to society of littering is estimated to amount to around 1p per bag.

[17] "Resource Futures - Report on kerbside household waste analysis", South Gloucestershire District Council
[18] http://www.defra.gov.uk/environment/waste/topics/
[19] Keep Wales Tidy; http://www.keepwalestidy.org/english/images/plasticbags.pdf

138. In total, the externalities arising from improper disposal (through littering and improper recycling) are estimated to be around 2p per bag (see Table B).

Table B - Estimated social costs arising from disposal in pence per bag

Social cost of disposal	
Cost of cleaning (£)	
Street cleaning (£)	1,000,000
Beach cleaning (£)	20,000
Subtotal	**1**
Social cost of improper recycling	
Landfill Cost (£)	1,575,347
Subtotal	**1**
Total	**2**

Total Social Cost

139. Table C (below) sets out the estimated total social cost of a single-use carrier bag (approximately 7p per bag), based on the life-cycle stages outlined above. The average 'private' cost (i.e. the wholesale price which retailers pay to purchase the bags from producers) is estimated to be 2p per bag. Based on the sum of both the social and private costs (i.e. total external cost per bag), the recommended minimum level of charge would thus amount to around 9p per bag, excluding VAT.

140. However, it is assumed that retailers already include the private cost (2p) in the price of shopping; the 9p would thus account for retailers lowering the price of shopping accordingly, following the introduction of a charge, and passing the 2p per bag on to consumers. In reality, however, this is deemed unlikely. **The recommended level of charge based on the social cost per bag alone is therefore a minimum of 7p per bag.**

Table C - Estimated total social costs arising from each production and consumption stage of Single-use carrier bags (pence)

Social cost of externalities by life cycle stage in pence per bag	
Production	
Greenhouse gas emissions	3
Pollution (Air)	1
Pollution (Water)	1
Disposal	
Littering	1
Improper Recycling	1
Total private cost per bag	2
Total social cost per bag	7
Total external cost per bag	9

Sensitivities

Inclusion of VAT

141. The minimum level of charge is now proposed at 5p per SUCB. Allowing for the addition of VAT at 20% the minimum level of charge per single-use bag could be recommended at around 6p. This level of charge would also hold for VAT levels of 15.0% and 17.5%.

Paper Bags

142. It has not been possible to calculate the social cost of a paper bag at this stage due to lack of available data, relating to both the life-cycle of such a bag and to current usage of such bags in Wales[20]. For the purpose of this analysis it was assumed that the social cost of a single-use paper bag is the same as that of a single-use plastic bag.

143. However, in reality the social cost of a single-use paper bag is likely to be much higher than that of a single-use plastic bag, due to higher resource intensity in the production process along with the additional cost of transporting and disposing of a typically much larger and heavier bag. This could ultimately lead to the social cost of a single-use carrier bag amounting to more than 7p, although the extent of such an increase is uncertain at this stage.

Global Warming Potential (GWP)

144. The Environment Agency's life-cycle analysis of a single-use carrier bag indicates that the global warming potential per bag amounts to 2.08kg CO_2e; this is based on the assumption that all SUCBs have only one primary use, and does not account for secondary re-use (i.e. re-use in a different function, for instance as a bin-liner in the home). However, SUCBs are often re-used in the home and so have more than one use. The Environment Agency's report suggested that with a 40% secondary re-use rate the GWP per bag amounts to around 1.58kg CO_2e.

145. However, even when this lower GWP figure is accounted for in the analysis, the social cost of a single-use carrier bag remains unchanged, suggesting that SUCBs would need to have a substantially higher re-use rate in order to lower the social cost per bag.

Findings from Australia

146. The Australian Nolan-ITU analysis of plastic bags suggests that a SUCB has a global warming potential of 6.08kg CO_2e, compared with the 2.08kg suggested in the Environment Agency's report. As indicated in paragraph 132, this could be due to differing assumptions between the reports, coupled with the fact that the

[20] It is estimated that of the approximately 445 million single-use carrier bags consumed annually in Wales, 115 million of those are paper. However, there is considerable uncertainty surrounding the consumption of paper bags, for example what sizes of bags this consumption consists of or how many of those would be included in the charge on SUCBs (since smaller bags will be exempt).

studies were undertaken almost a decade apart (allowing for developments in production processes, for example).

