

Title: The Environment Bill RPC Reference No: RPC-DEFRA-4439(1) Lead department or agency: The Department for Environment, Food and Rural Affairs Other departments or agencies:	Impact Assessment (IA)			
	Date: 3rd December 2019			
	Stage: Final			
	Source of intervention: Domestic			
	Type of measure: Primary legislation			
	Contact for enquiries: EnvironmentBill@defra.gov.uk			
Summary: Intervention and Options			RPC Opinion: Fit for purpose (green)	

Cost of Preferred (or more likely) Option (in 2018 prices and 2020 present value)

Total Net Present Social Value	Business Net Present Value	Net cost to business per year	Business Impact Target Status
Unquantified	Unquantified	Unquantified	Qualifying provision

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

To establish a new domestic framework for environmental governance to protect and enhance our natural environment now we have left the European Union and enact a series of measures to help with the delivery of the 25 Year Environment Plan. The Bill will address three main market failures:

- i) Inadequate provision of public goods. Non-rivalry and non-excludability mean that many aspects of the natural environment, such as the recreational benefits of the environment, may be underprovided by the market without government intervention.
- ii) Regulation of externalities. Environmental costs and benefits often accrue to third parties in economic transactions in ways not fully reflected by prices. Without government intervention to regulate externalities for example, there might be excessive levels of air pollution.
- iii) Tackling the incomplete information that can lead to poor decision-making on environmental matters.

What are the policy objectives and the intended effects?

The Environment Bill aims to introduce a new framework for environmental governance, and build on the ambition of the 25 Year Environment Plan. The Bill introduces measures on air quality, the protection and enhancement of our landscapes, wildlife and habitats, more efficient handling of resources and waste, and better management of our surface, ground and waste water. The Environment Bill will help deliver the government's commitment to leave the natural environment in a better condition than we found it.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)

Do nothing: This option was deemed not viable. Without the Environment Bill, the UK would not have in place a robust system of environment governance now we have left the European Union and would have reduced ability to meet the ambitions of the 25 Year Environment Plan. Nevertheless, do nothing provides the basis for comparison for the preferred option.

Preferred option: Establish a new governance framework able to protect and enhance our natural environment now we have left the European Union, and enact a series of measures to help with the delivery of the 25 YEP by improving: air quality, natural environment, efficiencies in waste and resource management measures, as well as water management.

Will the policy be reviewed? It will be reviewed. If applicable, set review date: N/A

Does implementation go beyond minimum EU requirements?	n/a			
Is this measure likely to impact on international trade and investment?	YES			
Are any of these organisations in scope?	Micro YES	Small YES	Medium YES	Large YES
What is the CO ₂ equivalent change in greenhouse gas emissions? (Million tonnes CO ₂ equivalent)	Traded: Unquantified		Non-traded: Unquantified	

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

..... Rebecca Pow Date: 2 March 2020

Summary: Analysis & Evidence

Policy Option 1

Description: The Environment Bill puts environmental ambition and accountability at the very heart of government. It will represent one of the key vehicles for delivering the 25 Year Environment Plan.

FULL ECONOMIC ASSESSMENT

Price Base Year 2018	PV Base Year 2020	Time Period Years 10	Net Benefit (Present Value (PV)) (£m)		
			Low: Unquantified	High: Unquantified	Best Estimate: Unquantified

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

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

Due to uncertainty around the magnitude of costs calculated for both primary and secondary legislation, the costs are not included in the cells above. The impacts of measures requiring secondary legislation are provisional at this stage as future decisions are still needed to determine policy options. Of the measures to be introduced at primary legislation the total annualised costs are estimated to be £221m. Most of these costs are represented by annualised costs to business of £196.6m due to biodiversity net gain. The costs of this measure are already presented in a separate published Impact Assessment. The costs arising from the remaining primary legislation measures are mostly public-sector costs associated with the nature, water, and air quality measures, which are described in the evidence base report and related annexes.

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

There are other key non-monetised costs which will arise from primary legislation and through future secondary legislation. The secondary legislation measures affecting different groups are still going through further policy development and therefore impacts at this stage are only provisional. Non-monetised and indicative costs are presented in the evidence base report, along with qualitative impacts.

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

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

Most of the benefits are not monetised at this stage. The only monetised benefit is from the biodiversity net gain and local nature recovery strategies measures, where the estimated annualised environmental benefits are around £1.4¹ billion per year, as described in the published Impact Assessment.

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

Most benefits resulting from the new measures were not monetised. Evidence suggests that there are large benefits to the environment, health and society from reducing the emissions of greenhouse gases, increasing resource efficiency and sustainability by helping to deliver a circular economy, reducing pressures on the water environment and improving resilience to floods, and mitigating chemical pollution to water bodies.

Key assumptions/sensitivities/risks	Discount rate (%)	3.5
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The estimates represent an initial and illustrative indication of the impacts of the Environment Bill. Where possible, impacts expected to arise from primary legislation have been monetised. Impacts arising from enabling powers, however, are much less certain at this stage. Some of these impacts may be large, depending on the details agreed at that stage. Some totals given for the quantified costs omit some unquantified economic impacts, which will be assessed at the secondary legislation stage.

BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:	Score for Business Impact Target (qualifying provisions only) £m:
Costs: Unquantified Benefits: Unquantified Net: Unquantified	UNQUANTIFIED

¹ All ongoing costs and benefits quantified and reported in the evidence base report are in 2018 prices and are annualised present value figures, unless otherwise stated. Although different policies start at different times, all costs and benefits are expressed in 2020 present value.

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1. Introduction

The Environment Bill puts environmental ambition and accountability at the very heart of government. It aims to help deliver the government's manifesto commitment for the most ambitious environmental programme of any country on earth. The Environment Bill builds on the 25 Year Environment Plan (25 YEP) to take direct action to address the biggest environmental priorities: climate change, air quality, the protection and enhancement of our landscapes, wildlife and habitats, more efficient handling of resources and waste, and better management of our surface, ground and waste water.

The Bill consists of measures addressing environmental governance, waste and resources, air quality, water, nature and biodiversity, conservation covenants and other miscellaneous and general provisions (e.g. REACH amendments). The measures build on the commitments included in the 25 YEP to enhance domestic environmental protection. This document sets out the rationale for intervention and presents the predicted impacts of the primary legislation and expected secondary legislation for each measure contained in various chapters, as well as impacts for the Bill as a whole. The Bill will likely deliver environmental benefits that are greater than the sum of the impacts of the individual measures, by driving a behavioural shift in business, consumers and developers towards more sustainable behaviours.

The Environment Bill is composed of measures that are directly implemented through primary legislation and, at the same time, establishes frameworks to design and implement secondary legislation. Estimates of the likely impacts of these measures have been made where possible. In cases where the Bill seeks an outcome through subsequent secondary legislation, indicative analysis of the impacts is provided where policy development is sufficiently advanced. An analysis of the expected impacts of the secondary legislation, if not completed already, will be carried out in due course.

A detailed description of all impacts for each of the many and varied measures that are included in the Bill and rationale for intervention are provided in the next sections of this document, as well as in the individual Statements of Impacts. These individual Statements of Impacts describe impacts for each measure and are presented as annexes to this evidence base report.

2. The problem under consideration

The Environment Bill is part of the government's response to the clear and scientific case and growing public demand for a step-change in environmental protection and recovery.

The 25 YEP sets out the ambition for ours to be the first generation to leave the environment in a better state than it was found in. Current UK policies are already producing notable improvements to the quality of our environment, but more efforts are needed in order to achieve the ambition of

the 25 YEP¹. The supplementary evidence report² annexed in the 25 YEP summarises the key environmental pressures, noting the importance of considering them systematically and designing integrated policy responses to improve the environment. The report also highlights that *'Both the environmental policies themselves, and the mechanisms by which their delivery is ensured, need to go further than they do now'*. The Environment Bill will establish new mechanisms through which our country will make decisions relating to enhancing the environment.

Now we have left the European Union, the UK will no longer be subject to the governance framework provided by the institutions of the European Union. To maximise on this opportunity, the Bill introduces new measures to transform our environmental governance by creating a new system which is tailored specifically to a UK context. The Bill also introduces a series of measures designed to protect and enhance the environment.

3. The rationale for government intervention

Globally, increasing consumption, population growth, climate change and loss of biodiversity make it important to improve the sustainable use of our finite environmental resources. The Environment Bill builds on the 25 YEP to take direct action to address the biggest environmental priorities of our age: air quality; the protection and enhancement of our landscapes, wildlife and habitats; more efficient handling of resources and waste, and better management of our surface, ground and waste water.

The use of natural resources is affected by market failures, as the services and goods provided often do not have a price and property rights cannot be secured. There are three principal market failures that the Environment Bill addresses:

Provision of public goods: Many aspects of the natural environment exhibit the characteristics of a public good: they are non-rival (e.g. the benefit an individual derives from improved air quality does not affect the benefit derived by someone else) and non-excludable (e.g. one cannot prevent someone else from enjoying the benefits of clean air). There is a reduced incentive for an individual to invest in improvements or maintenance of environmental assets if they cannot prevent others from 'free-riding' and are therefore unable to recoup the value of the investment. For example, if someone improves air quality, they cannot prevent others from deriving benefits from it. Without government intervention, 'goods' such as air quality may be under-provided by the market, meaning that the benefits derived from their use will be socially suboptimal.

Regulation of externalities: Activities which impact the environment can generate negative impacts that are larger than the associated benefits from these activities. As these negative impacts or costs do not accrue to those benefiting, the market does not fully reflect externalities in prices, which leads to levels of consumption or production which are not optimal for society over all. In this context, an absence of government intervention can lead to a misallocation of environmental resources away from their highest-value use. For example, without intervention,

¹ Defra, 25 Year Environment Plan
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf

² Defra, A Green Future: our 25 Year Plan to improve the environment. Annex 1 Supplementary evidence report.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/673492/25-year-environment-plan-annex1.pdf

a river may be unsustainably abstracted by businesses who use the water for producing goods, failing to take into account the impacts on downstream communities and ecosystems of depleting the water supply. The water in this example is used in a way that does not maximise its potential value.

Tackling asymmetric or incomplete information: The environment is complex and it is difficult for individuals and businesses to make appropriate decisions with limited information. There are also costs associated with the provision of such information. Limited data and evidence can lead to ineffective decision making, by increasing the risk of harmful practices or unintended negative consequences for the economy and the environment.

Problems with incomplete information could arise because the costs of acquiring information about environmental resources necessary to facilitate exchange could outweigh the benefits of any exchange. Examples would include ascertaining the risk of plant diseases. Likewise, one party to an exchange (typically the seller) may have more information about an environmental resource than the other thereby preventing a mutually beneficial exchange from taking place. An example here might include the cost of producing ecosystem service flows on farmland. There is a role for government in addressing these information problems, in order to mitigate the risk of harmful practices or unintended negative consequences.

The environment represents ‘an essential basis for economic growth and productivity over the longer term’.³ It contributes to broader, intangible benefits that are not fully captured in estimates of Gross Domestic Product (GDP), as too often these benefits are not expressed in monetary terms with the consequent risk of not being taken into account when decisions are needed. Natural capital is ‘the sum of our ecosystems, species, freshwater, land, soils, minerals, our air and our seas.’ These elements of nature bring value, either directly or indirectly, to the country at large. These natural assets benefit society in many ways, but chiefly by providing food, clean air and water, wildlife, energy, wood, recreation and protection from hazards”⁴. The government has developed its approaches to measuring and understanding how natural capital changes over time and space. These approaches help the assessment of the costs and benefits of changes in the level and type of environmental provision of air, water, soil and ecosystems supporting all forms of life.

4. The Environment Bill’s objectives and intended effect

The Environment Bill aims to establish a new and ambitious domestic framework for environmental governance. The Bill aims to manage the impact of human activity on the environment, creating a more sustainable and resilient economy, and enhancing well-being and quality of life. The measures in the Bill seek to engage and empower citizens, local government and business to deliver environmental outcomes and create a positive legacy for future generations.

³ Ibid.

⁴ Defra, 25 Year Environment Plan, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf

The Bill is underpinned by the natural capital approach. Natural capital assets support our economy by providing goods as vital as food, water, air, and raw materials. Natural assets give millions of people a place for leisure and recreation. If we want these essential services to be available to us and future generations it is vital that our environment is managed sustainably. The wider ambition of the Environment Bill is to rely on this evidence-based approach in order to deliver cost-effective measures aimed at improving the environment.

The Environment Bill has been prepared through consultations with the public on numerous measures including those relating to environmental governance, the clean air strategy, biodiversity net gain, trees, conservation covenants, packager producer responsibility, recycling, the deposit return scheme and water.

Additionally, the environment is a devolved matter subject to a small number of reserved areas, recognising the transboundary nature of environmental policy. Work has been carried out with the Devolved Administrations to identify policy areas across the Environment Bill that would benefit from being extended to Scotland, Wales and Northern Ireland.

The Bill will create **a new environmental governance system** which is built on international best practice and tailored specifically to a domestic context. It embeds environmental principles in future policy making and aims to strengthen environmental oversight. The new system aims to be clear and accessible, providing certainty to businesses and citizens.

The Environment Bill aims to improve **resource efficiency and sustainability** by moving our economy away from the 'take, make, use, throw' system to a more circular economy. Our ambition is to keep resources in use for longer and ensure that we extract the maximum value we can from them, including through reform of the UK's packaging producer responsibility system. This change would reduce emissions of greenhouse gases, helping to mitigate climate change.

The Bill aims to tackle one of the greatest environmental risks to health – poor **air quality**. It is estimated that long-term exposure to man-made air pollution in the UK has a significant impact on life expectancy, contributing to a number of serious health conditions⁵. Measures to address this problem include setting a legally binding target for fine particulate matter, and tackling smoke emissions through new measures on domestic solid fuel burning. Bill measures are expected to benefit public health directly, due to the reduced impact from health conditions such as heart disease, lung cancer, asthma and cognitive decline.

In addition to the health and social benefits of the nature and air quality measures, the Environment Bill also aims to secure long-term, **resilient water and wastewater services**, ensuring we are better able to maintain water supplies whilst making sure that that we have a cleaner, greener and more resilient economy.

The Bill legislates **to restore and enhance nature**, aiming to maximise the public benefits of ecosystems services, such as improvements in air quality, water flow control, outdoor recreation and physical activity. Nature measures aim to reduce the loss of thousands of hectares and create

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https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/734799/COMEAP_NO2_Report.pdf

thousands of new habitats; as well as to support better spatial planning for local areas, ensuring communities can benefit from the distinct opportunities their local environments can offer.

The Bill also proposes an enabling power to be exercised by Statutory Instrument(s) regarding regulation of the use of **Chemicals** in the UK, aiming to ensure a smooth transition to a UK chemicals regime now the UK has left the EU.

The expected impacts of the Bill measures planned at both primary and secondary legislation are outlined measure-by-measure in Section 6.

