Consultation on National Litter and Flytipping Strategy

Strategic Environmental Assessment

Environmental Report

Scottish Government
Riaghaltas na h-Alba
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Non-Technical Summary

Introduction

The Scottish Government is committed to reviewing the existing five-year National Litter Strategy[1]. Despite recent efforts and strategies, the problem of littering and flytipping in Scotland has persisted[2] and in March 2021, Keep Scotland Beautiful in partnership with Zero Waste Scotland and Scottish Government hosted a litter summit. This provided an opportunity to reflect on work that had been carried out under the first strategy and to start defining future priorities for tackling litter[3]. This included recognition that there is a need to treat flytipping and litter as distinct issues, which although interrelated, will allow for separate strategies to be developed that target the different drivers for littering and flytipping.

The Scottish Government is seeking views on proposals in the new National Litter and Flytipping Strategy to prevent litter and flytipped materials and improve their management. The new strategy will identify a suite of measures to help prevent litter and flytipping and reduce environmental impacts. It will build upon the previous five-year strategy and aims to provide an agile strategic framework to accommodate the changing landscape.

A Strategic Environmental Assessment (SEA) of the new National Litter and Flytipping Strategy (NLFS) is being undertaken to assess its likely significant environmental effects and identify ways to enhance environmental benefits and avoid, minimise or mitigate any adverse environmental effects. The findings are provided in this Environmental Report (ER). **This Non-Technical Summary (NTS) provides an**

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[1] https://www.gov.scot/publications/towards-litter-free-scotland-strategic-approach-higher-quality-local-environments/

[2] https://www.keepscotlandbeautiful.org/media/1566897/leq-2020-report-final-041220.pdf)

[3] https://www.keepscotlandbeautiful.org/news/mar-2021/scottish-litter-summit/#:~:text=On%20Wednesday%2017%20March%202021,of%20dog%20fouling%20and%20graffiti

overview of the Environmental Report produced as part of the SEA of the proposed new strategy.

The Environmental Report presents the findings of the SEA for consultation. The following sections of this NTS:

- provide an overview of the proposed new National Litter and Flytipping strategy;

- describe the SEA process

- outline how SEA has been applied to the proposed National Litter and Flytipping strategy;

- summarise the findings of the SEA on the relevant topic areas, including an outline of the cumulative effects, any proposals for mitigation and monitoring;

- present the conclusions and recommendations of the SEA.

What are the key elements proposed in the National Litter and Flytipping Strategy?

The new National Litter and Flytipping Strategy has the potential to achieve the following:

- reduce the volume of waste created;

- increase the volume of materials entering recycling;

- divert materials from landfill;

- reduce the amount of waste entering Scotland's rivers, lochs and seas;

- improve local environments and neighbourhoods;

- encourage wider behaviour change around materials.

The new strategy will build upon the previous five-year National Litter Strategy and aims to provide an agile strategic framework to accommodate the changing policy and data landscape. It will treat litter and flytipping as separate but interrelated issues, allowing for improved targeting of measures to bring about change. The new strategy identifies a suite of measures to prevent litter and flytipping and therefore reduce impact on local environmental quality, structured according to the following four thematic areas (noting that proposals for 'Data and Research' in particular, may include measures that are cross-cutting with each of the other themes):

Behaviour change: This theme recognises the need for improved communications and engagement, but also the need to take a holistic approach to behaviour change; understanding key audiences, issues and developing a framework to identify solutions that enable behaviours to be changed.

Services and infrastructure: This theme recognises that in order for the prevention of litter and flytipping to be effective there needs to be services and infrastructure in place to support responsible behaviours. This includes services offered by local authorities, businesses and community groups.

Enforcement: Enforcement and deterrents are an important component of the new strategy to achieve the prevention of litter and flytipping. Its inclusion reflects stakeholder requests to review the enforcement process and procedures and to understand if alternative collaborative solutions are available (such as education or volunteering for those who cannot afford to pay fines) and effective.

Data and research: Improved litter and flytipping data is crucial to successfully understanding the root causes of the issue, evaluating the success of any interventions, collaborating successfully and monitoring progress. This includes reporting of issues by the public and communities, national reporting and monitoring, citizen science and measurable outcomes.