147. Using the 6.08kg figure from the Australian report – instead of the 2.08kg from the Environment Agency report – in the analysis has an effect on the social cost of a single-use carrier bag. Allowing for this higher CO_2e per bag, the social cost could increase to around 12p per bag. This would lead to a 7p charge per bag generating a greater net benefit to society, although the overall NPV would in fact be worse than if the original CO_2e figure was used since the reference case itself would also consist of a higher ongoing cost to society and a greater negative NPV (based on a higher social cost per bag). In this instance, the minimum level of charge needed to generate an overall net benefit to society (i.e. to ensure the overall NPV is greater than zero) is estimated to be just over 15p per bag.

Calculating the Social Cost of Bags-for-Life (BfL)

Life-Cycle Analysis of Carrier Bags

148. Calculating the social cost of a bag-for-life involved a similar process to that undertaken for single-use bags. However, in this case the reference flow of each type of bag-for-life was used, in order to compare the social cost of a BfL relative to that of a SUCB.

149. The reference flow can be described as 'the number of carrier bags required to fulfil the functional unit'[21]. In the Environment Agency's life-cycle analysis, the 'functional unit' is carrying one month's shopping, or 483 items, from the supermarket to the home. The reference flows of each bag type are shown in Table D.

Table D Reference Flow of Alternative Bag Types

Alternative Bag Types	Volume per bag (litres)	Weight per bag (g)	Items per bag	Reference Flow
Single-use HDPE	19.10	8.12	5.88	82.14
Reusable LDPE	21.52	34.94	7.96	60.68
Cotton bag	28.65	183.11	10.59	45.59
Non-woven PP bag	19.75	115.83	7.30	66.13

Source: Environment Agency

Note: A Single-use HDPE represents the average single-use plastic bag; a reusable LDPE represents the average 10p bag-for-life

150. The reference flows in Table D allow comparisons to be made between single-use carrier bags and alternative types of reusable 'bags-for-life' (i.e.

[21] Life Cycle Assessment of Supermarket Carrier Bags, Environment Agency (draft report - as yet unpublished).

around 82 SUCBs are required to carry 483 items per month, compared with around 61 reusable LDPE bags). Since the social cost of a single-use bag was calculated previously, each of the reference flow figures for the alternative bag types were hence given an index relative to the baseline (i.e. a single-use bag), for comparison.

151. For example, if the reference flow of a single-use bag (82.14) was given an index of 100, for a reusable LDPE the index would be 73.87 ([60.68 / 82.14] x 100). This essentially means that where 100 single-use bags are needed, only 73.87 LDPE bags would be required if used as an alternative bag type.

152. Using indices, it was thus possible to calculate the average social cost of a BfL by applying the average relative index to the social cost of a single-use bag. For instance, the index for a reusable LDPE was 73.87; based on a life of 5 uses, the social cost of this bag relative to that of a single-use HDPE (7p) equates to around 25p. Hence, a value of 25p was used in the analysis to represent the social cost of a 10p bag-for-life, which was assumed to make up 90% of the composition of BfL demand.

153. The social cost of the stronger, more durable bags-for-life with an estimated average price of 65p was calculated using the same formula; these bags were assumed to make up the remaining 10% of the composition of BfL demand. The individual indices for the remaining bag types (cotton and non-woven PP) were calculated using the same formula as for an LDPE bag. Based on an average life of 173 uses for a cotton bag and 14 uses for a non-woven PP bag, the average social cost of the two bag types (representing the average 65p bag) is around £3.70 per bag.

Average Social Cost based on Composition of BfL Demand

154. It was assumed in the overall analysis that the composition of demand for bags-for-life consisted of 90% reusable HDPE bags (i.e. the heavy-gauge plastic bags which have an average price of 10p) and 10% of the stronger, more durable bags which have an average price of 65p (for example calico, woven and swag bags).

155. Based on this estimated composition of demand, a weighted average was applied to the individual social cost calculations in order to find the average social cost of a bag-for-life. For instance, assuming a 90:10 composition of 10p and 65p bags respectively, the average social cost was estimated to be around 60p ([0.90 x 25p] + [0.10 x £3.70]).

156. The impact on the NPV of altering this composition of demand (and, hence, the weighted average social cost of a BfL) was examined in the sensitivity analysis, results of which were outlined in the Evidence Base.

Assumptions used in the Calculation of Costs and Benefits

Forecast Period and the use of Discounting

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

158. Given that there is a general public preference to receive goods and services now rather than in the future (known as 'time preference'), individuals and firms require a return in order to encourage them to invest their money now and defer their present consumption until later. The real rate (i.e. taking account of inflation) of return required can thus be used as the 'discount rate', in order to convert future costs and benefits to present values so that comparisons can be made between them.

159. The net present value of each policy option therefore represents the present value of the stream of costs and benefits over the 15-year period, and is used to determine whether or not Government intervention can be justified. In general, the higher the NPV the better the expected outcome of the policy.