5. Description of options

5.1 The baseline option

The 'do nothing' option would not be able to secure the ambition envisaged by the 25 YEP, to be the first generation to leave the environment in a better state than we found it in. Innovative, cost-effective measures will need to be developed in order to realise this ambition: it cannot be achieved by doing nothing. Inaction would lead to further degradation of our vital natural assets, with long-lasting effects.

Furthermore, in the 'do nothing' or baseline option, now the United Kingdom has left the European Union, without any change to domestic governance processes, the UK would miss the opportunity to set a new system of environmental governance tailored to the UK context. The absence of a UK tailored governance system and the deterioration of our natural assets that would emerge in the 'do nothing' option mean that this option should not be seen as equivalent to the status quo.

5.2 Description of the proposed measures by Bill chapter

The Bill establishes a new domestic framework of environmental governance now we have left the European Union. The UK's ability to follow the 25 YEP will be further reinforced by a series of measures designed to protect and enhance the natural capital of the country.

5.2.1 Environmental governance

The Environment Bill establishes a new system of domestic environmental governance, which is composed of **five main pillars**:

The establishment of the **Office for Environmental Protection** (OEP) aims to strengthen domestic environmental accountability (see Annex 1): The Office for Environmental Protection is intended to provide independent assurance of government's delivery of environmental law and the 25 YEP, and impartial advice to support the development of improved measures for future application. These activities are intended to bolster and complement the domestic governance framework to ensure that the UK has the ability to implement environmental legislation in an improved manner, enabling the law to deliver its intended benefits. This intervention should

improve public engagement and accountability and ensure a long-term view of the environment in decision-making.

Environmental principles (see Annex 2) will be embedded into domestic law, ensuring they are taken into account in policy-making. The environmental principles are currently enshrined in EU law and act as a basis for all EU environmental policy-making. They are also important to avoid market failures related to the environment. The principles are already considered in policy-making but including them in primary legislation should ensure that they are applied more consistently and with greater clarity, which should improve the effectiveness of policy-making as well as help to protect the environment.

The **Environmental improvement plans** will require a new statutory cycle of monitoring, planning and reporting (see Annex 3): In 2018, the government published the 25 YEP, which identified goals for environmental improvement and the related actions needed to achieve them. However, this plan is not currently enshrined in law. The Bill imposes a duty on government to produce environmental improvement plans and to report annually to Parliament on progress.

Legally binding environmental targets aim to ensure that future governments and wider society implement the actions set out in the 25 YEP (see Annex 4). The actions set out in the 25 YEP are not legally binding, meaning that there is no certainty that future governments and wider society will implement them. For this reason, this measure will propose new powers for the government to set out specific environmental targets in secondary legislation. These targets should ensure that environmental improvement and protection become a short-term as well as a long-term priority for future governments.

The measure on **UK environmental protections** seeks to ensure that the UK continues to legislate for high environmental protection standards, by improving the transparency of changes to environmental legislation. Future governments will have to make statements to Parliament about whether proposed changes to primary legislation would represent a reduction in the level of environmental protection. The rationale for this measure is that giving Parliament more information on the environmental impacts of legislation will enable it to scrutinise legislation properly and hold the government to account on the commitments it has made (see Annex 5).

In addition the government will review every 2 years any significant developments in international environmental protection legislation and publish a report.

5.2.2 Waste and Resource efficiency

The Environment Bill aims to improve resource efficiency and sustainability by promoting a circular economy.

There are currently seventeen measures proposed in this chapter and most of these are enabling powers which will be defined in more detail at secondary legislation stage. However, there have been consultation-stage Impact Assessments and Statements of Impacts on how some of the enabling powers might be implemented in secondary legislation, for which indicative impacts on the environment, businesses and society at large are estimated. Some of these measures are expected to lead to negligible impacts whilst others are likely to be more significant. Impacts of these measures are described in Section 6.2. The respective Statement of Impacts are presented in the annexes to this document.

The concept of **Extended Producer Responsibility (EPR)** refers to businesses (typically manufacturers and importers), taking financial responsibility for the products and packaging they place on the market once they reach the end of life. This measure will reform existing producer responsibility schemes by requiring producers to pay the full costs, net of material revenues, of collecting and treating waste. This measure is an application of the polluter-pays principle. The primary legislation also enables EPR to cover new product and material categories. More information about this measure is provided in Annexes 13, 14 and 19.

The **Deposit Return Scheme (DRS)** is a form of extended producer responsibility (EPR) that contains an incentive based system for consumers too. It imposes a surcharge on a product when it is purchased, which is then rebated when it is returned to a designated collection point after use. The availability of a rebate introduces a monetary value and therefore creates an incentive for the consumer to return the product post-use. The surcharge and rebate can be set to reflect the true social and environmental costs of disposal. Successful return ensures the product can be recycled into secondary raw materials. A DRS also reflects the 'polluter pays' principle, as the costs net of material revenues are to be funded by the producers of the material in scope and the deposits that are left unredeemed due to improper disposal. This measure forms part of EPR, requiring that producers placing products on the UK market pay towards the recycling and safe disposal of those products when discarded by the final user. More information about this measure is provided in Annex 16.

The **Litter measure** covers two related powers concerning litter. The purpose of the measure is to improve enforcement against littering. The first power is for the Secretary of State / Welsh Ministers to issue statutory guidance on the use of litter authorities' enforcement powers. The second power is for the Secretary of State / Welsh Ministers to prescribe conditions to be satisfied by any person before they may be authorised by a litter authority to carry out enforcement functions. More information about this measure is provided in the Statement of Impacts for litter, included as Annex 15.

The **Consistency of recycling collections** would provide the powers to ensure that all local authorities in England collect a consistent, minimum core set of dry recycling and organic recycling materials. It would also provide powers to require businesses and public-sector organisations to segregate a core set of dry materials from their waste and, where required, food waste. More information about this measure is provided in Annex 21.

The **Food waste** measures extend existing producer responsibility obligations to waste prevention and redistribution and create powers to impose mandatory targets. The measure will create an obligation to redistribute surplus which further incentivises businesses to take action to reduce their food waste. This change should help to ensure that where negative externalities currently arise from food, either its production or its disposal, the burden of the costs will instead fall on the producer. More information about this measure is provided in Annex 20.

The **Single Use plastic** measure seeks to extend powers beyond those in section 77 of the Climate Change Act 2008 in order to add additional products to a list of single-use plastic items where a separate charge can be imposed. Extending existing powers would allow the application of a requirement to place a charge on a "product-by-product" basis and could be used to impose greater costs on products with higher environmental impacts. This change could encourage consumers to make more environmentally informed choices and, in turn, to demand more sustainable products. More info about this measure is provided in Annex 22.

Eco-Labeling provides the policy framework and powers to drive the production and consumption of more resource-efficient products through mandatory provision of consumer information via eco-labelling powers. More info about this measure is provided in Annex 18.

The **Eco-Design** measure allows the Secretary of State to (i) have powers to set product standards as to resource efficiency of non-energy-related products (ii) have powers to restrict what is placed on the market to ensure it complies with those product standards. These requirements will be enforced by a market surveillance authority, appointed by the Secretary of State. More information about this measure is provided in Annex 17.

Various other measures and powers are included to curb waste crime. More information about these measures is provided in the associated Statements of Impacts (see Annexes 6, 7, 8, 9, 10, 11 and 12).

5.2.3 Air quality

The Environment Bill aims to better enable both local and national government to tackle poor air quality. Air pollution is a negative externality, because polluters do not face the social costs that their activities generate. The Environment Bill will contribute to regulating this negative externality and to reducing air pollution by furthering the enactment of the polluter-pays principle.

The Air Quality chapter of the Bill proposes four measures:

The first measure imposes a duty on the Secretary of State to set a **target for the annual mean level of fine particulate matter (PM2.5)** in ambient air. At this stage it is not possible to predict the eventual impact of introducing this duty, without knowing the design of the target that will be subsequently set, and the timescale that will be allowed. Some initial considerations of the potential impacts are, however, set out in the relative Statement of Impacts (see Annex 26).

The Bill also aims to improve the framework within which local authorities tackle air pollution by, for example, ensuring responsibility for tackling air pollution is shared across local government structures and with relevant public bodies, and by better enabling local government to tackle emissions from domestic burning. These changes will be achieved by **amendments to the Clean Air Act 1993** (see Annexes 23 and 24), alongside **amendments to the Environment Act 1995** (see Annex 25). These changes represent the Bill's second and third air quality measures respectively.

In addition, this chapter will provide government with new powers, such as **environmental recalls of motor vehicles** (see Annex 27), and simple-to-use powers to address air quality in their areas.

5.2.4 Water

The Environment Bill will introduce ten measures to improve water quality and manage water more sustainably. The UK water management sector is characterised by regional natural monopolies meaning that economic regulation is required to deliver outcomes for the consumer. Beyond economic regulation, intervention is required to ensure that further market failures are corrected, delivering the best results for consumers and the environment.

The Environment Bill hopes to improve the regulation of these monopolies by:

- a) encouraging collaboration and research into seeking **more efficient management solutions** between companies and other water-using sectors, which can benefit both consumers and the environment, at the regional and interregional level (see Annexes 30 and 31)
- b) **reforming Ofwat's powers** (see Annexes 32, 33, and 34).
- c) **strengthening the resilience of water and sewerage networks and assets** (see Annexes 30 and 31).

The Environment Bill also aims to tackle negative externalities related to the use of water resources by applying the polluter-pays principle to unsustainable abstraction – a negative externality (see Annex 28). Currently, it is other abstractors who have to bear the cost of correcting unsustainable abstraction, through an additional charge used to compensate the unsustainable abstractors when their licences are changed or revoked. This measure will now remove the liability for the Environment Agency to pay this compensation, thus moving the system in line with the polluter-pays principle. Abstractors could also have their **licences varied** without the Environment Agency being liable to pay compensation, if the licence is underused over a period of 12 years by 75% or less – as long as the variation still authorises the abstractor to abstract the quantity they reasonably require (see Annex 29).

Water quality regulation will be upheld by enabling future updates to the **list of priority substances** which are considered harmful to the water environment and their respective maximum concentration levels in the absence of section 2(2) ECA 1972 powers now the UK has left the EU (see Annex 35).

This chapter also includes a power that will allow the **separation of functions exercisable in the Solway-Tweed river basin district** (see Annex 36).

The Environment Bill aims to improve flood and coastal erosion risk management at a local level by enabling the creation of new and expansion of existing internal drainage boards (see Annex 37).

5.2.5 Nature and conservation covenants

The Bill introduces a new framework of measures to support lasting action for nature. The measure of the Nature chapter with the highest impacts on business is the implementation of **Biodiversity Net Gain**⁶. For developments it is a means of ensuring that, for a given site, there is an overall increase in habitat area or quality following a new development. The Impact Assessment for this policy has already been published and it received a green rating from the Regulatory Policy Committee (See Annex 38).

Government will introduce new duties for spatial planning for nature through **Local Nature Recovery Strategies (LNRSs)**. The whole of England will be covered by LNRSs. Each LNRS will include a statement of biodiversity priorities for the area covered by the strategy and a local habitat map that identifies opportunities for recovering or enhancing biodiversity. This measure

⁶ Biodiversity net gain and local nature recovery strategies

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/839610/net-gain-ia.pdf

has also been assessed within the aforementioned Biodiversity Net Gain & LNRS Impact Assessment (See Annex 38).

The **Forestry Enforcement** measures aim to ensure that the enforcement regime around felling provides a credible deterrent, and that the environmental and amenity damage which is done by unlicensed felling can be reversed. The Forestry Commission proposes six amendments to the Forestry Act 1967, specifically surrounding enforcement of non-compliance with the felling licence regime. See the Statement of Impacts (Annex 42) for more information.

The **Duty to consult on felling trees** introduces a duty on local authorities to consult with local communities to ensure that consultation takes place when a street tree is to be felled and that the consultation process meets certain standards. See Annex 41 for more information.

The amendment to section 40 of the **Natural Environment & Rural Communities (NERC) Act** seeks to replace the existing duty in section 40 of the NERC Act 2006 with an enhanced duty on public authorities in England. The enhanced duty will include strengthened wording and impose a reporting requirement on some public authorities. See Annex 39 for more information.

In addition to the measures in the Nature Chapter, the Bill legislates to enable the use of **Conservation Covenants**. A conservation covenant is a private, voluntary agreement between a landowner and a “responsible” body, such as a conservation charity, government body or local authority to deliver conservation for the public good. A conservation covenant sets out obligations in respect of the land, which are legally binding on the landowner and generally will be on subsequent owners of the land. See Annex 40 for more information.

5.2.6 REACH amendment

The Environment Bill provides powers to amend **REACH Chemical regulations** that were previously part of EU law. The UK REACH statutory instrument under the European Union (Withdrawal) Act converted existing EU REACH regulation into national law, with powers to amend the annexes only. The Bill powers ensure the regulation, including its articles, can be amended to provide government with the flexibility to respond to possible future changes in regulatory needs. See Annex 43 for more information.

6. Impacts by chapter of the Bill

This section reports estimates, both qualitative and quantitative, of the main impacts of the measures for each chapter of the Environment Bill. A more detailed description of these impacts, and explanations of how they were estimated, are given in the Statements of Impacts and the Biodiversity Net Gain Impact Assessment, which are provided as annexes to this document. For most of these measures there are uncertainties about their effects and interactions across different policies leading to some challenges in assessing impacts to the diverse actors who use the environment. For measures where evidence is limited or the level and size of activities are not specified (e.g. 25 YEP targets) and/or where there is a high level of uncertainty on future impacts (e.g. environmental principles), costs have not been quantified.

The Environment Bill is composed of measures that are directly implemented through primary legislation and measures that establish frameworks to design and implement secondary

legislation. The analysis of the impacts of measures directly implemented through primary legislation is more detailed than the analysis of the impacts of the secondary legislation likely to follow the Bill, as the details of this secondary legislation are yet to be finalised. Appropriate Impact Assessments will be carried out ahead of secondary legislation. Throughout this document, there has been a distinction between the impacts that are likely to arise from primary legislation and the possible impacts that could arise from the likely secondary legislation.

The estimates reported in this chapter represent an initial and illustrative indication of the qualitative and quantitative impacts of the Environment Bill. Both quantified and qualitative costs and benefits have been reported by Environment Bill chapter (see Tables 2-11 from Sections 6.1-6.6).

Table 1 below lists the measures for which costs and benefits have been quantified. These have been expressed in 2018 prices and 2020 present value. The overall costs and benefits may not be indicative of the final overall costs and benefits as a result of policy uncertainty with secondary legislation measures. The total impacts for each chapter are estimated for the quantified primary legislation measures and then for all quantified measures.