For more information on the new National Litter and Flytipping Strategy, please see Section 2 of the Environmental Report. Separate aims, objectives and actions have

been developed for combating litter and flytipping aligned to these strategy themes, which for litter are summarised in **Appendix C**, and for flytipping are summarised in **Appendix D**.

It is noted that development of the draft National Litter and Flytipping Strategy is an iterative process and there is potential for some minor differences between the presentation of the strategy proposals in this Environmental Report and the format used in final consultation paper for the draft National Litter and Flytipping Strategy. However, the SEA has been based on the entirety of the strategy proposals and any discrepancies in the presentation of the proposed actions is not considered material in terms of the assessment of environmental effects.

What is Strategic Environmental Assessment (SEA)?

SEA is a statutory requirement under the Environmental Assessment (Scotland) Act 2005, to assess the likely significant environmental effects that a public plan, programme or strategy (PPS) will have on the environment if implemented. The process identifies how adverse environmental effects can be avoided, minimised, reduced or mitigated and how any positive effects could be enhanced. It also allows the public to give their view on the programme and its potential environmental impacts.

SEA is comprised of the following key stages:

1. **Screening** – determining whether a PPS requires SEA.

2. **Scoping** – establishing the scope and approach of the SEA, including the environmental topics to include, the context (a review of other PPS and the environmental baseline) and the assessment methodology, with the information presented in a Scoping Report, which is subject to a 5-week consultation.

3. **Environmental Assessment** – identifying, describing and assessing the likely significant effects of the PPS.

4. **Environmental Report** - outlining the findings from the environmental assessment, consistent with the requirements of Schedule 3 of the 2005 Act.

5. **Main consultation** - consulting on the draft PPS and Environmental Report;

6. **Post Adoption Statement (PAS)** – completing this statement after the PPS has been adopted. It outlines how the assessment and consultation responses have been considered within the finalised PPS.

7. **Monitoring** – monitoring the effects of implementation.

A combined SEA screening and scoping report for the National Litter and Flytipping Strategy was submitted to statutory consultees for consultation which ended on 20 October 2021. The SEA approach has been amended, where appropriate in response to the comments received. This scoping consultation comments and responses are documented in **Appendix A**.

The proposed actions for combating litter and flytipping are set out in the consultation document, published alongside the Environmental Report. The responses received and findings of the SEA will help inform the final outcome and will be reflected upon in the Post Adoption Statement.

Scottish Government will monitor the implementation and environmental effects resulting from implementing new measures to combat litter and flytipping in Scotland.

How have the environmental effects of proposed National Litter and Flytipping Strategy been assessed?

Visions, aims and actions for preventing and improving management of litter and flytipping have been assessed to identify and evaluate (where applicable) the likely significant effects that could arise from the implementation of proposed measures to combat litter and flytipping. The effects of the proposed measures have been considered with respect to the following topic areas: biodiversity, human health, water, climatic factors, material assets, and landscape and visual impacts. These topics were scoped into the SEA following the scoping stage.

Assessment criteria have been developed to ensure that the SEA focuses on significant environmental effects relevant to each scoped in topic area. The assessment criteria for this SEA are presented in Table NTS 1 below.

Table NTS 1   SEA Assessment Criteria

SEA Topic	SEA Criteria
Biodiversity, flora and fauna	• To safeguard terrestrial, marine and coastal ecosystems, including species and habitats, and their interactions • To avoid pollution of the terrestrial, coastal and marine environments • To maintain or work towards good ecological and environmental status
Human health	• To safeguard the amenity of recreational assets • To safeguard human health
Water	• To safeguard water quality, including bathing waters
Climatic factors	• To prevent any increase in net carbon impacts and to contribute to Scotland's journey to meet the 2045 net zero commitment.
Material assets	• To maintain the environmental quality which supports economic activities • To prevent increased pressure on material assets such as landfill sites
Landscape and visual impacts	• To protect and, where appropriate, enhance the landscape/seascape

For more information on the approach to assessment, please see Section 3 of the Environmental Report.

What are the likely significant environmental effects of the proposed National Litter and Flytipping Strategy?