160. In line with the 'Green Book'[22] recommendation, the discount rate used in the analysis was 3.5%.

Baseline Assumptions used for all Policy Options

161. Table E outlines the baseline assumptions used in the calculation of costs and benefits for each policy option; these are the baseline indicators from which each policy option varied according to the assumptions used.

162. Table E shows there are an estimated 445 million single-use bags consumed annually in Wales, consisting of 330 million plastic and 115 million paper bags. This assumption was taken from the Welsh Assembly Government-commissioned AEA study on single-use bags (see Reference 1). The single-use figure is based on a 50% reduction, from the 2006 baseline figure of 660 million, following the introduction of the existing voluntary agreement. The same report also estimated that under the current voluntary agreement bag-for-life usage had doubled, from the 2006 baseline figure of 7 million to the current figure of 14 million.

[22] http://www.hm-treasury.gov.uk/data_greenbook_index.htm

Table E Baseline Assumptions used in the Calculation of Costs and Benefits

Indicator	Value
• Baseline number of SUCBs consumed annually in Wales	445 million (330m plastic; 115m paper)
• Baseline number of BfL consumed annually in Wales	14 million
• Composition of Bag-for-Life demand	• 90% LDPE heavy gauge (10p reusable bags); • 10% Stronger, more durable bags (average 65p reusable bags, e.g. woven, jute, hessian).
• Average life of 10p BfL	5 shopping trips
• Average life of 65p BfL	94 shopping trips
• Weighted Average BfL Price	16p
• Weighted Average Social Cost of BfL	60p
• Price charged per SUCB under the Extended Voluntary Agreement (assumes 30% of retailers impose a charge under Option 4)	5p

Bags for Life

163. The estimate of the composition of bag-for-life demand was based on discussions with retailers, who approximated that around 90% of bag-for-life sales consisted of the heavy-gauge reusable LDPE bags which have an average price of 10p. Based on this approximation, it was assumed the remaining 10% of demand consisted of the more expensive, more durable bags. The AEA Technology report, produced for the Scottish Executive on the proposed plastic bag levy in Scotland, suggested that the average price of a more durable bag-for-life is around 65p.

164. Based on the composition of BfL demand, a weighted-average price was calculated at 16p ([0.9 x 10p] + [0.1 x 65p]).

165. The Environment Agency report indicated that a reusable LDPE bag (e.g. with an average price of 10p) had a life of 5 uses. The stronger and more durable bags were assumed to have an average life of 94 uses. The average social cost of a BfL was determined using the life-cycle analysis findings from the Environment Agency report and the weighted-average was based on the composition of BfL demand. Based on the calculations outlined in the previous section the weighted average social cost was estimated to be around 60p.

Voluntary Charge

166. It was assumed that under Option 4 all retailers involved would impose a 5p charge on each single-use bag in order to discourage consumption of the bags. This assumption was based partly on the existing voluntary agreement – which saw one retailer out of seven imposing a 5p charge on SUCBs – and also on results from the consultation process, which found that several retailers are now voluntarily imposing a charge on SUCBs (in the region of 1p to 5p).

Costs to Retailers

167. For Option 2 it was assumed that retailers would incur annual costs through having to report on the number of single-use bags being sold per annum. The estimated costs to retailers are based on figures from the Scottish Executive's Regulatory Impact Assessment (RIA) of an Environmental Levy on plastic bags[23].

168. Table F shows the estimated average cost to each Scottish retail sector of keeping and publishing annual records, and is based on 52,690 retail outlets in Scotland in 2005 (92% of which were SMEs). For example, the average total cost to *all* 48,000-plus SME food and non-food retailers per annum is around £4.4 million (i.e. the average of the £5.6m for SME food retailers and the £3.2m for SME non-food retailers respectively); this equates to around £90 per individual retailer unit, per annum (i.e. £4.4 million / 48,500 SMEs). For the 4,000-plus large retailers in Scotland the average annual total cost is around £0.3 million, equating to around £80 per individual retailer unit, per annum. Based upon these estimates, the corresponding average annual total cost for the 9,614 food- and non-food retailers[24] in Wales is thus estimated at just under £0.9 million.