Table 1: Monetised total costs and benefits by chapter, using best estimates from Impact Assessments and Statements of Impacts. (2018 Price Year, 2020 Present Value)

Chapter & Measure for which costs and benefits were monetised	Annex no.	Is Impact at Primary or Secondary?	Annualised Benefits (£m)	Annualised Costs (£m)	Total Benefits (£m, PV terms)	Total Costs (£m, PV terms)	NPV
Waste and Recycling							
EPR (assuming DRS all-in)	13, 14, 19	Secondary	1,260	1,286	10,843	11,067	-223
DRS all-in	16	Secondary	985	756	8,478	6,504	1,974
Recycling Consistency	21	Secondary	557	443	5,935	4,725	1,210
Total Primary Legislation Impacts			£ -	£ -	£ -	£ -	
Total Primary and Secondary Legislation Impacts (indicative)			£ 2,801	£ 2,484	£ 25,256	£ 22,296	
Air Quality							
Amendments to the Clean Air Act	23	Primary	n/a	3.7	n/a	31.4	n/a
Amendments to the Environment Act	25	Primary	n/a	4.4	n/a	38.3	n/a
Total Primary Legislation Impacts			£ -	£ 8.1	£ -	£ 69.7	
Total Primary and Secondary Legislation Impacts (indicative)			£ -	£ 8.1	£ -	£ 69.7	
Water							
Statutory Drainage and Wastewater Management Plans (DWMPPs)	30	Secondary	n/a	4.0	n/a	34.2	n/a
Waste Resources Management Plans	31	Secondary	n/a	0.3	n/a	2.6	n/a
Strengthening Ofwat Licence Condition Modification Powers	32	Primary	n/a	0.5	n/a	4.5	n/a
Electronic Service of documents under Water Industry Act 1991	33	Primary	n/a	-0.5	n/a	-4.3	n/a
Ofwat information gathering power	34	Primary	n/a	0.0	n/a	0.1	n/a
Valuation calculation for internal drainage boards (IDBs)	37	Secondary	n/a	3.6	n/a	31.3	n/a
Total Primary Legislation Impacts			£ -	£ 0.0	£ -	£ 0.3	

Total Primary and Secondary Legislation (indicative)			£ -	£ 7.9	£ -	£ 68.3	
Nature							
Biodiversity Net Gain & LNRS	38	Primary	1,374	209.1	11,219	1,799.9	9,419
NERC Amendment	39	Primary	n/a	0.7	n/a	6.2	n/a
Urban Trees (Duty to Consult)	41	Primary	n/a	2.8	n/a	24.1	n/a
Forestry Enforcement	42	Primary	n/a	0.0	n/a	0.0	n/a
Total Primary Legislation Impacts			£ 1,374	£ 212.6	£ 11,219	£ 1,830.2	
Total Primary and Secondary Legislation Impacts (indicative)			£ 1,374	£ 212.6	£ 11,219	£ 1,830.2	
Whole Bill							
Total Primary Legislation Impacts			£ 1,374	£ 220.7	£ 11,219	£ 1,900.1	
Total Primary and Secondary Legislation (indicative)			£ 4,175	£ 2,713	£ 36,475	£ 24,264	
<p>This table includes the quantified benefits and costs from the Environment Bill. These are only indicative of the overall final impacts, as measures of secondary legislation enacted through powers will vary depending on the preferred policy option that is taken forward at that time. All secondary legislation will be further assessed at the relevant stage of legislation. Details on the methods used to estimate these benefits and costs can be found in their respective Statements of Impacts or, for some waste measures, in their respective consultation Impact Assessments. The estimated benefits and costs of waste measures are provisional figures as subject to review in the light of forthcoming results from further primary research. The figures indicating the costs and benefits of waste measures in the above table may be different to the total costs and benefits for waste and resources indicated elsewhere in this evidence report (eg when illustrating the waste and resource efficiency measures by sector rather than by measure).</p>							

All costs and benefits reported in the following sections are in 2018 prices and are annualised present value figures, unless otherwise stated. Although different policies start at different times, for consistency costs and benefits have been expressed in 2020 present value⁷. As such, the figures reported in this document may not match exactly those stated in their respective Statements of Impacts and Impact Assessments (see annexes), which in certain cases use different price years and present value bases.⁸

Impacts on the Justice System will be determined in collaboration with Ministry of Justice and will follow the appropriate government processes in line with the Justice Impact Test guidelines⁹.

The following sections of this chapter include tables distinguishing impacts arising from primary legislation from those indicative impacts expected at secondary legislation stage. In certain circumstances impacts fall under both primary and secondary legislation stages. In such cases, impacts have been included in both tables, but without being counted twice in cumulative figures.

The impacts in the tables for both primary and secondary legislation have been divided into three main categories, environmental and social, businesses and consumers, and public-sector impacts.

6.1. Environmental governance

⁷ Present value of a stream of future costs and benefits, which have been discounted to account for the time preference for the present. No consistent assumption has been made as to the start date of each policy: the assumed start date varies across the policies.

⁸ If the Impact Assessment or Statement of Impacts made use of a present value base prior to 2020, their estimates would be lower than in this document (i.e. there would be a greater gap between the present value base and the start year of the policy, meaning that costs and benefits would be further discounted) and vice versa. The same applies to costs and benefits in different price bases (e.g. figures expressed in 2016 prices are lower than the ones expressed in 2018 prices).

⁹ <https://www.gov.uk/government/publications/justice-impact-test>

Table 2: Impacts of Environmental Governance measures arising from primary legislation

	Environmental and social impacts	Business and consumer impacts	Public-sector impacts
Benefits	<p>Improved policy-making on the environment</p> <p>Increased trust in national environmental authorities</p> <p>Secured environmental and economic benefits of environmental law and the 25 YEP</p>	<p>More regulatory certainty for businesses and contribution to securing benefits from environmental regulation</p>	<p>A better and more targeted risk-based approach to manage UK's natural capital</p> <p>Improved evidence on significant developments in international protection legislation</p> <p>A reduction in third-party Judicial Review's resulting in cost savings on legal proceedings by public authorities.</p>
Costs		<p>Transaction costs for businesses from familiarisation with new system</p>	<p>The establishment of the OEP will entail set-up and ongoing costs covered by grant-in-aid. For example, there are extra financial costs which include both staff and non-staff resources required to fulfil its statutory functions sufficiently. The financial costs will be published in due course.</p> <p>Minor costs of compliance to local authorities</p> <p>Additional impacts on public authorities as a result of the duty to cooperate with the OEP in connection with the exercise of its functions</p> <p>Costs incurred from embedding environmental principles in government policy-making.</p> <p>Minor costs for producing a report on significant developments in international environmental protection legislation</p>

Table 3: Impacts from Environmental Governance arising from secondary legislation (provisional)

	Environmental and social impacts	Business and consumer impacts	Public-sector impacts
Benefits	<p>Improved environmental policy-making on the environment</p> <p>Increased trust in national environmental authorities</p> <p>Secured environmental and economic benefits of environmental law and the 25 YEP</p>	<p>More regulatory certainty for businesses and contribution to securing benefits from environmental regulation</p>	<p>A better and more targeted risk-based approach to manage UK's natural capital</p> <p>Improved evidence on significant developments in international protection legislation</p>

Costs		<p>Transaction costs for businesses from familiarisation with new system</p> <p>The potential costs to businesses and consumers from complying with environmental targets depend on the level of ambition of the additional targets.</p> <p>Potential additional secondary impact costs to businesses and consumers from any changes to policy on the basis of the environmental principles policy statement</p>	
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As mentioned in section 5.2.1 the Environment Bill introduces a new system of environmental governance, which is composed of five main pillars: a) the establishment of the Office for Environmental Protection (OEP); b) the embedding of environmental principles in government policy-making; c) placing the 25 YEP on a statutory footing via a new statutory cycle of monitoring, planning and reporting, d) establishing legally binding environmental targets as part of this framework in order to ensure that future governments and wider society will implement those actions, and e) improving the transparency of changes to environmental primary legislation, through a measure on UK environmental protections.

Environmental and social impacts

These measures aim to increase the effectiveness of environmental law, which should lead to higher levels of environmental protection and enhancement. The OEP is designed to hold government to account on the implementation of the Environmental Improvement Plans, increasing their effectiveness. The establishment of SMART (Specific, Measurable, Achievable, Realistic, Time-limited), legally binding targets through secondary legislation should better enable the OEP and others to hold government accountable, and provide more certainty for businesses, stakeholders, investors and innovators, despite some costs due to additional regulations. In monitoring and reporting on the implementation of environmental law, the OEP aims to ensure that the benefits of environmental law are fully realised and that government and public authorities are more accountable for the impacts of their decisions and policies on the environment, increasing transparency of and trust in the UK’s environmental authorities. Through monitoring both the implementation of the Environmental Improvement Plans and environmental law, the OEP will be able to highlight interdependencies and trade-offs to government, enabling a more overarching approach to environmental issues. The Environment Bill will also embed environmental principles in government policy-making. These changes are designed to help put in place effective, transparent, accountable, and consultative processes that assist in the design and implementation of measures to protect environmental quality, and identify opportunities to enhance the environment for future generations.

Business and consumer impacts

The intention is that businesses will benefit from more regulatory certainty, allowing the implementation of long-term plans and investments.¹⁰ There are likely to be impacts on businesses from complying with new regulations, including regulations adopted as a result of the setting of new targets. These regulations will be defined at the secondary legislation stage. The new governance system will be able to provide a more cost-effective protection in line with existing standards.

Public-sector impacts

The creation of this new governance system will bring costs to the public sector, largely consisting of the set-up and ongoing costs of the Office for Environmental Protection, as well as the additional burden of needing to have due regard to the environmental principles policy statement in policy-making. For example, there are extra financial costs which include both staff and non-staff resources required to fulfil the statutory functions of the OEP sufficiently.

Local authorities may face extra minor costs due to compliance. Moreover, public authorities will be required to give reasonable assistance to the OEP in the exercise of its functions. It is expected that this requirement will result in only a moderate increase in administrative burden, as the OEP will pursue scrutiny and enforcement activities in a proportionate manner.

It is also anticipated that, relative to the option of not creating a new body, the establishment and activities of the OEP will reduce the number of third-party judicial reviews which it is expected would otherwise be heard. In turn, this should reduce the amount of time and money spent by public authorities defending such cases in the High Court. In addition to these benefits, the Office for Environmental Protection will aim to contribute to securing the delivery of the benefits expected from environmental legislation. Previous evidence indicated net benefits of DEFRA regulatory stock (not all of which is environmental regulation) to be around £7.5 billion per year¹¹. Even if the OEP were to secure only a small part of these benefits, the effects could be very significant.

Risks and Assumptions

The cost estimates for the OEP are still indicative and the benefits will depend on the body's future specified remit. The impact of the environmental principles policy statement will depend on the type and extent of changes in policy measures. In terms of assessing costs and benefits associated with the establishment of the 25 YEP targets, there are significant risks to introducing new targets in primary legislation as the scientific, environmental and economic evidence required to justify specific targets is currently being developed. Overall, the main limitation of deriving costs and benefits associated with these measures is the fact that at this stage it is not possible to foresee the mix of policies that will be in place in secondary legislation, which will have implications for the governance measures to be introduced.

¹⁰ There exists a large body of literature which shows that good governance including strong institutions is positively linked to long-term economic growth. Haidar (2012) estimates that on average, a specific business regulatory reform is associated with an average 0.15% increase in the annual growth rate of a country's gross domestic product. Acemoglu and Robinson (2008) argue that institutions are "the fundamental cause of economic growth and development differences across countries". Burtless (2001), makes the case that better regulation also enables desirable social and development outcomes to be achieved.

¹¹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/406225/defra-regulation-assessment-2015.pdf. Only a proportion of the annual net benefits is related to environmental regulation falling under the scope of the OEP. Some of the benefits associated with the stock of DEFRA regulation were not assessed in economic terms.

6.2 Waste and Resource Efficiency¹²

Table 4: Impacts arising from Waste and Resource Efficiency measures through primary legislation

	Environmental and social impacts	Business and consumer impacts	Public-sector impacts
Benefits	Reduction in waste crime due to improved enforcement (See Annexes 11 and 12)		
Costs			Negligible change in government costs (See annexes 11 and 12)

Table 5: Impacts arising from Waste and Resource Efficiency measures through secondary legislation (provisional)

	Environmental and social impacts	Business and consumer impacts	Public-sector impacts
Benefits	<p>Better resource management and efficiency, reduction in waste and increase in reuse and recycling</p> <p>Reduction in waste crime with more waste being managed in the legitimate economy and associated local environmental and social consequences</p> <p>Reduction in GHG emissions. Initial quantified net benefits arising from secondary legislation include:</p> <ul style="list-style-type: none"> £150 million annualised GHG emission net benefits from consistency of recycling collections £25 million annualised GHG emission net benefits from DRS on drink containers and EPR packaging <p>Reduction in littering activities and societal disamenities deriving from it (e.g. annualised £889m¹³ litter disamenity benefit from DRS). This also includes benefits deriving from a clean environment, such as reduced risk to wildlife of ingesting or becoming entangled in litter.</p>	<p>Benefits to consumers from better information, increased recyclability and expected lifetime of products</p> <p>Benefits to businesses in terms of higher revenues from recycled products and market opportunities for technology innovation</p> <p>New business opportunities to invest in waste infrastructure such as recycling facilities</p> <p>Reduced time and financial burden on citizens wishing to make complaints about incidences of littering</p> <p>Reduction in crimes related to waste and corresponding increase in demand for legitimate waste sector services</p> <p>Initial quantified benefits arising from secondary legislation suggest there could be a £103 million annualised net benefit to businesses from consistency of recycling collections.</p>	<p>An Extended Producer Responsibility for packaging waste and a Deposit Return Scheme for specified drinks containers could save all local authorities across the UK more than £900 million (annualised).</p> <p>Reduced tax evasion (e.g. from landfill tax) from illegal operators</p> <p>Placing the responsibility on producers for the cost of managing products/materials when they become waste will reduce the burden on the taxpayer and move it onto those who can design their products and materials for re-use, repair and recycling.</p>
Costs		Increased cost to business at secondary legislation stage under the obligations of the	Upon secondary legislation, new EPR and DRS schemes will need to be implemented.

¹² The impacts of secondary legislation are provisional and appropriate analysis and Impact Assessments will be carried out ahead of secondary legislation.

¹³ This figure is based on earlier research commissioned by DEFRA. However further research findings are emerging and are presently being evaluated.

		<p>Extended Producer Responsibility (EPR) for packaging, Deposit Return Scheme for drinks containers, and products' material efficiency standards, ecolabelling, and conditions prescribed for litter enforcement officers. Some of these costs may be passed down to consumers.</p> <p>Initial estimates for the DRS on drink containers and EPR for packaging suggest there could be a circa £1.0 – £1.4 billion net annualised present value cost to businesses.</p> <p>Increased cost to consumers if charged for single-use items and if they choose not to redeem deposits as part of deposit return scheme. Costs to business from having to segregate dry materials and food waste for recycling as necessary</p>	<p>Additional costs to local authorities for collection of materials – the government has made clear that the costs of new statutory duties will be covered in line with New Burdens Doctrine.</p> <p>Initial indicative quantified costs arising from secondary legislation: £373 million annualised net costs from collections for the consistency of recycling measure (of which £79 million is to local authorities)</p>
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Note: All numbers reported in this table and in the following sections are in 2018 prices. Although different policies start at different times, 2020 has been used as the present value start year, so as to have consistency across all policies in the Environment Bill. As such, figures reported in this document may not match what is stated in their respective Impacts Assessments and Statements of Impacts, which instead may use different prices years and present value start years.