The effects of proposed measures against each of the four strategy themes against SEA topic areas scoped into this analysis, namely biodiversity, human health, water,

climatic factors, material assets, and landscape and visual impacts, are summarised in Table NTS 2 for litter and Table NTS 3 for flytipping.

The analysis shows that the proposed measures for combating both litter and flytipping will generate cumulative positive effects across each of the environmental topics. No cumulative significant negative effects have been identified from the assessment.

Table NTS 2   Summary of cumulative effects from actions for the prevention of litter

Litter Strategy Theme	Biodiversity	Human Health	Water	Climatic Factors	Material Assets	Landscape and Visual
Behaviour Change	+/?	+/?	+/?	+/?	+/?	+/?
Services and Infrastructure	+	+	+	+	+	+
Enforcement	+/?	+/?	+/?	+/?	+/?	+/?
Data and Research	+/?	+/?	+/?	+/?	++/?	+/?

Table NTS 3   Summary of cumulative effects from actions for the prevention of flytipping

Flytipping Strategy Theme	Biodiversity	Human Health	Water	Climatic Factors	Material Assets	Landscape and Visual
Behaviour Change	+/?	+/?	+/?	+/?	+/?	+/?
Services and Infrastructure	+	+/?	+	+	+	+
Enforcement	+/?	+/?	+/?	+/?	+/?	+/?
Data and Research	+/?	+/?	+/?	+/?	+/?	+/?

The key to each assessment score is shown below:

Score Key:	++	+	0	-	--	?
	Significant positive effect	Minor positive effect	No overall effect	Minor negative effect	Significant negative effect	Score uncertain
NB: Where a box is coloured but also contains a "?" this indicates uncertainty over whether the effect could be a minor or significant effect although a professional judgement is expressed in the colour used. A conclusion of uncertainty arises where there is insufficient evidence for expert judgement to conclude an effect.						

In the case of the measures developed for combating litter, although positive effects are determined for each of the environmental topics, in general these are not considered to be significant, which in part is due to the high-level nature of the proposed actions, along with some additional uncertainty regarding the quantitative effects of litter on the environment and unknowns regarding implementation by relevant stakeholders. A significant cumulative positive effect is determined for the proposals related to data and research for material assets, where there are considered to be benefits in recouping the resource value of materials in litter that would otherwise be lost, as well as avoiding disposal of litter and therefore reducing pressure on landfill capacity.

In the case of the measures developed for combating flytipping, again, positive effects are determined for each of the environmental topics. None of the cumulative positive effects for the environmental topics are found to be significant, although there is considerable uncertainty identified. In principle, the proposals for enforcement should deliver positive effects for the environment but the uncertainty arises from insufficient evidence currently available to demonstrate causal links between enforcement measures and sustained reductions in flytipping. The uncertainty points to the need for further clarity, and monitoring, to assess the effectiveness of the proposed actions in changing existing levels of flytipping.

For more information on the cumulative effects, please see Section 10 of the Environmental Report.

How can potential environmental effects be effectively managed, mitigated or enhanced?

A number of measures have been identified to enhance the environmental benefits of the proposals to combat litter and flytipping and are outlined within the relevant sections. Key recommendations are:

- Improved consistency in data collection between duty bodies should be encouraged and informed through guidance. Data reporting should be made clear and simple to users to maximise reporting rates.

- Improving shared access to information on enforcement and prosecutions for littering and flytipping may assist in deterring repeat offenders. Enforcement levels could also be analysed against flytipping levels per local authorities/relevant organisations to find gaps or shortcomings.

- Whilst incorporating information on flytipping into a national database would be beneficial, efforts must be made to ensure that reporting is consistent and comprehensive.

- Consider the use of technology to streamline and facilitate the reporting of data on litter and flytipping to determine how it can improve reporting by local authorities and landowners.

- Consider increasing the prominence of enforcement in nudging behavioural change, such as emphasising the consequences of failing to pay a fixed penalty notice and the level of potential fines associated with prosecution.

- Provide reminders on the availability of waste recycling facilities, including the option that using recycling facilities at home may provide better outcomes for waste material rather than littering.

What monitoring is proposed?