Table F Average Annual (Total) Costs to each Scottish Retail Sector of Keeping Records & Submitting Returns

Type of Retailer by Sector	Range of Annual Costs by Sector (£)	Average Annual Total Cost to each Sector (£)
Large Food	151,750 – 315,000	233,375
Large Non-Food	303,500 – 630,000	466,750
SME Food	3,858,000 – 7,366,000	5,612,000
SME Non-Food	2,170,000 – 4,144,000	3,157,000
Average Annual Cost to Large Retailers	**227,625 – 472,500**	**350,063**
Average Annual Cost to SMEs	**3,014,000 – 5,755,000**	**4,384,500**

[23] http://www.scottish.parliament.uk/business/committees/environment/papers-05/rap05-28.pdf?page=3
[24] Inter-Departmental Business Register (IDBR). Five-year average from 2005 to 2009 of total food and non-food enterprises in Wales.

169. Taking a five-year average from 2005 to 2009 of all businesses in Wales (from the IDBR), 97% (around 9,300) have fewer than 250 employees. Using this as a measure of SMEs in Wales, based on the costs to Scottish retailers around 9,300 businesses in Wales would therefore face annual costs of an estimated £90 for publishing requirements. For large retailers in Wales (around 300) the average cost is estimated to be around £80 per annum (again based on the Scottish figures).

170. Several responses to the second consultation indicated that the initial Impact Assessment had substantially underestimated the ongoing costs to retailers of administering and processing a charge on SUCBs. The evidence used in the 'Final' stage IA was based on analysis undertaken by the Scottish Executive and is therefore deemed appropriate for the purpose of this IA.

171. There were a few estimates of average costs provided in the consultation responses. These indicated that the total cost to retailers could amount to an average of around £1 million per annum, based on a consumption level of 180 million SUCBs following the introduction of a 5p charge. This figure is based on a suggestion of ongoing admin and operational costs of between $^{1}/_{4}$p and 1p per SUCB, depending on the retailer, giving an indicative range of costs between £0.46m and £1.8m. Given that the majority of retailers in Wales are SMEs, the total annual cost could be towards the higher end of the scale since SMEs are likely to incur higher costs than larger retailers. The average annual figure of £1m, nonetheless, is similar to that outlined in the 'Final' (Consultation) stage IA, suggesting that the estimated cost to retailers is not substantially different to that expected by a majority of retailers. These indicative figures generated by the consultation will need to be verified by retailers, however, in order to form an accurate picture of the actual costs incurred by retailers under Option 2.

172. The smallest businesses may not be affected by the requirement to submit annual returns, since those businesses selling fewer than 1000 bags and operating below a threshold of £68,000 are to be exempt from the publishing requirements.

Additional Assumptions made under Option 2 (Introduction of a Charge)

173. Table G outlines the additional key assumptions which were used in order to evaluate the effect of a charge on the overall NPV. The main indicator was the percentage reduction in consumption of single-use bags following the introduction of a charge; the derivation of the relative reductions for each level of charge are outlined in the 'Sensitivity Analysis' section of the Evidence Base.

Table G Assumptions under Option 2: Introduction of a Charge

Indicator	Value
• Level of charge for SUCB	5p
• Percentage reduction in SUCB consumption	59%
• Percentage increase in BfL consumption	172%

174. The minimum level of charge recommended under option 2 was originally based on the estimated social cost of a single-use carrier bag (7p). However, taking into account the level of uncertainty and the responses to the second consultation this has now been amended to 5p per SUCB. The corresponding percentage reduction is based on data from the Irish 'PlasTax' and was adjusted according to the level of charge under consideration. The range of values for Costs and Benefits and NPVs given in the 'Summary: Analysis and Evidence' page is based on differing percentage reductions in SUCB consumption following the introduction of a 5p charge (see Table 2.0 in the Evidence Base for more detail).

175. The percentage increase in BfL consumption following the introduction of a charge on SUCBs is based on an assumption used in the AEA WAG Single-Use Bag Study (see Reference 1). The AEA study estimated that demand for reusable LDPE bags would increase by 263% following the introduction of a charge on all single-use paper and plastic carrier bags. This percentage increase, however, corresponded to a 90% reduction in demand for single-use bags, which was based on the reduction in SUCBs experienced by Ireland following their introduction of the 'PlasTax'. The regression analysis outlined in the Evidence Base shows that a 5p charge on SUCBs is estimated to reduce consumption of SUCBs by approximately 59%; therefore, the corresponding percentage increase in BfL consumption was estimated to equate to around 172% ([263 / 90] x 59).

176. However, the analysis assumes that the level of BfL demand following the percentage increase will be sustained throughout the 15-year forecast period; in reality, this will not necessarily be the case. It is estimated that there is likely to be an initial surge in BfL demand following the introduction of a charge on SUCBs, provided consumers adapt their behaviour in response and switch consumption to the reusable bags-for-life. But given that many of the more expensive BfL will last for up to a year, or perhaps even longer, this level of demand might fall once consumers have purchased their required volume of BfL.