The figures in Table 1 include all the costs and benefits of the different waste measures. The figures elsewhere in this Impact Assessment have been selectively chosen to illustrate poignantly the waste and resource efficiency measures by sector rather than by measure, which is why they do not add up to the totals in Table 1.

Details on the breakdown and composition of benefits and costs for DRS, EPR and the Consistency of Recycling Collection measures can be found in their respective Statements of Impacts and consultation Impact Assessments.

Most measures in this chapter will be implemented through secondary legislation. For this reason, the description of impacts reported below is mainly qualitative. Indicative quantification from first consultation stage Impact Assessments has been provided for three measures. The figures in Table 1 include all the costs and benefits of the different waste measures. The figures elsewhere in this Impact Assessment have been selectively chosen to illustrate poignantly the waste and resource efficiency measures by sector rather than by measure which is why they do not add up to the totals in Table 1. The Environment Bill sets requirements for households and businesses to collect a consistent set of materials for recycling¹⁴ (with provision for other materials to be added and for exemptions to be made through secondary legislation). It also sets out a framework to implement, through secondary legislation, provisions for a deposit return scheme (DRS) on drink containers¹⁵ and extended producer responsibility (EPR) for products, the first application of which will be to reform the UK packaging producer responsibility system¹⁶.

The Environment Bill aims to change fundamentally the way government, businesses and individuals produce and consume products. Waste management is a major source of environmental pollution with evidence suggesting that 80% of the damage inflicted upon the environment when products become waste can be avoided if more thoughtful decisions are made

¹⁴ Consistency in household and business recycling IA: https://consult.defra.gov.uk/environmental-quality/consultation-on-consistency-in-household-and-busin/supporting_documents/recycleconsistencyconsultia.pdf

¹⁵ Deposit Return Scheme consultation IA: https://consult.defra.gov.uk/environment/introducing-a-deposit-return-scheme/supporting_documents/depositreturnconsultia.pdf

¹⁶ UK packaging reform consultation IA: https://consult.defra.gov.uk/environmental-quality/consultation-on-reforming-the-uk-packaging-produce/supporting_documents/packagingepconsultimpactassessment.pdf

at the production stage¹⁷. The waste measures included in the Environment Bill aim to reduce these environmental costs by improving resource efficiency through material efficiency standards and increased recyclability of products. These improvements will be sought through a combination of demand and supply-side policies, aimed at making polluters pay for the environmental and social costs of their activities. Pressure on the environment and the economy also comes from illegal waste activities, the impact of which on the UK economy in 2013 was estimated to be between £568 million and £808 million per year.¹⁸ For this reason, the Environment Bill aims to tackle waste crime and illegal operations related to it.

Environmental and social impacts

The measures included in this chapter aim to improve resource efficiency, increase recycling rates and decrease the amount of waste generated. Improving resource efficiency would reduce pressure on raw materials and resources, delivering significant social benefits. These benefits come from improved recycling rates, decrease in litter and a reduction of 20 million tonnes of greenhouse gas emissions in 10 years. Further detail on the estimated emissions reductions can be found in the first DRS, EPR and recycling consistency consultation Impact Assessments respectively.¹⁹ Likewise, ensuring producer responsibility obligations can be applied at all levels of the waste hierarchy is expected to result in a reduction of food waste and associated GHG emissions and an increase in the redistribution of food surplus.

In addition, the waste crime measures aim to tackle illegal behaviours, in order to ensure that the environment is protected and enhanced. These measures are included in the Resource and Waste Strategy (RWS)²⁰, which also commits government to improving consumers' information on the products they buy, creating more effective and efficient processes to tackle waste crime and improving waste data.

Reducing litter would reduce the negative environmental impact and social disamenities. Initial analysis of the DRS on drink containers suggest annualised benefits will run into the hundreds of millions of pounds from the associated reduction of litter disamenity. Further litter measures will also improve confidence that enforcement activities are carried out in line with government guidance, in a proportionate and effective manner.

Business and consumer impacts

The application of the polluter-pays principle through EPR will increase businesses' costs. However, it will ensure those most capable of reducing waste, the producers, become responsible for the costs of managing products once they become waste. Within this system costs can be apportioned in order to incentivise waste prevention or to be easily recycled. This is because it is the producers who can better design products and materials so they can be repaired, re-used and recycled rather than being consigned to waste. Producers can also reduce the amount of material used to produce goods and the amount of packaging goods use. Using less material is more cost-effective for producers and is environmentally beneficial. These impacts could lead to some costs

¹⁷ WRAP (2013) [Embedding Environmental Sustainability in product design](#)

¹⁸ The Environmental Services Association (2014) Waste crime: Tackling Britain's dirty secret - http://www.esauk.org/esa_reports/ESAET_Waste_Crime_Tackling_Britains_Dirty_Secret_LIVE.pdf

¹⁹ Deposit Return Scheme consultation IA: https://consult.defra.gov.uk/environment/introducing-a-deposit-return-scheme/supporting_documents/depositreturnconsultia.pdf

UK packaging reform consultation IA: https://consult.defra.gov.uk/environmental-quality/consultation-on-reforming-the-uk-packaging-produce/supporting_documents/packagingepconsultiaimpactassessment.pdf

Consistency in household and business recycling IA: https://consult.defra.gov.uk/environmental-quality/consultation-on-consistency-in-household-and-busin/supporting_documents/recycleconsistencyconsultia.pdf

²⁰ Defra [Resources and waste strategy for England](#)

being transferred to consumers, although consumers can avoid these higher costs by choosing more resource-friendly goods.

Impacts on the economy from this chapter will arise only from secondary legislation: further analysis will be carried out at that point. Initial and indicative analysis from consultations on DRS for drink containers and EPR for packaging estimate that these measures will jointly deliver net present annualised costs to business of £1.0 - £1.4 billion. Actual costs to business will be determined by the type of DRS for drinks containers that is introduced, with the lower bound being based on an 'on the go' DRS and the higher bound an 'all-in' DRS²¹. On the other hand, initial analysis of the consistency of recycling collections measure estimates that it will deliver net benefits to businesses of £103 million a year from improved waste collections practices. Although reforms to separate collections of recyclates are being introduced in the Environment Bill, the subsequent secondary legislation will determine the application of duties and any exemptions, such as for micro businesses. For this reason, the detailed assessment of impacts will be considered at the secondary legislation stage.

Measures in this chapter are expected to lead to other types of business impacts at the secondary legislation stage, which are described qualitatively at this stage. For example, resource efficiency standards are likely to generate short-term cost increases for some producers as they adjust their manufacturing methods²². However, these standards are expected to encourage innovation and the adoption of more environmentally and economically efficient solutions, for which expanding markets are expected, because of the consumer benefits of durability and reparability. Consumers would benefit directly from increased lifespans and slower depreciation in value. The upfront price of products might increase in the short run, but once bought and kept for a longer time period, the net cost of maintaining the product might be lower relative to repurchasing.

Consumer information measures such as labelling will have some associated costs for business including the costs of having to understand ratings systems or to affix labels, but these measures would allow consumers to make more informed purchasing decisions. These information measures can enhance corporate green credentials, not only strengthening public confidence but also generating new customer loyalties for more environmental-friendly producers. Higher resale prices, as well as greater potential for repair as a result of both resource efficiency standards and consumer information, are expected also to support the repair and the nascent "second-life sector", expected to be based in the UK, to the benefit of consumers and businesses.

Charges for single-use plastic items can only be applied to products supplied in connection with the sale or supply of a good or service. Typically these products are provided free at the point of purchase. In some instances, where the single-use plastic item may determine the demand for the main good or service, a charge could result in reduced demand and potentially cause revenue losses to businesses selling these items. However, businesses may choose to keep the charge or to donate it to charity, as some businesses have done in response to the current legislation for the single-use carrier bag charge. Both the scale and direction of this impact depend on the substitutability of single-use plastic items for plastic-free alternatives. Substitutability will be assessed on a case-by-case basis as secondary legislation is developed. In addition, the broader power acquired in the Environment Bill to place a charge on any single-use plastic item is also

²¹ These costs to business estimation also assume unredeemed deposits consumers are not used to part-fund the scheme. The DRS for drinks containers consultation-stage Impact Assessment can be found online.

https://consult.defra.gov.uk/environment/introducing-a-deposit-return-scheme/supporting_documents/depositreturnconsultia.pdf.

²² Costs and benefits are product specific, and will be assessed in associated Impact Assessments should the powers acquired in primary legislation be applied in secondary legislation.

expected to generate business savings from reduced stocks of these items²³. Any net savings to business from increased economic efficiency might indirectly be passed onto consumers in the form of lower prices.

Some waste crime measures will impose compliance costs. These costs include transaction costs related to familiarisation for instance, where stakeholders will have to train or hire additional staff to understand the new regulation and handle the new requirements. Some of these requirements will require monitoring, which itself might impose additional costs to businesses. The introduction of mandatory electronic waste tracking will probably lead to additional costs to business in the use of the new system and benefits in removing the existing system of burdensome waste transfer notes. These impacts will be further assessed ahead of secondary legislation introducing the waste tracking system.

Other measures can bring about costs related to changes in business practices, or from loss of revenue from reduced demand. However, the scale and direction of these costs will likely vary on an individual basis. Changes to the exemptions regime under the waste crime provisions for instance will lead to some moves from exemptions to permits, or vice versa, which will impose additional costs to some businesses but generate savings for others. Waste crime measures in the Environment Bill are intended to provide a level playing field for legitimate businesses by tackling illegal or suboptimal activities. The measures are designed to deter non-compliant and poor performing businesses from undercutting other firms, incentivise them to improve their business practices, or crowd them out of the market. These measures intend to benefit not only legitimate and well performing businesses – rewarding them with additional revenue and increased market share – but also the economy overall by reducing moral hazard behaviours²⁴.

Public-sector impacts

Public-sector impacts are expected at secondary legislation stage. The consistency of recycling collections measures will likely result in costs to the public sector, arising from losses in landfill tax revenues and from policy support to the non-household municipal sector. Indicative analysis of this measure estimates annualised present value costs to the public sector of £373 million for the consistency of recycling collections measure, of which £79 million is to local authorities.

However, budgetary pressure on public organisations means there is a real premium on initiatives which can deliver improved services for less or reach more people with the same level of investment. The measures in this chapter are designed to make it easier for local authorities to carry out their existing waste management and enforcement activities reducing the resource burden and achieving greater success in tackling issues around waste crime.

Potential reduction in local authority financial burdens from Extended Producer Responsibility for packaging waste and a Deposit Return Scheme for specified drinks containers could exceed £900 million (annualised), across all local authorities in the UK.

²³ This follows the same argument as the charge on single-use carrier bags, of which the extension to all retailers is expected to generate business annual savings of £91 million (in 2016 prices). https://consult.defra.gov.uk/environmental-quality/extending-the-single-use-bags-charge/supporting_documents/carrierbagsconsultia.pdf

²⁴ Negative behaviour that arises when someone has an incentive to take risks because they do not face the full costs or responsibility of their action. Measures such as the power to adjust fixed penalty levels in the future, or the introduction of new Environmental Agency charging schemes, will ensure that non-compliant businesses bear the social cost of their illegal activities.

Risks and Assumptions

The figures above refer to the measures covering a Deposit Return Scheme, Extended Producer Responsibility and the Consistency of Collection. The key assumptions for these are included in the specific Statements of Impacts (annexed in this Impact Assessment). Specific information about impacts associated with each of these measures is also contained in various consultation Impact Assessments alongside the 2019 Consultation on Consistency in Household and Business Recycling Collections in England²⁵, consultation on Introducing a Deposit Return Scheme (DRS) in England, Wales and Northern Ireland²⁶ and the Consultation on reforming the UK packaging producer responsibility system.²⁷

6.3 Air Quality

Table 6: Impacts arising from Air Quality measures through primary legislation

	Environmental and social impacts	Business and consumer impacts	Public-sector impacts
Benefits	<p>Reductions in air pollution, with resultant benefits for public health, cleaning and amenity benefits associated with building soiling and ecosystem services</p> <p>The measures in the Bill aim to contribute to the achievement of the Clean Air Strategy, which will have significant benefits to society.</p>	<p>Improved air quality leads to increased workforce productivity (reduction in no. of sick days etc.) and crop yields.</p>	<p>Improved collaborative working across public bodies, through exchange of knowledge and data</p>
Costs		<p>One-off cost of up to £1.9 million from Clean Air Act amendments (£0.2 million annualised)</p>	<p>One-off costs to local authorities from adjusting to Clean Air Act Amendments: up to £4.5 million (£0.5 million annualised)²⁸</p> <p>Ongoing costs to local authorities of complying with Clean Air Act amendments: £2.9m per year (£25.0m in total over appraisal period)</p> <p>Ongoing costs to local authorities of complying with amendments to the Environment Act: £4.4m per year (£38.3m in total over appraisal period)²⁹</p>
<p>Note: All numbers reported in this table and in the following sections are in 2018 prices. Although different policies start at different times, 2020 has been used as the present value start year, so as to have consistency across all policies in the Environment Bill. As such, figures reported in this document may not match what is stated in their respective Impacts Assessments and Statements of Impacts, which instead may use different prices years and present value start years.</p>			

²⁵ <https://consult.defra.gov.uk/environmental-quality/consultation-on-consistency-in-household-and-busin/>

²⁶ <https://consult.defra.gov.uk/environment/introducing-a-deposit-return-scheme/>

²⁷ <https://consult.defra.gov.uk/environmental-quality/consultation-on-reforming-the-uk-packaging-produce/>

²⁸ These costs represent what is expected to be an absolute upper bound based on the very limited data available. This estimate is based on every possible local authority enacting the optional measure and the upper limits of uptake within these local authorities. This one-off cost is expected to be spread over a number of years as and when local authorities decide to use the optional power. The total cost includes the Welsh government's adoption of Published Lists for approved fuels and exempt appliances policy.

²⁹ These are high-end estimates, indicative of the fact that this would be an upper bound of the costs expected from these policies.