Section 19 of the Environmental Assessment (Scotland) Act 2005 requires the Responsible Authority to monitor significant environmental effects of the implementation of the Plan. The Responsible Authority for the new National Litter and Flytipping strategy will be the Scottish Government.

In order to ensure the intended benefits of the proposals in the new National Litter and Flytipping strategy are being realised, the following monitoring framework is proposed:

- Scotland's performance against the waste hierarchy is reported annually, and improvements in reducing landfill waste and increasing utilisation of waste are regularly monitored and reported. This could be used to evaluate the level of litter and flytipping that has been prevented or the quantity of these materials diverted from landfill in to recycling routes.

- Zero Waste Scotland periodically conducts waste studies to determine the composition of Scotland's waste. Zero Waste Scotland and the Scottish Government are considering the timing and scope of these studies to support effective monitoring of the proposed measures and ensure the strategy aims are being achieved.

- Litter and beach clean-up data collected in Scotland by organisations like Keep Scotland Beautiful and the Marine Conservation Society can be used to monitor changes in observable litter following implementation of the proposals to prevent litter and flytipping.

- WasteDataFlow (WDF) and FlyMapper are national databases that include information on incidents and composition of flytipping. WDF is a mandatory reporting requirement for local authorities. Dumb Dumpers is an additional platform available for members of the public to report incidents of flytipping to Zero Waste Scotland[4]. These could be used to monitor any changes brought about by implementation of the proposals for flytipping. However, the

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[4] https://www.zerowastescotland.org.uk/DumbDumpers

Flymapper system has not been adopted universally by authorities and differences in reporting of incidents for both FlyMapper and WDF means that data can be incomplete, which complicates interpretation of the information. Proposals in the strategy to improve the consistency of reporting should provide the basis for ensuring that these databases can be used as suitable tools to monitor the effectiveness of other proposals in the strategy to prevent flytipping.

- Records of enforcement notices, including issuing of fixed penalty fines and prosecutions for littering and flytipping, may be used to monitor the effectiveness of the proposals for enforcement, which would improve the current understanding of what works at what doesn't and how to make best use of legislative powers.

Monitoring proposals are explored in more detail in Section 11.2 of the Environmental Report; however, these are not exhaustive. It is anticipated that as newer monitoring programmes are developed, these may be used to gather further data in relation to the effects of the measures to combat litter and flytipping across all relevant topic areas.

What were the conclusions and recommendations of the SEA?

The Environmental Report concludes that subject to the practical implementation of what are recognised to be high level visions, aims and actions for preventing litter and flytipping, the proposals in the new National Litter and Flytipping strategy have the potential to produce positive environmental effects across all of the topics assessed:

- biodiversity, flora and fauna;

- human health;

- water;

- climatic factors;

- material assets; and

- landscape and visual impacts.

It is anticipated that the strategy proposals will assist in preventing the presence of litter and flytipped material, thus helping to break the link between the adverse effects of these wastes on each of the environmental topics. Where incidents of litter and flytipping do occur the proposals are also expected to limit the duration that uncontrolled waste is present in the environment and improve the onward management of these materials, which is considered to be particularly beneficial to material assets and may also support a reduction in carbon emissions.

How can I comment on this Environmental Report?

Public views are now sought on the proposals for the prevention of litter and flytipping in this Environmental Report. We would welcome your views on any aspect of this Environmental Report. We are particularly interested to receive your response to the following question:

1. (a) Do you agree with the recommendations and conclusions within the Strategic Environmental Assessment Environmental Report? Yes / No / Do not know

   (b) If not, please provide detail and evidence

- The consultation will run until 13 December 2021. Comments on the proposals in new National Litter and Flytipping strategy and the Environmental Report can be submitted online at https://consult.gov.scot/environment-forestry/national-litter-and-flytipping-strategy

Contents

1. Introduction

1.1 Background to the National Litter and Flytipping Strategy (NLFS)

Litter and flytipping are well-documented indicators of local environmental quality and have significant social, environmental and economic impacts, and health implications. Research[5] indicates that at least 15,000 tonnes of litter is disposed of into our urban and rural environment and is subsequently cleared by local authorities every year, which equates to around 250 million easily visible items. The same research reports that a further 26,000 tonnes of waste is flytipped each year and dealt with by local authorities, with an estimated 61,000 incidents occurring per year, although this estimate excludes the vast majority of cases on private land.