177. Furthermore, many of the 'bags-for-life' which are sold for 10p are indeed intended to be 'for life': many retailers which sell the 10p BfL offer a promise to replace the bag free of charge once it reaches the end of its life. However, it is not known whether this policy would continue following the introduction of a charge on SUCBs, or whether this will also be extended to the more expensive reusable bags (which we have also termed 'bags-for-life' for the purpose of this analysis), which would reduce the cost to the consumer over time of purchasing BfL.

Additional Assumptions made under Option 3 (a Ban on SUCBs)

178. Table H outlines the additional key assumptions used in the evaluation of the effect of a ban on the overall NPV. As considered under Option 2, the main key indicator was the percentage reduction in consumption of single-use bags following the introduction of the policy and the subsequent percentage increase in BfL.

Table H Assumptions under Option 3: Introduction of a Ban

Indicator	Value
• Percentage reduction in SUCB consumption	100%
• Percentage increase in BfL consumption	292%

179. It was assumed that a ban on SUCBs would result in a 100% reduction in the number of SUCBs consumed. This would ultimately depend upon there being a 100% rate of compliance with the ban.

180. The derivation of the percentage increase in BfL demand following a ban on SUCBs is the same as that described under Option 2; i.e. the increase corresponds to the percentage reduction in SUCBs, based on the assumptions used in the AEA Technology WAG study ([263 / 90] x 100).

Additional Assumptions made under Option 4 (Extended Voluntary Agreement)

181. Table I shows the additional assumptions used under Option 4, the extended voluntary agreement. As with Options 2 and 3, the main key indicators are the percentage changes in consumption of both SUCBs and BfL.

Table I Assumptions under Option 4: Extended Voluntary Agreement

Indicator	Value
• Percentage reduction in SUCB consumption	18%
• Percentage increase in BfL consumption	51%
• Charge imposed under Voluntary Agreement	5p

182. The percentage increase in BfL consumption (51%) was calculated using the same method as for Options 2 and 3, i.e. relative to the percentage reduction in SUCB consumption and based on the AEA estimate ([263 / 90] x 18).

183. The estimate of the percentage reduction in SUCB consumption under Option 4 was based on data from a report by Nolan-ITU[25], on plastic bag consumption in Australia between 2002 and 2004. The report indicated that, with a voluntary code of practice encompassing targets for bag usage set by the Environment Protection and Heritage Council, SUCB usage had fallen by between 10% and 25% between 2002 and 2004. Based on the average of this range, it was estimated that with an extended voluntary agreement in Wales which achieved an additional participation rate of 30% of the remaining retailers, a reduction in SUCB usage of 18% could potentially be achieved.

[25] http://www.environment.gov.au/settlements/publications/waste/plastic-bags/consumption/pubs/plasticbag-use0304.pdf

184. It was assumed for the purpose of this analysis that all retailers involved in the agreement would impose a charge of 5p on each single-use bag. This assumption was based on responses to the consultation process, which indicated that several retailers already impose a charge on SUCBs outside of the voluntary agreement which is currently in place.

185. The percentage reduction in SUCBs demanded under Option 4 was not based on the Irish data, since it was assumed that not all retailers would be involved in the extended voluntary agreement. Furthermore, some may choose to reduce SUCB consumption via means other than the imposition of a charge. It should be noted, thus, that the costs and benefits estimated to arise under Option 4 could potentially be over- or under-estimates (for instance, if the percentage reduction in SUCB demand was lower or higher, respectively) and should therefore be considered accordingly.

186. Responses to the second consultation indicated that there was a high level of support for an extended voluntary agreement. However, there was no further evidence provided to support the case for Option 4.

187. For illustrative purposes, sensitivity analysis was undertaken to give an indication of the impact of Option 4 under revised assumptions. For example, if Option 4 were able to reduce SUCB demand by a further 50% relative to the baseline (i.e. 445 million reduced by 50%, to 223 million) it is estimated that, provided 50% of remaining retailers took part (rather than the 30% assumed in the original model) and all voluntarily charged 5p per bag, this could create an additional benefit of around £50 million relative to the original estimated NPV. This would give a new overall NPV of -£320 million. If participating retailers only charged 1p per SUCB on this voluntary basis the additional benefit relative to the original NPV is likely to be smaller at around £10 million, generating an overall NPV of an estimated -£360 million. These adjusted NPV figures also account for the anticipated relative increase in bags-for-life that would arise under this option. These illustrative figures indicate, therefore, that Option 4 is not likely to rank any differently among the policy options even if the modeling assumptions were amended.

End.