Table 7: Impacts arising from Air Quality measures through secondary legislation (provisional)

	Environmental and social impacts	Business and consumer impacts	Public sector impacts
Benefits	<p>Reductions in air pollution, with resultant benefits for public health, cleaning and amenity benefits associated with building soiling and ecosystem services</p> <p>If the vehicle recall power is used, it should result in fewer environmentally damaging vehicles in use.</p> <p>The measures in the Bill aim to contribute to the achievement of the Clean Air Strategy, which will have significant benefits to society (see below).</p>	<p>Improved air quality leads to increased workforce productivity (reduction in no. of sick days etc.) and crop yields.</p>	<p>Improved collaborative working across public bodies, through exchange of knowledge and data</p>
Costs		<p>Costs to businesses and consumers, at secondary legislation stage, from complying with an air quality target, which will depend on the timescales for meeting them</p> <p>If the vehicle recall power is used, non-compliant manufacturers will face higher costs, but no costs would be faced by compliant businesses.</p>	<p>Enforcement costs of regulations introduced through secondary legislation, including the target for PM2.5</p>
<p>Note: All numbers reported in this table and in the following sections are in 2018 prices. Although different policies start at different times, 2020 has been used as the present value start year, so as to have consistency across all policies in the Environment Bill. As such, figures reported in this document may not match what is stated in their respective Impacts Assessments and Statements of Impacts, which instead may use different prices years and present value start years.</p>			

Environmental and social impacts

Improving air quality would directly benefit public health due to the reduced impact of health conditions such as heart disease, lung cancer and asthma. It is estimated that long-term exposure to man-made air pollution in the UK has a significant negative impact on life expectancy, contributing to a number of serious health conditions³⁰. Measures in the Environment Bill deliver key elements of the government’s Clean Air Strategy. It is estimated that the actions outlined in the Clean Air Strategy could cut the costs of air pollution to society by £1.7 billion every year by 2020, rising to £5.3 billion every year from 2030³¹. It is not possible at this stage to attribute a certain portion of these benefits to the contribution of the Environment Bill. However, if the Bill delivers even a small portion of these benefits, the impact could be very significant.

Air pollution is also associated with material damage and building soiling, and other detrimental effects on the level and quality of the provision of various ecosystem services. Improving air quality would reduce the costs associated with the detrimental impact on buildings in utilitarian applications (i.e. in houses, factories, etc.), mostly from acid damage from sulphur dioxide emissions, and improve the provision of ecosystem services (e.g. recreational activities,

³⁰ Public Health England (2018), Report for the Committee on the Medical Effects of Air Pollutants ‘Associations of long-term average concentrations of nitrogen dioxide with mortality’ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/734799/COMEP_NO2_Report.pdf

³¹ <https://www.gov.uk/government/publications/clean-air-strategy-2019>

biodiversity). If the vehicle recall power is used, it should result in fewer environmentally damaging vehicles in use.

Business and consumer impacts

The only potential cost arising from primary legislation is a one-off cost of up to £1.9 million³² to some owners of permanently moored vessels in areas where local authorities decide to bring inland waterway vessels into scope of their smoke control areas. However, this measure is estimated to have no significant impact on boats that operate as a business.

There will also be costs that will occur when the details of secondary legislation are decided and implemented, which cannot be quantified at this stage. If the vehicle recall power is used, non-compliant manufacturers will face higher costs, but no costs would be faced by compliant businesses. However, improvements in air quality lead to better economic outcomes, as better human health has a positive impact on productivity. This effect is reflected in the damage costs produced by Defra³³. Improved air quality also improves crop yields.

Public-sector impacts

The additional costs to the public sector from primary legislation are expected to be limited to additional burdens on local authorities. These burdens are expected to consist of a one-off cost of up to £4.5 million, and ongoing annualised costs of up to £7.3 million³⁴, arising from the amendments to the Clean Air and Environment Acts.

The amendments to the Clean Air Act 1993, which enable the provision of civil penalties, the extension of nuisance provisions, strengthened rules on the sale of solid fuels, and a power for local authorities to tackle burning on inland waterway vessels, are expected to require additional resource costs for local authorities. Estimates indicate a one-off cost of up to £4.5 million (for those local authorities using powers to tackle burning on inland waterway vessels and needing to reimburse boat owners) and total annualised costs of up to £2.9 million (to enforce smoke control areas). However, these measures are also expected to deliver benefits to local authorities: bringing the existing regulatory framework up to date should make local authority powers easier and cheaper to enforce. This change should improve the flexibility and proportionality of the system of sanctions that local authorities can apply. This expansion in capabilities is designed to provide a strong deterrent and a greater potential to realise significant long-term public health benefits through reductions in emissions from domestic burning.

Additionally, the amendments to Environment Act 1995 are expected to result in an estimated annualised cost of £4.4 million to local authorities, arising from the additional administrative and collaborative work that they will be expected to undertake. These amendments will also introduce new duties for neighbouring authorities and relevant public bodies to play a collaborative role in the Local Air Quality Management system. This change is designed to ensure that local authorities have the support they need to tackle their local air quality issues. These proposals respond

³² These costs represent what is expected to be an absolute upper bound based on the very limited data available. This estimate is based on every possible local authority enacting the optional measure and the upper limits of uptake within these local authorities. This one-off cost is expected to be spread over a number of years as and when local authorities decide to use the optional power.

³³ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/770576/air-quality-damage-cost-guidance.pdf

³⁴ These estimates represent an upper bound.

directly to calls received from local authorities through the recent consultation on the Clean Air Strategy which was published in January 2019.

Greater collaboration on air quality within and between local authorities and with relevant public bodies should also lead to wider and indirect benefits such as greater knowledge sharing, improving the capability of local authorities and relevant public bodies to tackle air pollution.

There are expected to be additional costs to the public sector from enforcing and also complying with the regulations introduced in secondary legislation, including the target for PM2.5.

Risks and Assumptions

The estimates of the costs to local authorities of enforcing these measures was estimated by making assumptions about the additional working hours required to be spent by certain types of official within local authorities, and further supporting evidence from consultation will be necessary.

No nationwide data was available on the number of vessels that will need to be upgraded. An estimate of the number of vessels that will be impacted was made using some very limited information: a Canal and River Trust survey that estimated the number of boats seen on canals in London over one year (2015-2016).

6.4 Water³⁵

Table 8: Impacts arising from Water measures with primary legislation

	Environmental and social impacts	Business and consumer impacts	Public-sector impacts
Benefits	<p>More efficient water management that should lower environmental pressures</p> <p>Better resilience to drought and flooding and coastal erosion risk management</p>	<p>Annualised benefits from reform to allow companies to serve documents electronically: up to £0.5 million (£4.3 million in total over the appraisal period)</p>	

³⁵ The impacts of secondary legislation are provisional and appropriate analysis will be carried out ahead of secondary legislation.

Costs		<p>Annualised costs from strengthening Ofwat's licence modification powers: up to £0.5 million (£4.5 million in total over the appraisal period)</p> <p>Annualised costs from Ofwat information gathering powers: up to £0.01 million (£0.08 million in total over the appraisal period)</p> <p>Distributional cost on abstractors who rely on under-used and environmentally damaging abstraction licences</p>	
<p>Note: All numbers reported in this table and in the following sections are in 2018 prices. Although different policies start at different times, 2020 has been used as the present value start year, so as to have consistency across all policies in the Environment Bill. As such, figures reported in this document may not match what is stated in their respective Impacts Assessments and Statements of Impacts, which instead may use different prices years and present value start years.</p>			

Table 9: Impacts arising from Water measures with secondary legislation (provisional)

	Environmental and social impacts	Business and consumer impacts	Public-sector impacts
Benefits	<p>More efficient water management that should lower environmental pressures</p> <p>Better resilience to drought and flooding and coastal erosion risk management</p> <p>Reduction of chemical pollution to water bodies and associated environmental and health benefits</p>	<p>Improved water transfers could lead to lower water bills</p> <p>Improved business assets thanks to better resilience to drought and flooding, and coastal erosion risk management</p>	<p>Improved public-sector assets thanks to better resilience to drought and flooding and coastal erosion risk management</p> <p>More coordination and integrated decision-making for local authorities</p>

Costs		<p>Upfront costs from investing in Water Resources Management Plans (WRMPs): £0.3 million annualised over the appraisal period (£2.6 million in total)</p> <p>Annualised costs associated with the establishment of the Drainage and Wastewater Management Plans: up to £4.0 million, expected to be partially offset by economies of scale from third-party collaboration (£34.2 million in total over appraisal period)</p> <p>Additional burden on agricultural landowners where local partners choose to create a new internal drainage board or expand an existing internal drainage board: up to £1.3 million annualised (£10.9 million in total)</p> <p>Potential costs to the water industry and to consumers if additional chemicals are added to the list of harmful substances</p>	<p>Potential increase in monitoring costs for UK regulators if additional chemicals are added to the list of harmful substances</p> <p>Additional burden on local authorities from choosing to create a new internal drainage board or expand an existing internal drainage board: up to £2.4 million annualised (£20.4 million in total)</p>
<p>Note: All numbers reported in this table and in the following sections are in 2018 prices. Although different policies start at different times, 2020 has been used as the present value start year, so as to have consistency across all policies in the Environment Bill. As such, figures reported in this document may not match what is stated in their respective Impacts Assessments and Statements of Impacts, which instead may use different prices years and present value start years.</p>			

Environmental and social impacts

These measures aim to reduce pressure on the water environment, contributing to the restoration of our waters and associated ecosystems. The Environment Bill aims to also improve the flood and coastal risk management. Over 5.2 million properties³⁶ in England are estimated by the Environment Agency to be at risk from flooding. Additionally, the water resources management planning measures in the Environment Bill aim to improve the efficiency and effectiveness of water resources, to increase resilience to drought. The benefits would reach beyond the public water supply to other sectors likely to be affected by drought and the environment.

The Environment Bill also ensures effective regulation of chemical pollution to water bodies. By acquiring powers to update the list of substances which are considered harmful to the water environment, the UK should be able to reduce progressively the presence of these chemicals in the environment through the adoption of measures to control the discharges, emissions and losses in the aquatic environment.

Business and consumer impacts

The measures in this chapter will also have an impact on the economy, businesses and consumers. The reform of Ofwat's powers are expected to lead to aggregate annualised net costs of up to £0.03 million. Specifically, the reform of Ofwat powers in terms of licence modification and for information gathering from companies leads to additional annualised costs of up to £0.5 and £0.01 million, respectively. However, if companies decide to use the power to

³⁶ <https://www.gov.uk/government/publications/flood-and-coastal-risk-management-national-report/managing-flood-and-coastal-erosion-risk-management-report-1-april-2017-to-31-march-2018#reducing-risk-and-minimising-consequences>

serve documents electronically, they could save up to £0.5 million in forgone postage and printing costs.

Greater transparency in Ofwat's decision-making for licence condition modifications will benefit customers and the environment. This change is intended to result in a more responsive regulator, which safeguards proactive policy development in the water industry.

Furthermore, whilst the removal of environmentally damaging and under-used abstraction licences can be carried out without the Environment Agency being liable to pay compensation, it is expected that the Environment Agency will work with affected licence holders to find alternative solutions which balance the needs of the environment with those of affected parties. There might be some distributional impacts on abstractors relying on those licences. The agricultural sector accounts for the largest number of licences (64%) and so is likely to be affected. However, these powers are intended only be used by the Environment Agency when other acceptable solutions cannot be found.

There will also be the following costs to business from secondary legislation. The establishment of the statutory Drainage and Wastewater Management Plans (DWMPs) is expected to impose annual costs to business, estimated to be up to £4.0 million. Additionally, amendments to the existing Water Resources Management Plans (WRMPs) will impose additional annualised costs to business, estimated to be £0.3 million. It is expected that the costs for WRMPs will reduce to zero over around ten years as companies embed them into their business practices. The purpose of regulating these private natural monopolies in the context of Water Resources Management Plans and Drainage and Wastewater Management Plans is to achieve greater economies of scale in the sector. Encouraging cooperation between the water companies should achieve greater economic efficiency. Water Resources Management Plans are designed to drive an improvement in the option assessment of water resources at a regional scale, thereby helping to deliver more efficient and effective drought solutions for water companies' customers, and businesses that abstract water. If new substances are added to the list of priority substances or a concentration limit is reduced, there may be elevated costs to businesses in ensuring their discharges meet the prescribed threshold. This impact is in line with the 'polluter pays' principle and would mainly impact the water industry dealing with domestic sewage, though some costs could be passed on to consumers.

Additionally, at the secondary legislation stage, the changes to the valuation calculation that affect internal drainage board operations would result in annualised costs of up to £1.3 million to agricultural land owners, depending on the number of internal drainage boards created or expanded.

The improvements in water resource management as a result of the Environment Bill aim to increase consumer welfare. For instance, better management of water supplies (e.g. through Water Resources Management Plans and abstraction measures) and an increase in competitive pressures in the water industry may result in lower household water bills, so an increase in disposable income.

Furthermore, the improvement of surface water, ground water and waste water management would generate benefits to the economy more widely, for example through the reduction of the risk of flooding. The creation or expansion of internal drainage boards is intended to improve the management of water levels and reduce the risk of flooding in those areas, which itself would

reduce the risk of damages to business owned assets and of losses arising from disruptions caused by flooding. The benefits of investment in flood risk management are typically worth around £8 for every £1 spent.³⁷

Public-sector impacts

The measures will also enable the public sector to play an active role in promoting partnerships that unlock currently missed local opportunities to protect and enhance the water environment.

The secondary legislation implementing the water resources and wastewater management planning measures is designed to enable and facilitate a more strategic conversation between water companies and those planning for growth in local areas, both industrial and in terms of housing. This change has the potential to lead to greater coordination and integrated decision-making about water demand, water supply, drainage and wastewater issues. This coordination and integration could ultimately lead to productivity benefits, by providing a platform for local authorities to work collaboratively to resolve current issues, such as surface water drainage, and plan better for the future.

Additional monitoring and analytical costs could be incurred by the UK's environmental regulators if new substances are added to the list of priority substances or concentration limits are reduced. These costs will be quantified in an economic assessment which specifically focusses on the impact of regulating a certain substance.

Additionally, the reduction in flooding risk would also benefit assets owned by the public sector. At the secondary legislation stage, the changes to the valuation calculation that affect internal drainage board operations would result in annualised costs of up to £2.5 million to local authorities, depending on the number of internal drainage boards created or expanded.

Risks and Assumptions

The key assumptions underlying these estimates include the working time that would need to be spent by officials within water companies familiarising with the new arrangements, the printing and postage costs currently incurred by water companies (that would not be incurred in future), the percentage expansion of Internal Drainage Boards, and the annual cost per company of developing and sticking to a Drainage and Waste Water Management Plan. More information is provided in the specific Statement of Impacts provided as annexes to this document.

³⁷ This ratio is highly variable among flood risk management activities but considering the EA's ratio a conservative estimate is 8 to 1. Source: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/575164/2012_to_2013_managing_FCER_LIT_8443.pdf, page 17.