Litter and flytipping have both direct and indirect costs for society. Scotland spends an estimated £53 million of public money on litter and flytipping each year in direct costs (for clearance, education and enforcement activities)[6]. Indirect costs are the negative impacts or consequences of litter that impact on society more widely, for example, crime, mental health and wellbeing. Research[7] suggests that indirect costs are likely to exceed £25 million. This cost does not include a comprehensive estimate for marine litter.

Litter and flytipping are indicators of the unsustainable use of our resources and represent a loss of material from the circular economy. An estimated 80% of the litter stream consists of potentially recyclable material and an estimated 50% of the material could have been easily recycled, had it not been littered[8]. This unsustainable resource loss has a clear link to fundamental environmental challenges surrounding climatic

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[5] https://www.zerowastescotland.org.uk/sites/default/files/Scotland%27s%20Litter%20Problem%20-%20Full%20Final%20Report.pdf

[6] https://www.zerowastescotland.org.uk/sites/default/files/Scotland%27s%20Litter%20Problem%20-%20Full%20Final%20Report.pdf

[7] https://www.zerowastescotland.org.uk/sites/default/files/Exploring%20the%20Indirect%20Costs%20of%20Litter%20in%20Scotland.pdf

[8] https://www.zerowastescotland.org.uk/sites/default/files/Scotland%27s%20Litter%20Problem%20-%20Full%20Final%20Report.pdf

change, as additional carbon emissions are released from the extraction and processing of constituent raw materials and the manufacture and transport of goods to replace the lost resources.

In 2014, Scottish Government launched the existing five-year National Litter Strategy 'Towards A Litter-Free Scotland: A Strategic Approach to Higher Quality Local Environments'[9]. This provided the strategic national framework for Scotland to begin to address some of the issues that result in unwanted levels of littering and flytipping. Despite current efforts and strategies, the problem of littering and flytipping in Scotland has not improved in recent years[10].

In March 2021, Keep Scotland Beautiful in partnership with Zero Waste Scotland and Scottish Government hosted a litter summit; this provided an opportunity to reflect on work that had been carried out under the first strategy and start to define future priorities for tackling litter[11]. This was complemented by a roundtable meeting hosted by Scottish Government in January 2021, to discuss with stakeholders how to move forward work on tackling flytipping[12]. Further to this, Scottish Government has committed to establishing a Flytipping Forum, which will convene from early 2022. The forum will be chaired by Scottish Government and hosted in partnership with Zero Waste Scotland and SEPA. This forum will provide an opportunity to support the implementation and monitoring of the Strategy and ensure ongoing engagement of key issues.

The Scottish Government has completed work to review the 2014 National Litter Strategy and has drafted a new Litter and Flytipping Strategy. It will treat litter and flytipping as separate but inter-related issues and identify a suite of measures to help prevent litter and flytipping, and therefore reduce the economic, social and

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[9] https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2014/06/towards-litter-free-scotland-strategic-approach-higher-quality-local-environments/documents/00452542-pdf/00452542-pdf/govscot%3Adocument/00452542.pdf

[10] https://www.keepscotlandbeautiful.org/media/1566897/leq-2020-report-final-041220.pdf)

[11] https://www.keepscotlandbeautiful.org/news/mar-2021/scottish-litter-summit/#:~:text=On%20Wednesday%2017%20March%202021,of%20dog%20fouling%20and%20graffiti

[12] https://www.gov.scot/publications/five-years-review-scotlands-national-litter-strategy/pages/1/

environmental impact. It will build upon the previous five-year strategy and aims to provide an agile strategic framework to accommodate the changing landscape. Following consultation on a draft version of the new Litter and Flytipping Strategy (in combination with consultation of this SEA Environmental Report), a new National Litter and Flytipping Strategy is expected to be published in early 2022.

Items littered or flytipped in the terrestrial environment are part of a broader system, with many transported to the marine environment via fluvial pathways and other routes. Items littered on land in Scotland are now thought to constitute 90% of plastic in Scottish seas[13]. In addition to the development of the new National Litter and Flytipping Strategy, which focusses on the terrestrial environment, a separate review and update has been progressed for the Marine Litter Strategy[14] (also originally published in 2014). The update to the Marine Litter Strategy will provide an increased focus on litter removal alongside litter prevention for the marine environment. Background to Strategic Environmental Assessment (SEA)

In 2005 the Scottish Government established the Environmental Assessment (Scotland) Act[15]. This Act, which came into force on 20 February 2006, replaced the Environmental Assessment of Plans and Programmes (Scotland) Regulations 2004 as the transposition vehicle for the European Directive 2001/42/EC "the assessment of the effects of certain plans and programmes on the environment")[16].

The Environmental Assessment (Scotland) Act 2005 requires that environmental assessment is undertaken on all plans, programmes and strategies of a public nature which are likely to have significant environmental effects. Strategic environmental assessment (SEA) aims to ensure that the likely significant environmental effects of plans, programmes and strategies are identified, described and assessed to avoid, manage or mitigate any significant adverse effects and to enhance any beneficial

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[13] https://www.sciencedirect.com/science/article/pii/S0025326X19308811

[14] https://www.gov.scot/policies/marine-environment/marine-litter/

[15] The Environmental Assessment (Scotland) Act 2005

[16] https://ec.europa.eu/

effects. In this context, the purpose of SEA is to encourage relevant plan authors to integrate environmental considerations into the development of any plan or programme.

The main benefits of the SEA process as set out in the 2005 Act are as follows:

- SEA improves the information base for plan, programme and strategy (PPS) preparation, providing clear information on the possible impact on the environment and influencing the preparation of the PPS, while building in better environmental protection and outcomes;

- SEA provides a rigorous system for including environmental factors in decision making, thus supporting a sustainable development approach;

- SEA facilitates an improved consultation process, including the rigorous assessment of reasonable alternatives;

- SEA also facilitates transparency, by requiring that an analysis of public comments is undertaken and made publicly available;

- SEA facilitates the consideration of cumulative effects and provides a means to prevent, reduce and, as fully as possible, offset any potentially adverse environmental effects.

SEA is an iterative process and comprises the following distinct stages:

- **Screening** – determining whether a PPS requires SEA.

- **Scoping** – establishing the scope and approach of the SEA, including the environmental topics to include, the context (a review of other PPS and the environmental baseline) and the assessment methodology, with the information presented in a Scoping Report, which is subject to a 5-week consultation.

- **Environmental Assessment** – identifying, describing and evaluating the likely significant effects of the PPS.

- **Environmental Report** - outlining the findings from the environmental assessment, consistent with the requirements of Schedule 3 of the 2005 Act.

- **Main consultation** - consulting on the draft PPS and Environmental Report;

- **Post Adoption Statement** – making the final decision on how or whether to proceed with the proposed activity, plan or strategy taking into account the comments resulting from the consultation and the contents of the Environmental Report; informing the public about that decision.

- **Monitoring** - monitoring significant environmental effects of implementation and taking appropriate remedial action for unforeseen environmental effects are also part of the final monitoring stage.

Scottish Government has screened the proposals for the new National Litter and Flytipping Strategy against the requirements of the 2005 Act and identified that, in accordance with Section 5(4) of the 2005 Act, as it is likely to have significant environmental effects, a SEA is required. The SEA provides a systematic process for identifying, reporting and mitigating the environmental impacts of introducing measures to help prevent litter and flytipping in Scotland. Scoping consultation was undertaken on a Scoping Report, which ended on 20 October 2021. The SEA approach has been amended, where appropriate in response to the comments received. This scoping consultation comments and responses are documented in **Appendix A**.