6.5 Nature & Conservation Covenants³⁸

Table 10: Impacts arising from Nature measures with primary legislation

	Environmental and social impacts	Business and consumer impacts	Public-sector impacts
Benefits	<p>More equitable distribution of biodiversity and nature</p> <p>Increased ecosystem and biodiversity benefits, including habitat restoration (c. £1.4 billion per annum)³⁹ from mandating biodiversity net gain and local nature recovery strategies</p> <p>Reduction in illegal deforestation</p> <p>Environmental benefits such as reduction in air pollution and noise levels, improved water flow control, climate regulation and more recreational and sport opportunities</p> <p>Improved citizens' participation in their local authorities' decision-making</p> <p>Increase in people's well-being from making nature more accessible</p>	<p>Potential process savings to developers due to consistent and streamlined requirement for delivering net gain</p>	<p>Cost savings arising from standardised and streamlined approach to biodiversity and nature improvement (e.g. net gain across local planning authorities, local nature recovery strategies)</p> <p>Wider stakeholder collaboration and innovation in the provision of biodiversity</p>
Costs		<p>c. £196.6m annualised costs to businesses from biodiversity net gain & local nature recovery strategies</p>	<p>c. £12.5m annualised costs to local authorities and the public sector from biodiversity net gain and local nature recovery strategies (Of this cost, c. £9.4m is to local authorities.)</p> <p>Increased burden to local authorities from duty to consult on felling street trees (c. £2.8 million annualised)</p> <p>Reporting duty for public authorities (excluding local authorities⁴⁰) following amendments to the Natural Environment and Rural Communities Act (c. £0.4 million – £0.7 million annualised. The upper bound is used for the central cost estimate presented in Table 1.)</p>

Note: All numbers reported in this table and in the following sections are in 2018 prices. Although different policies start at different times, 2020 has been used as the present value start year, so as to have consistency across all policies in the Environment Bill. As such, figures reported in this document may not match what is stated in their respective Impacts Assessments and Statements of Impacts, which instead may use different prices years and present value start years. Estimates that appear in both the table for primary and the table for secondary legislation are counted only once in cumulative figures: they estimate the total impact, which arises partly from primary and partly from secondary legislation.

³⁸ The impacts of secondary legislation are provisional and appropriate analysis will be carried out ahead of secondary legislation.

³⁹ The methodology for this estimate is described in Annex 38. (Under Annex 2 of the Net Gain and Local Nature Recovery Strategies Impact Assessment).

⁴⁰ Burdens on local authorities from this measure are captured in the net gain estimates.

Table 11: Impacts arising from Nature measures with secondary legislation (provisional)

	Environmental and social impacts	Business and consumer impacts	Public-sector impacts
Benefits	<p>More equitable distribution of biodiversity and nature</p> <p>Increased ecosystem and biodiversity benefits, including habitat restoration from biodiversity net gain and local nature recovery strategies. This benefit has been accounted for as part of the primary legislation impacts but has also been listed here because the size of the impact will be affected by subsequent secondary legislation.</p> <p>Reduction in illegal deforestation</p> <p>Environmental benefits such as reduction in air pollution and noise levels, improved water flow control, climate regulation and more recreational and sport opportunities</p> <p>Improved citizens' participation in their local authorities' decision-making</p> <p>Increase in people's well-being from making nature more accessible</p>		
Costs		<p>The costs of compliance with biodiversity net gain and local nature recovery strategies have been accounted for as part of the primary legislation impacts but have also been listed here because the size of the impact will be affected by subsequent secondary legislation.</p> <p>Other costs listed in the primary legislation section may also change subject to further work on policy development, implementation and delivery.</p>	<p>The costs of facilitating biodiversity net gain and local nature recovery strategies have been accounted for as part of the primary legislation impacts but have also been listed here because the size of the impact will be affected by subsequent secondary legislation.</p> <p>Other costs listed in the primary legislation section may also change subject to further work on policy development, implementation and delivery.</p>

Note: All numbers reported in this table and in the following sections are in 2018 prices. Although different policies start at different times, 2020 has been used as the present value start year, so as to have consistency across all policies in the Environment Bill. As such, figures reported in this document may not match what is stated in their respective Impacts Assessments and Statements of Impacts, which instead may use different prices years and present value start years. Estimates that appear in both the table for primary and the table for secondary legislation are counted only once in cumulative figures: they estimate the total impact, which arises partly from primary and partly from secondary legislation.

The Environment Bill aims to restore and enhance nature, taking a modern approach to creating beautiful, biodiverse places. In order to achieve these objectives, government intervention is key, to regulate negative externalities (e.g. pollution) and to provide positive externalities (e.g. recreational or health benefits deriving from nature). These measures represent a vital part of the solution to reversing the long-term decline of nature in the UK. This solution will be sought through measures to: 1) mandate a biodiversity net gain policy for development within the Town and Country Planning Act 1990, supported by new duties to support better spatial planning for nature through the creation of Local Nature Recovery Strategies (LNRSs); 2) strengthen the duty on public authorities to take action to conserve and enhance biodiversity; 3) enable landowners and responsible bodies to enter voluntary, legally-binding conservation covenants; 4) tackle illegal

deforestation; and 5) establish a new duty on local authorities to consult local communities on felling trees.

Environmental and social impacts

These measures aim to deliver a wide range of environmental benefits, by contributing to the creation of new wildlife habitats and the avoidance of habitat loss. These improvements would generate an additional stream of ecosystem services that benefit people and the environment. For example, natural capital benefits to people and local communities deriving from mandating biodiversity net gain and local nature recovery strategies are estimated to be worth approximately £1.4 billion per year. These benefits represent several thousands of hectares of avoided habitat loss and habitat creation each year. This habitat creation and avoided habitat loss would increase the public benefits of ecosystems, such as improvements in air quality, water flow control, outdoor recreation and physical activity, which would directly improve people's health and wellbeing.

The £1.4bn of annual benefits from net gain and local nature recovery strategies has been estimated by multiplying the annual habitat creation and avoided habitat loss resulting from more environmentally sustainable development, multiplied by the (partial and imperfect) value of private natural capital benefits perceived by residents living near greenspace. The full methodology is presented in Annex 38.

The Environment Bill also aims to take targeted action for trees and forests, by giving the public a greater say in street tree management, helping preserve the natural environment which is so important for communities. The Environment Bill will also strengthen legal tools to tackle illegal deforestation. Trees and forests plays an essential role for society's well-being, by regulating microclimate, improving water quality, reducing noise levels and by providing recreational and sport opportunities.

Business and consumer impacts

Most of the measures in this chapter, with the exception of biodiversity net gain, do not impose any significant additional costs to businesses. The biodiversity net gain measure will impose annualised net direct costs to businesses at primary legislation stage, estimated at around £196.6 million. Additionally, a significant proportion of costs which are imposed on developers, are likely in the medium to long term to be 'passed through' to developable land prices, thereby affecting landowners. The measure aims to provide a streamlined and easy to understand process for developers that will not prevent, delay or reduce housebuilding. The streamlined process could even reduce developer costs. It is intended to provide businesses with the regulatory certainty and long-term confidence to make investments in skills, infrastructure and research.

It is expected that the combined effects of implementing net gain and other measures of the Environment Bill will lead to minor impacts on housebuilding whilst securing process savings to the planning system. However, further cross-departmental work can identify particular areas and/or developments that may lead to extra impacts associated with these effects.

Public-sector impacts

The Environment Bill measures included in this chapter aim to improve the accountability and transparency of public authorities in their actions to protect the environment. These measures will result in additional costs to public authorities from primary legislation measures, including local authorities and the wider Defra group.

These costs are mainly related to the reporting requirements included in the net gain proposals and duty to local authorities to consult on their street trees felling activities. Specifically, with regard to biodiversity net gain and local nature recovery strategies, total annualised costs to the public sector are estimated to be £12.5 million. These costs from net gain are expected to help generate cost savings in the long run from a more streamlined planning system, and a risk-based approach to promoting biodiversity. The duty to consult on felling street trees will impose additional costs to local authorities, in terms of additional resources needed to carry out those activities. These additional costs are estimated to be £2.8 million annualised.

Additionally, the amendments to the Natural Environment and Rural Communities Act, including the reporting duty to public authorities, is expected to lead to additional annualised present value costs⁴¹ of £0.4 million to £0.7 million.

The measures included in this chapter will help to stimulate wider stakeholder collaboration and innovation in the provision of biodiversity. Measures on net gain will work with the planning system to make the biodiversity requirements in planning clearer and more consistent for developers and local authorities.⁴² Locally led projects, for instance, in the case of public consultations on felling street trees, are designed to empower civic society to make more informed choices regarding the environment. This approach aims to help to reduce costs to local authorities by planning and delivering services in a more targeted way.

Risks and Assumptions

Numerous assumptions have been made to estimate the costs and benefits from the Nature measures in the Bill (which is primary legislation). These include assumptions to help estimate the number of extra employees that will be required by local and central government for reporting duties or consultations and the amount of business time that will be required to stay familiar with the policies. The benefits and costs listed for biodiversity net gain are particularly sensitive to assumptions on developer behaviour – for example, whether developers deliver net gain mostly on-site (e.g. by retaining distinctive habitat within the site boundary) or off-site (e.g. by purchasing compensatory habitat locally). It is expected that delivering net gain on-site is likely to result in much higher benefits and lower costs compared to off-site (see Annex 38).

6.6 Chemicals – REACH Amendments

The Environment Bill's REACH provisions do not themselves incur any costs or benefits to government or business. They just enable future changes to be made to the REACH Regulation and the REACH Enforcement Regulations. The impact of any future changes to that legislation on businesses and the public sector will be considered before the changes are made. At this stage it is not possible to assess what the likely impacts of these might be because there are no imminent plans to change these regulations. Therefore no table summarising the impacts can be presented.

⁴¹ These costs exclude costs to local authorities, which have been included in the biodiversity net gain estimates.

⁴² As evidenced by Defra's 25 YEP Pioneer projects i.e. the Urban Pioneer in the Greater Manchester Combined Authority

7. Summary of impacts of the overall Bill

As in Section 6, Tables 12 and 13 below summarise the total costs and benefits of the Bill in qualitative, and when possible quantitative, terms.

Table 12: Summary of main impacts arising from primary legislation from the whole bill

	Environmental and social impacts	Business and consumer impacts	Public-sector impacts
Benefits	<p>Cross-cutting Improved environmental accountability and policy-making</p> <p>Reduction in GHGs emissions</p> <p>Governance Improved environmental policy-making, policy and regulation</p> <p>Waste and resource efficiency All impacts arise through secondary legislation.</p> <p>Air Quality Reduction in air pollution with resultant health and environmental benefits</p> <p>Water Reduction in pressures on the water environment</p> <p>Better resilience to drought and flooding and coastal erosion risk management</p> <p>Nature Annualised benefits of £1.4 billion from mandating biodiversity net gain and local nature recovery strategies for nature. This policy is expected to result in several thousands of hectares of avoided habitat loss and habitat creation each year. Improvement and enhancement of ecosystems and biodiversity</p>	<p>Governance More regulatory certainty for businesses</p> <p>Water Annualised benefits from reform to allow companies to serve documents electronically: up to £0.5 million (£4.3 million in total over the appraisal period)</p> <p>Nature Consistent and standardised approach to demonstrating biodiversity net gain and potential savings for developers</p>	<p>Cross-cutting Improved collaborative working across public bodies, through exchange of knowledge and data</p> <p>Waste and resource efficiency All impacts arise through secondary legislation.</p> <p>Water Improved public-sector assets thanks to better resilience to drought and flooding, and better coastal erosion risk management</p> <p>Nature Cost savings arising from standardised and streamlined approach to biodiversity and nature improvement (e.g. net gain across Local Planning Authorities, local nature recovery strategies)</p> <p>A better and more targeted risk-based approach to manage UK's natural capital</p>
Cost		<p>Governance Transaction costs for businesses associated with familiarisation with the new system</p> <p>Air Quality⁴³ One-off cost of up to £1.9 million from Clean Air Act amendments (£0.22 million annualised)</p> <p>Water</p>	<p>Governance The establishment of the OEP will entail set-up and ongoing costs covered by grant-in-aid. For example, there are extra financial costs which include both staff and non-staff resources required to fulfil its statutory functions sufficiently. The financial costs will be published in due course.</p>

⁴³ This measure is expected to have no significant impact on boats that operate as a business

		<p>Annualised costs from strengthening Ofwat's licence modification powers: up to £0.5 million (£4.5 million in total over the appraisal period)</p> <p>Annualised costs from Ofwat information gathering powers: up to £0.01 million (£0.08 million in total over the appraisal period)</p> <p>Distributional cost on abstractors who rely on under-used or environmentally damaging abstraction licences</p> <p>Nature c. £196.6m annualised costs to businesses from biodiversity net gain and local nature recovery strategies</p>	<p>Costs incurred from embedding environmental principles in government policy-making</p> <p>Air One-off costs to local authorities of adjusting to Clean Air Act Amendments: up to £4.5 million (£0.5 million annualised)⁴⁴</p> <p>Ongoing costs to local authorities of complying with Clean Air Act amendments: £2.9m per year (£25.0m in total over appraisal period)</p> <p>Ongoing costs to local authorities of complying with amendments to the Environment Act: £4.4m per year (£38.3m in total over appraisal period)⁴⁵</p> <p>Nature c. £12.5m annualised costs to local authorities and the public sector from biodiversity net gain and local nature recovery strategies (Of this cost, c.£9.4m is to local authorities)</p> <p>Increased burden to local authorities from duty to consult on felling street trees (c. £2.8 million annualised on average)</p> <p>Reporting duty for public authorities (excluding local authorities⁴⁶) following amendments to the Natural Environment and Rural Communities Act (c. £0.4 million – £0.7 million annualised. The upper bound is used for the central cost estimate presented in Table 1.)</p>
Annualised total net impact from primary legislation⁴⁷	£1,374m in benefits from environmental and social impacts	£196.9m in costs from business and consumer impacts	£23.8m in costs to the public sector, of which £20.0m are costs to local authorities
	£1,374m in benefits from environmental and social impacts	£220.7m in costs from business & consumer, and public-sector impacts	There will be additional costs to establish and run the OEP.
Note: All numbers reported in this table and in the following sections are in 2018 prices. Although different policies start at different times, 2020 has been used as the present value start year, so as to have consistency across all policies in the Environment Bill. As such, figures reported in this document may not match what is stated in the respective Impacts Assessments and Statements of Impacts, which instead may use different prices years and present value start years.			

⁴⁴ These costs represent what is expected to be an absolute upper bound based on the very limited data available. This estimate is based on every possible local authority enacting the optional measure and the upper limits of uptake within these local authorities. This one-off cost is expected to be spread over a number of years as and when local authorities decide to use the optional power. The total cost includes the Welsh Government's adoption of Published Lists for approved fuels and exempt appliances policy.

⁴⁵ These are high-end estimates, indicative of the fact that this would be an upper bound of the costs expected from these policies.

⁴⁶ Burdens on local authorities from this measure are captured in the net gain estimates.

⁴⁷ The one-off costs feed into these total figures as annualised costs.

Estimates that appear in both the table for primary and the table for secondary legislation are counted only once in cumulative figures: they estimate the total impact, which arises partly from primary and partly from secondary legislation.

The annualised totals at the bottom of the table incorporate one-off costs as annualised costs. All the totals are also rounded to the nearest million.