1.2 Purpose of Environmental Report

This Environmental Report contains the assessment of the likely environmental effects arising from the introduction of the new measures to help prevent litter and flytipping in Scotland, specifically with reference to those topic areas scoped in during the initial scoping phase. The objectives of this SEA are:

- to ensure that the likely significant environmental effects arising from an introduction of new measures to prevent litter and flytipping are identified, characterised and assessed;

- to provide a framework for monitoring the potential significant effects arising from measures to prevent litter and flytipping in Scotland;

- to give the statutory consultees, stakeholders and the wider public the opportunity to review and comment upon the environmental effects that new measures to prevent litter and flytipping may have on them, their communities and their interests, and to encourage and support them to make responses detailing any such effects and how to mitigate these;

- to inform Scottish Government's decisions on proposals to be included in the new National Litter and Flytipping Strategy; and

- to demonstrate that the introduction of new measures to prevent litter and flytipping in Scotland are being carried out in a manner deemed to be consistent with the requirements of the SEA Act.

This report has been produced for inclusion within the public consultation stage of the strategy development process.

1.3 Environmental Report structure

This Environmental Report presents the findings of the SEA and is set out as follows:

- **Section 1** – Provides an introduction and background to the National Litter and Flytipping Strategy and provides a broad overview of the content and purpose of this Environmental Report.

- **Section 2** – Provides an overview of the National Litter and Flytipping Strategy and considers its implementation in the Scottish policy context.

- **Section 3** – Sets out the approach to the SEA, the process to date and scope of the assessment along with mitigating and monitoring proposals.

- **Section 4** – Provides an analysis of the Biodiversity, Flora and Fauna Topic area, its interdependencies, baseline characteristics and the likely significant effects.

- **Section 5** – Provides an analysis of the Human Health Topic area, its interdependencies, baseline characteristics and the likely significant effects.

- **Section 6** – Provides an analysis of the Water Topic area, its interdependencies, baseline characteristics and the likely significant effects.

- **Section 7** – Provides an analysis of the Climatic Factors Topic area, its interdependencies, baseline characteristics and the likely significant effects.

- **Section 8** – Provides an analysis of the Material Assets Topic area, its interdependencies, baseline characteristics and the likely significant effects.

- **Section 9** – Provides an analysis of the Landscape and Visual Impacts Topic area, its interdependencies, baseline characteristics and the likely significant effects.

- **Section 10** – Sets out analysis on possible cumulative effects across all topic areas.

- **Section 11** – Provides conclusions and recommendations resulting from the assessment, and the next steps to introduce the new National Litter and Flytipping Strategy and the SEA process.

2. The National Litter & Flytipping Strategy

2.1 Overview and aims

The Scottish Government, with key stakeholders, has undertaken a review[17] of the existing five year National Litter Strategy 'Towards A Litter-Free Scotland: A Strategic

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[17] https://www.gov.scot/publications/five-years-review-scotlands-national-litter-strategy/pages/1/

Approach to Higher Quality Local Environments'[18]. The review provides a snapshot of the activities that took place within the first five years of the strategy. Whilst progress has been made, litter and flytipping still pose significant challenges.

There is recognition that there is a need to treat flytipping and litter as distinct but interrelated topics and should be addressed in the new strategy. The Environmental Protection Act (1990) defines littering as 'throwing down or dropping an item in any public open space'[19]. Flytipping is illegal dumping of waste - from a bin bag of household waste to large quantities of domestic, commercial or construction waste[20].

Public consultation on the new 'National Litter and Flytipping Strategy' will commence in December 2021, with a view to Strategy being finalised and published in early 2022.

2.1.1 Scotland's response to date

The new National Litter and Flytipping strategy will contribute towards the continuation of the objectives set out in the original 2014 strategy 'Towards a litter-free Scotland: a strategic approach to higher quality local environments', which were motivating people to:

- stop littering;

- stop flytipping;

- understand responsibilities relating to waste disposal.

The 2014 National Litter Strategy committed to a range of activities and interventions under three overarching themes of Information, Infrastructure and Enforcement[21]. A

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[18] https://www.gov.scot/publications/towards-litter-free-scotland-strategic-approach-higher-quality-local-environments/

[19] https://www.legislation.gov.uk/ukpga/1990/43/section/87

[20] https://www.legislation.gov.uk/ukpga/1990/43/section/33

[21] https://www.gov.scot/publications/towards-litter-free-scotland-strategic-approach-higher-quality-local-environments/

review in 2019 by Scottish Government, Zero Waste Scotland and other key stakeholders highlighted that significant progress had been made and identified a number of key successes[22]. These included:

- shifting focus from clearance to prevention through communication and education;

- increasing opportunities for reuse and recycling making it easier to dispose of waste responsibly; and

- the introduction of a new litter monitoring system that will collect more detail to provide better evidence of the littering problem.