Table 13: Summary of main impacts arising from the secondary legislation from the whole bill (provisional)

	Environmental and social impacts	Business and consumer impacts	Public-sector impacts
Benefits	<p>Cross-cutting Improved environmental accountability and policy-making. Reduction in GHGs emissions</p> <p>Governance Improved environmental accountability, policy-making and regulation</p> <p>Waste and resource efficiency Reduction in littering activities and societal disamenities deriving from it (e.g. annualised £889⁴⁸ million litter disamenity benefit from DRS) Reduction in GHG emissions (c.20 MtCO₂e) and natural capital costs</p> <p>Air Quality Reduction in air pollution with resultant health and environmental benefits</p> <p>Water Reduction in pressures on the water environment</p> <p>Better resilience to drought and flooding and coastal erosion risk management</p> <p>Reduction of chemical pollution to water bodies</p> <p>Nature Annualised benefits of £1.4 billion from mandating biodiversity net gain and local nature recovery strategies for nature.⁴⁹ This benefit has been accounted for as part of the primary legislation impacts but has also been listed here because the size of the impact will be affected by subsequent secondary legislation. This policy is expected to result in several thousands of hectares of avoided habitat loss and habitat creation each year.</p> <p>Improvement and enhancement of ecosystems and biodiversity</p>	<p>Governance More regulatory certainty for businesses</p> <p>Waste and resource efficiency Improved waste management practices from consistency of recycling collections are expected to save businesses £103 million annualised in reduced costs.</p>	<p>Cross-cutting Improved collaborative working across public bodies, through exchange of knowledge and data</p> <p>Waste and resource efficiency Placing the responsibility on producers for the cost of managing products/materials when they become waste will reduce burden on the taxpayer and move it onto those who can design their products and materials for re-use, repair and recycling.</p> <p>Water Improved public-sector assets thanks to better resilience to drought and flooding, and better coastal erosion risk management</p> <p>Nature Cost savings arising from standardised and streamlined approach to biodiversity and nature improvement (e.g. net gain across local planning authorities, local nature recovery strategies)</p> <p>A better and more targeted risk-based approach to manage the UK's natural capital</p>

⁴⁸ This figure is based on earlier research conducted by Leeds University for Defra. However further research findings are emerging and are presently being evaluated.

⁴⁹ The £1.4bn figure is the same as presented in table 12 and therefore should not be treated as an additional benefit delivered by this measure.

<p>Costs</p>	<p>As with every intervention, there is the potential for unintended consequences.</p>	<p>Cross-cutting Compliance and regulatory costs from Bill measures with associated transition costs. For example, legally binding targets, the air quality target, and measures in the waste chapter</p> <p>Governance Transaction costs for businesses associated with familiarisation with the new system</p> <p>Waste and resource efficiency Deposit Return Scheme on beverage containers and Extended Producer Responsibility for Packaging (circa £1.0 - £1.4 billion net present annualised costs)⁵⁰</p> <p>Water Upfront costs from investing in Water Resources Management Plans (WRMPs): £0.3 million annualised over the appraisal period (£2.6 million in total)</p> <p>Annualised costs associated with the establishment of the Drainage and Wastewater Management Plans: up to £4.0 million, expected to be partially offset by economies of scale from third-party collaboration (£34.2 million in total over appraisal period)</p> <p>Additional burden on agricultural landowners where local partners choose to create a new internal drainage board or expand an existing internal drainage board: up to £1.3 million annualised (£10.9 million in total)</p> <p>Potential costs to the water industry and to consumers if additional chemicals are added to the list of harmful substances</p> <p>Nature c. £196.6m annualised costs to businesses from biodiversity net gain and local nature recovery strategies. This cost has been accounted for as part of the primary legislation impacts but has also been listed here because the size of the impact will be affected by subsequent secondary legislation.</p> <p>Chemicals regulation</p>	<p>Waste and resource efficiency The costs to LAs of collection of materials</p> <p>Initial and indicative quantified costs arising from secondary legislation £373 million annualised net costs from consistency of recycling collections (of which £79 million is to local authorities)</p> <p>Air Quality Potential additional costs to public sector from complying with the target for PM2.5, to be set by Secretary of State. The impacts of the target will depend upon its level, its design, and the timescales allowed for meeting it – to be determined at the secondary legislation stage.</p> <p>Water Additional burden on local authorities from choosing to create a new internal drainage board or expand an existing internal drainage board: up to £2.4 million annualised (£20.4 million in total)</p> <p>Nature c. £12.5m annualised costs to local authorities and the public sector from biodiversity net gain and local nature recovery strategies (Of this cost, c.£9.4m is to local authorities.) This cost has been accounted for as part of the primary legislation impacts but has also been listed here because the size of the impact will be affected by subsequent secondary legislation.</p>
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⁵⁰ The costs to business depends on the type of Deposit Return Scheme that could be implemented. This is because it affects the materials that flow through each scheme. The high cost estimate accounts for the 'all-in' option of a Deposit Return Scheme on drink containers being implemented as consulted on in Spring 2019 (i.e. with no restriction on the size/format of drink containers in scope). The low cost estimate accounts for the 'on the go' option (i.e. containers of less than 750ml in size and sold in single format containers) in the same consultation. These analyses will continue to be refined and further options for both Extended Responsibility and Deposit Return Schemes will be presented in a future consultation.

		This could result in additional costs, avoided costs, or be cost-neutral to businesses, depending on the proposed amendments.	
<p>Note: All numbers reported in this table and in the following sections are in 2018 prices. Although different policies start at different times, 2020 has been used as the present value start year, so as to have consistency across all policies in the Environment Bill. As such, figures reported in this document may not match what is stated in the respective Impacts Assessments and Statements of Impacts, which instead may use different prices years and present value start years. Estimates that appear in both the table for primary and the table for secondary legislation are counted only once in cumulative figures: they estimate the total impact, which arises partly from primary and partly from secondary legislation.</p>			
<p>The figures in Table 1 include all the costs and benefits of the different waste measures. The figures elsewhere in this Impact Assessment have been selectively chosen to illustrate poignantly the waste and resource efficiency measures by sector rather than by measure, which is why they do not add up to the totals in Table 1.</p>			

8. Monitoring and evaluating impacts

Both the HM Treasury Green Book and the Magenta Book identify the importance of monitoring and evaluation across the policy cycle. The policy cycle, framed as ROAMEF (Rationale, Objectives, Appraisal, Monitoring, Evaluation, Feedback) within these books outlines the importance of having robust practices in place to monitor and evaluate the implementation of policies, and how monitoring and evaluation can feed into the policy development process.

Within the context of environmental policies, there are particular and complex challenges in assessing policy impact. These include the uncertainty over future environmental scenarios, potential interactions between policies leading to additional impacts and the large number of actors (e.g. public and private sector, local communities, households etc.) involved in the maintenance and enhancement of the natural environment. Robust monitoring techniques are required to help to assess the evolution of ecological and biological conditions of the environment and how much of these changes are attributable to specific policies. Robust policy evaluation will provide evidence to enable a clear understanding of what is effective in achieving policy outcomes.

One of the key recommendations included in the Government’s response to the NCC’s 6th Annual Report is “ensuring that decision-makers can undertake high quality analysis by having access to reliable information on the value of benefits and costs arising from environmental improvements and change.” Monitoring and Evaluation (M&E) is necessary to inform the decision-making around a number of issues, including:

- Planning/efficiency – monitoring and evaluating progress is crucial in order to plan for and develop socially and economically efficient measures.
- Accountability – demonstrating how far the measures in the Environment Bill have achieved their objectives and how they have used resources.
- Implementation – improving the performance of programmes/projects that underpin the Environment Bill and the effectiveness of how they are delivered and managed.

In recognition of the importance of monitoring the state of the environment and how this evolves over time, the Environment Bill introduces duties on the government to: 1) prepare and update (at least every five years) a plan for improving the environment, 2) report annually to Parliament on progress, and 3) develop and publish a suite of indicators and metrics to measure environmental change to help measure long-term progress towards the 10 goals.

As part of this, the conceptual framework on monitoring and evaluation of the Environment Bill and the 25 YEP⁵¹ aims to answer the following questions:

- How are the pressures on natural assets changing?
- How well are interventions working?
- Has the natural environment improved?
- How have our natural assets and the benefits they provide changed?

The Monitoring and Evaluation plan for the Environment Bill will therefore need to monitor and assess the current environmental conditions and how they change over time. This monitoring and assessment will be done through the analytical and conceptual frameworks established for the 25 YEP, and more specifically through the use of performance measures and outcome indicators.

Performance measures are intended to help track progress on the actions taken to deliver the policies in the Environment Bill and the 25 YEP. These measures will be based on the actions necessary to achieve the intended outcomes and benefits of policies over a shorter term. This ensures there are clear objectives and a sensible relationship between activities conducted and the objective/policy intent/vision of the measures in the Environment Bill. Combining this approach with monitoring data allows government to build and test its understanding of how change happens as a result of policies. It also enables policy-makers to ensure that the right inputs and processes are in place, so that government will be able to lead to future changes/intended impacts.

Outcome indicators will assess the long-term vision of the Environment Bill and the 25 YEP. Using a natural capital framework, the indicators will focus on the outcomes and goals that government has set out to achieve in terms of reducing pressures, improving the state of assets and increasing the benefits reaped from the environment. Defra has published an “Outcome Indicators Framework for the 25 YEP”⁵², whose objective is to describe how the natural environment is improving in line with the goals of the 25 YEP. The 25 YEP outcome indicator framework draws on established data sets for some indicators but also recognises the need to develop measures for those indicators where there is no established dataset. As part of this, advice from the Natural Capital Committee has been sought on developing a cost-effective approach to an environmental citizen science project that integrates existing data, including the outcome indicator framework, and increases citizen engagement with the environment. Information on environmental change gathered through the 25 YEP outcome indicator framework will help government to assess the effectiveness of policies and other interventions and show how government is delivering on domestic and international commitments. In addition, the framework will help inform the decisions we all take and help promote action by everyone to improve the environment.

The Office for Environmental Protection (OEP) will have an important role in independently monitoring and reporting annually on progress in improving the natural environment in accordance with the 25 YEP. Together with the OEP’s role in monitoring and reporting on the

⁵¹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/673492/25-year-environment-plan-annex1.pdf

⁵² https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/802094/25-yep-indicators-2019.pdf

implementation of environmental law, these reports should help government evaluate the impact of measures in the Environment Bill.

Policy evaluation will also need to be undertaken in accordance to HMT Magenta Book guidance, as well as considering natural capital frameworks as envisaged by the HMT Green Book. Cumulatively, policy evaluation will aim to answer specific questions, such as:

- Have the right inputs and activities been put in place to generate the desired policy outcomes?
- To what extent does the existing monitoring data capture the outcomes observed, or are there other unexpected outcomes?
- Are activities underpinning the measures in the Environment Bill managed effectively and efficiently?
- Are resources in the right places to achieve the intended outcomes?
- What learning can be drawn on from the implementation of current initiatives to inform implementation of future policies?

Evidence from policy evaluation will inform future policy-making – indeed, a key purpose of the function of the M&E framework is to acquire evidence from current interventions to inform future interventions to further build institutional knowledge of ‘what works’.

In line with recommendations in the framework for the 25 YEP, a degree of flexibility and review in the Environment Bill M&E plans will be necessary to anticipate potential future changes and continuously adapt, informed by new findings and the best local, national, academic and stakeholder knowledge.

9. Potential trade implications

The Bill contains a number of measures which could affect trade. Investing in natural assets and improving the resource efficiency of the economy is key to the UK’s sustainable growth. The Environment Bill could provide green credentials to the economy and send clear messages for international businesses to invest and to fund innovation towards the improvement of the natural environment. However, the extent of such impacts is not possible to predict given the uncertainty around the policies that will be chosen at secondary legislation.

Despite uncertainties around the effects of environmental regulation on patterns of trade and investment, it is expected that the impact of the primary legislation will be small because its focus is domestic and it does not directly affect traded goods. The UK’s commitment to improving biodiversity net gain is in line with the efforts of the 69 other countries that have a similar national policy in place or under development. By setting a framework of legally binding long-term targets in England, the Bill will also provide long-term certainty for business which could boost investment and innovation.

The impacts of the secondary legislation measures will heavily depend on how the powers are implemented. These impacts will be assessed at the relevant legislative stage.

10. Small and micro business assessment

It is possible overall that small and micro businesses experience relatively higher costs and/or reduced benefits from the use of the powers acquired in the Environment Bill. Indeed, cost-increasing regulations typically are more burdensome for small businesses. Government policy is to mitigate these distributional impacts where possible and desirable. Measures to reduce cost impacts for small and micro firms will be further investigated through consultation and engagement with these businesses, and developed prior to the implementation of secondary legislation. In the meantime, apart from the biodiversity net gain measure for which small and micro business impacts have been assessed in the IA, for those measures for which impacts are expected to be more significant than others, a high-level yet non-exhaustive assessment of impacts on small and micro businesses is provided below. An assessment of impacts of the proposed measures to small a micro businesses will be carried at secondary legislation stage as part of the Impact Assessment process.

Regarding the **biodiversity net gain policy**, this assessment is already included into the published Impact Assessment (see Annex 38). Feedback from consultees and industry experts suggests that both minor and major developments should be in the scope of the policy, but for the former, processes can be simplified. The bulk of the 34,580 developers in England are classified as micro businesses (97%), with only 50 that can be classed as medium or large businesses. Micro and small developers account for approximately 60% of gross value added and 50% of turnover. Government intends to keep small sites in scope of the mandatory net gain approach, but will actively consider whether minor residential developments should be subject to longer transition arrangements or a lower net gain requirement than other types of development. Government will also consider exemptions for development of specific ownership types which may be proportionately impacted through these changes, such as residential self-build.

The **Deposit Return Scheme** could make provision for retailers, regardless of their size, to be fully compensated for labour, time and space costs of collecting containers. This provision could take the form of a handling fee which would be paid by the scheme administrator. The same would likely apply to a DRS on other containers. The collection of containers would then be a net-neutral endeavour for all businesses in the retail sector, including small and micro entities.

Under the **consistency of recycling collections** measure (in primary legislation), micro businesses as a whole, across all kinds of sectors, could face annual undiscounted net costs of up to £292 million in the preferred option consulted on in Spring 2019⁵³. Micro businesses produce the least waste, so the additional bins required to comply with the measure will have the greatest proportional impact on the smallest businesses.

⁵³ Based on Waste & Resources Action Programme data. Not adjusted for price and present value year.
https://consult.defra.gov.uk/environmental-quality/consultation-on-consistency-in-household-and-busin/supporting_documents/recycleconsistencyconsultia.pdf

In some sectors, such as retail and wholesale, micro businesses are expected to see savings. Small businesses as a whole would benefit from annual undiscounted net savings of £116 million⁵⁴, although some small businesses could see a net cost. The Environment Bill allows the government to exempt persons from the consistency of recycling collections requirements that apply to businesses, including small and micro firms, or to delay implementation to allow them time to bring in changes. This Impact Assessment assumes that small businesses and micro businesses start fully separating their waste into recyclates from 2029 and 2032 respectively, meaning that these costs or savings will not be realised in the years before. Overall, small and micro businesses represent 97% of the non-household municipal sector's business population, and around 59% of the total sector's waste arising. Further detail on the impact of the consistency of recycling collection measures can be found in its consultation Impact Assessment.

11. Conclusion

This document provides an overview of the currently anticipated quantitative and qualitative impacts of the Bill measures by chapter. It synthesises the assessment carried out for each measure. The impacts of the Bill are mostly quantified for measures to be implemented through primary legislation (see Table 14 below). Impacts of measures requiring secondary legislation are mostly assessed qualitatively; when quantified, the relative estimates (see Table 15 below) have been treated as indicative, because future decisions are still needed to determine policy options. Of the measures to be introduced at primary legislation the total annualised costs are estimated to be £221m. Most of these costs are represented by annualised costs to business of £196.6m due to Biodiversity Net Gain. The costs of this measure are already presented in a separate Impact Assessment, whereas most of the other costs arising from the remaining primary legislation measures are annualised minor extra costs associated with the nature, water and air quality measures to the public sector. Most of the benefits deriving from measures to be introduced at primary legislation have not been monetised. The only monetised benefits are from the biodiversity net gain and local nature recovery strategies measures, leading to annualised environmental benefits of an estimated £1.4⁵⁵ billion per year. These total benefits are described in full in the published Impact Assessment.

Table 14: Monetised total costs and benefits arising from primary legislation by chapter, using best estimates from Impact Assessments and Statements of Impacts. (2018 Price Year, 2020 Present Value)

Chapter & Measure for which costs and benefits were monetised	Annex no.	Annualised Benefits (£m)	Annualised Costs (£m)	Total Benefits (£m, PV terms)	Total Costs (£m, PV terms)	NPV
Air Quality						
Amendments to the Clean Air Act	23	n/a	3.7	n/a	31.4	n/a
Amendments to the Environment Act	25	n/a	4.4	n/a	38.3	n/a
Total Primary Legislation Impacts		£ -	£ 8.1	£ -	£ 69.7	

⁵⁴ Based on Waste & Resources Action Programme data. Not adjusted for price and present value year. https://consult.defra.gov.uk/environmental-quality/consultation-on-consistency-in-household-and-busin/supporting_documents/recycleconsistencyconsultia.pdf

⁵⁵ All ongoing costs and benefits reported in this document and in the table below are in 2018 prices and are annualised present value figures, unless otherwise stated. Although different policies start at different times, all costs and benefits are expressed in 2020 present value.

Water						
Strengthening Ofwat Licence Condition Modification Powers	32	n/a	0.5	n/a	4.5	n/a
Electronic Service of documents under Water Industry Act 1991	33	n/a	-0.5	n/a	-4.3	n/a
Ofwat information gathering power	34	n/a	0.0	n/a	0.1	n/a
Total Primary Legislation Impacts		£ -	£ 0.0	£ -	£ 0.3	
Nature						
Biodiversity Net Gain & LNRS	38	1,374	209.1	11,219	1,799.9	9,419
NERC Amendment	39	n/a	0.7	n/a	6.2	n/a
Urban Trees (Duty to Consult)	41	n/a	2.8	n/a	24.1	n/a
Forestry Enforcement	42	n/a	0.0	n/a	0.0	n/a
Total Primary Legislation Impacts		£ 1,374	£ 212.6	£ 11,219	£ 1,830.2	
Whole Bill Total Primary Legislation Impacts		£ 1,374	£ 220.7	£ 11,219	£ 1,900.1	

Table 15: Monetised total costs and benefits arising for secondary legislation by chapter, using best estimates from Impact Assessments and Statements of Impacts. (2018 Price Year, 2020 Present Value)

Chapter & Measure for which costs and benefits were indicatively monetised	Annex no.	Annualised Benefits (£m)	Annualised Costs (£m)	Total Benefits (£m, PV terms)	Total Costs (£m, PV terms)	NPV
Waste and Recycling						
EPR (assuming DRS all-in)	13, 14, 19	1,260	1,286	10,843	11,067	-223
DRS all-in	16	985	756	8,478	6,504	1,974
Recycling Consistency	21	557	443	5,935	4,725	1,210
Total Secondary Legislation Impacts (indicative)		£ 2,801	£ 2,484	£ 25,256	£ 22,296	
Water						
Statutory Drainage and Wastewater Management Plans (DWMs)	30	n/a	4.0	n/a	34.2	n/a
Waste Resources Management Plans	31	n/a	0.3	n/a	2.6	n/a
Valuation calculation for internal drainage boards (IDBs)	37	n/a	3.6	n/a	31.3	n/a
Total Secondary Legislation (indicative)		£ -	£ 7.9	£ -	£ 68.0	
Whole Bill						
Total Secondary Legislation (indicative)		£ 2,801	£ 2,493	£ 25,256	£ 22,364	

The total annual benefits for the whole Bill for both primary and secondary legislation are estimated in £4,175m (Present Value 2020), whilst the total annual costs are equal to £2,713m (Present Value 2020). These impacts are only indicative.

The following Table 16 provides an overview of the currently anticipated quantitative and qualitative impacts of the Bill measures on the environment, business and wider society.

Table 16: Summary of the main Impacts of the Bill from primary and secondary legislation

	Environmental and social impacts	Business and consumer impacts	Public sector impacts
Benefits	<p><u>Primary and secondary legislation (provisional for secondary legislation)</u> Cross-Cutting Improved environmental accountability and policy-making Reduction in GHGs emissions</p> <p>Governance Improved environmental accountability, policy-making and regulation</p> <p>Air Quality Reduction in air pollution with resultant health and environmental benefits</p> <p>Nature Annualised benefits of £1.4 billion from mandating biodiversity net gain and local nature recovery strategies for nature</p> <p>Water Reduction in pressures on the water environment: better resilience to drought, flooding and coastal erosion</p> <p>Waste and Resource Efficiency Increased resource efficiency</p> <p>Reduction in littering activities and societal disamenities deriving from it (e.g. annualised £889⁵⁶ million litter disamenity benefit from DRS with secondary legislation</p>	<p><u>Primary legislation</u> Governance More regulatory certainty for businesses</p> <p>Nature Consistent and standardised approach to demonstrating biodiversity net gain resulting in potential savings for developers</p> <p>Water Annualised benefits from Ofwat's reform to allow companies to serve documents electronically: up to £0.5 million</p> <p><u>Secondary legislation (provisional)</u> Waste and Resource Efficiency Improved waste management practices from consistency of recycling collections are expected to save businesses £103 million annualised in reduced costs.</p>	<p><u>Primary and secondary legislation (provisional for secondary legislation)</u> Cross-cutting Improved collaborative working across public bodies, through exchange of knowledge and data</p> <p>Nature A more integrated and targeted risk-based approach to managing the UK's natural capital from local nature recovery strategies with potential for greater collaboration across public bodies</p> <p>Cost savings arising from standardised and streamlined approach to biodiversity assessments for developments</p> <p>Water Improved public-sector assets thanks to better resilience to drought and flooding, and better coastal erosion risk management</p> <p>Waste and Resource Efficiency Placing the responsibility on producers for the cost of managing products/materials when they become waste will reduce burden on the taxpayer and onto those who can design their products and materials for re-use, repair and recycling.</p> <p>Improved litter powers will make it easier for local authorities to tackle litter problems.</p>
Costs	<p><u>Secondary Legislation (provisional):</u> As with every intervention, there is the potential for unintended consequences.</p>	<p><u>Primary legislation:</u> Cross-cutting Transition costs from familiarising with new systems including one-off cost up to £1.9 million from Clean Air Act amendments (£0.2 annualised)</p> <p>Governance Transaction costs for businesses associated with familiarisation with the new system</p> <p>Nature Compliance with new regulation from biodiversity net gain policy (£196.6 million annualised)</p>	<p><u>Primary legislation and secondary legislation (provisional for secondary legislation)</u> Cross-cutting Additional costs to the public sector, both from primary and secondary legislation, tied to the policy delivery mechanisms that will be determined by policy decisions of different public bodies</p> <p><u>Primary legislation</u> Governance The establishment of an OEP will entail set-up and ongoing costs covered by grant-in-aid. For example, there are extra financial costs which include both staff and non-staff resources required to fulfil its statutory functions sufficiently. The</p>

⁵⁶ This figure is based on earlier research conducted by Leeds University for Defra. However further research findings are emerging and are presently being evaluated.

		<p>Water Total annualised costs from Ofwat reforms: up to £0.5 million</p> <p><u>Secondary legislation (provisional)</u></p> <p>Cross-cutting Compliance and regulatory costs from Bill measures with associated transition costs. For example, legally binding targets, the air quality target, and measures in the waste chapter</p> <p>Waste and Resource Efficiency Deposit Return Scheme on beverage containers and Extended Producer Responsibility for Packaging (circa £1.0 - £1.4 billion net present annualised costs)⁵⁷</p> <p>Water Annualised costs to business of £6.6 million from Water Resources Management Plans, Drainage and Wastewater Management Plans and reform of Internal Drainage Boards</p> <p>Chemicals regulation These measures could result in additional costs, avoided costs, or be cost-neutral to businesses, depending on the proposed amendments.</p>	<p>financial costs will be published in due course.</p> <p>Air Quality One-off costs to local authorities from Clean Air Act Amendments: up to £4.5 million (£0.5 million annualised)</p> <p>Total annual ongoing costs to local authorities from Clean Air Act and Environment Act amendments: £7.3 million</p> <p>Nature Increased burden to public sector from biodiversity net gain and local nature recovery strategies: c. £12.5 million annualised on average, of which £9.4 falls on local authorities</p> <p>Increased burden to local authorities from duty to consult on felling street trees: c. £2.8 million annualised on average</p> <p>Reporting duty for public authorities (excluding local authorities⁵⁸) following amendments to the Natural Environment and Rural Communities Act: c. £0.4 million – £0.7 million annualised. (The upper bound is used as the central cost estimate presented in Table 1.)</p> <p><u>Secondary legislation (provisional)</u></p> <p>Cross-Cutting Potential additional costs to public sector from complying with the air quality target for PM2.5, and other legally-binding targets</p> <p>Water Additional burden on local authorities from choosing to create a new internal drainage board or expand an existing internal drainage board (up to £2.4 million annualised)</p> <p>Waste and Resource Efficiency Costs to local authorities for collection of materials</p> <p>Initial and indicative quantified costs arising from secondary legislation £373 million annualised net costs from consistency of recycling collections (of which £79 million is to local authorities)</p>
Annualised total net impact from primary legislation ⁵⁹	£1,374m in benefits from environmental and social impacts	£196.9m in costs from business and consumer impacts	£23.8m in costs to the public sector, of which £20.0m are costs to local authorities There will be additional costs to establish and run the OEP.
	£1,374m benefits from environmental and social impacts	£220.7m in costs from business & consumer and public sector impacts	

⁵⁷ The costs to business depend on the type of Deposit Return Scheme that is implemented. This is because it affects the materials that flow through each scheme. The high cost estimate accounts for the 'all-in' option of a Deposit Return Scheme on drink containers being implemented as consulted on in Spring 2019 (i.e. with no restriction on the size/format of drink containers in scope). The low cost estimate accounts for the 'on the go' option (i.e. containers of less than 750ml in size and sold in single format containers) in the same consultation. These analyses will continue to be refined and further options for both Extended Responsibility and Deposit Return Schemes will be presented in a future consultation.

⁵⁸ Burdens on local authorities from this measure are captured in the net gain estimates.

⁵⁹ The one-off costs feed into these total figures as annualised costs.

Note: All numbers reported in this table and in the following sections are in **2018** prices. Although different policies start at different times, **2020** has been used as the present value start year, so as to have consistency across all policies in the Environment Bill. As such, figures reported in this document may not match what is stated in the respective Impacts Assessments and Statements of Impacts, which instead may use different prices years and present value start years. Further detail on methods can be found in the Statements of Impacts.

The figures in Table 1 include all the costs and benefits of the different waste measures. The figures elsewhere in this Impact Assessment have been selectively chosen to illustrate poignantly the waste and resource efficiency measures by sector rather than by measure, which is why they do not add up to the totals in Table 1.

12. List of annexes

Governance:

1. Statement of impacts – Office for Environmental Protection
2. Statement of impacts – Environmental Principles
3. Statement of impacts – Environmental Improvements Plans
4. Statement of impacts – Legally binding targets for environmental improvement
5. Statement of impacts – UK environmental protections

Waste:

6. Statement of Impacts – Waste Charging Powers Reform in England, Wales and Northern Ireland
7. Statement of Impacts – S57 and Art. 27 Emergency (Modernising) powers to direct collection of waste in England, Wales and Northern Ireland
8. Statement of Impacts – Waste Exemptions
9. Statement of Impacts – Finings Powers in England and Wales
10. Statement of Impacts – Waste tracking powers in England, Wales, Scotland and Northern Ireland
11. Statement of Impacts – Section 108 enforcement powers in England and Wales
12. Statement of Impacts – Vehicle seizures in England and Wales
13. Statement of Impacts – Scheme Regulator for Extended Producer Responsibility
14. Statement of Impacts – EPR: Full Net Cost Recovery and Modulated Producer / Deposit Fees
15. Statement of Impacts – Improved enforcement against littering and related offences
16. Statement of Impacts – Power to set a deposit of named products as part of a Deposit Return Scheme (DRS)
17. Statement of Impacts – Eco-design: Mandatory material efficiency standards
18. Statement of Impacts – Powers to mandate consumer information via ecolabelling
19. Statement of Impacts – Scheme Administrators for EPR
20. Statement of Impacts – Powers to reduce business food waste
21. Statement of Impacts – Consistent municipal waste collections
22. Statement of Impacts – Extended charge for single use plastic items

Air quality:

23. Statement of impacts – Amendments to the Clean Air Act
24. Statement of impacts – Clean Air Act Changes [Wales]
25. Statement of impacts – Amendments to Environment Act
26. Statement of Impacts – For the Secretary of State to set a target in respect of the annual mean level of fine particulate matter (PM_{2.5}) in ambient air.

27. Statement of impacts – Environment recall of motor vehicles

Water:

28. Statement of impacts – Increasing the circumstances in which the Environment Agency can vary or revoke an abstraction licence without being liable to pay compensation: environmental damage

29. Statement of impacts – Increasing the circumstances in which the Environment Agency can vary or revoke an abstraction licence without being liable to pay compensation – under used

30. Statement of impacts – Statutory Drainage and Wastewater Management Plans (DWMPs)

31. Statement of impacts – Water Resources Management Plans (WRMPs)

32. Statement of impacts – Strengthening Ofwat Licence Condition Modification Powers

33. Statement of impacts – Electronic Service of documents under Water Industry Act 1991

34. Statement of impacts – Ofwat information gathering power

35. Statement of impacts – Power to update the Water Framework Directive's list of priority substances and environmental quality standards for surface and ground waters

36. Statement of impacts – Power to transfer functions within The Water Environment (Water Framework Directive) (Solway Tweed River Basin District) Regulations 2004

37. Statement of impacts – Valuation calculation for internal drainage boards (IDBs)

Nature:

38. Impact Assessment - Biodiversity Net Gain and Local Nature Recovery Strategies

39. Statement of Impacts – Amendment or replacement of section 40 of the Natural Environment and Rural Communities Act 2006 (NERC): duty on public bodies to have regard to the purpose of conserving biodiversity

40. Statement of Impacts – Conservation Covenants

41. Statement of Impacts – Local authority Duty to Consult on felling street trees

42. Statement of Impacts – Forestry Enforcement

Chemicals:

43. Statement of Impacts - REACH Amendment in the Environment Bill