In 2015, new fixed penalty powers were granted to SEPA to tackle low-level noncompliance with waste legislation, including flytipping.

The 2019 review recognised that litter and flytipping still pose a significant challenge and a report by KSB in 2020 concluded that despite current efforts and strategies, the problem of littering and flytipping in Scotland has not improved in recent years[23].

The Code of Practice on Litter and Refuse was updated in 2018 to provide statutory bodies with the flexibility to widen their focus from clearing litter and refuse to focus on prevention.

In 2020 the Scottish Parliament passed legislation to establish Scotland's Deposit Return Scheme which will encourage the public to recycle single-use drinks containers which are commonly littered. It is expected that the introduction of the Deposit Return Scheme will result in a up to a third reduction in volume of litter in Scotland[24].

The Scottish Government is committed to matching or exceeding the standards set out by the EU Single-use plastics (SUP) directive to tackle pollution and support the

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[22] https://www.gov.scot/publications/five-years-review-scotlands-national-litter-strategy/pages/1/

[23] https://www.keepscotlandbeautiful.org/media/1566897/leq-2020-report-final-041220.pdf

[24] https://depositreturnscheme.zerowastescotland.org.uk/litter

transition to a circular economy. Scottish Government has laid regulations before the Scottish Parliament that will ban certain SUP from 1 June 2022. Particular articles within this directive will impact on a number of commonly littered items, including market restrictions on single-use plastic items such as single-use plastic straws and cutlery, plates, beverage stirrers [25].

2.2 The New Strategy

The new National Litter and Flytipping Strategy will treat litter and flytipping as separate but inter-related issues, allowing for improved targeting of measures to bring about change. It will build upon the previous five-year strategy and aims to provide an agile strategic framework to accommodate the changing landscape.

The new National Litter and Flytipping Strategy will support progress towards the 2025 waste targets and accelerate Scotland's transition from a 'linear' economy to a more resource efficient and sustainable circular economy. In addition, a reduction in litter and flytipping will contribute to the objectives set out in the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 and the updated Climate Change Plan[26,27], by extending the resource value of materials in these wastes and avoiding carbon emissions associated with the extraction and transport of raw materials to replace lost resources.

Reducing litter and flytipping will also contribute to four of the United Nations Sustainable Development goals (Responsible Consumption and Production, Climate Action, Life Below Water and Life on Land) as well as the Green Recovery Plan

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[25] https://www.gov.scot/publications/introducing-market-restrictions-single-use-plastic-items-scotland-analysis-consultation-responses/

[26] https://www.legislation.gov.uk/asp/2019/15/contents/enacted

[27] https://www.gov.scot/publications/securing-green-recovery-path-net-zero-update-climate-change-plan-20182032/

objectives set out in Protecting Scotland, Renewing Scotland, the Government's Programme for Scotland 2020-21[28].

The new National Litter & Flytipping Strategy has the potential to achieve the following:

- reduce the volume of waste created;

- increase the volume of materials entering recycling;

- divert materials from landfill;

- reduce the amount of waste entering Scotland's rivers, lochs and seas;

- improve local environments and neighbourhoods;

- encourage wider behaviour change around materials.

The new strategy identifies a suite of measures to prevent litter and flytipping and therefore reduce impact on local environmental quality, structured according to the following thematic areas (noting that proposals for 'Data and Research' in particular, may include measures that are cross-cutting with each of the other themes):

- Behaviour change;

- Services and infrastructure;

- Enforcement; and

- Data and research.

Aims and objectives are also provided for each theme (summarised in **Appendix C** for litter and **Appendix D** for flytipping). A review of the compatibility of the aims and

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[28] https://www.gov.scot/publications/protecting-scotland-renewing-scotland-governments-programme-scotland-2020-2021/

objectives for each strategy theme against the SEA criteria for each environmental topic is included in **Section 10.1**.

It is noted that development of the draft National Litter and Flytipping Strategy is an iterative process and there is potential for some minor differences between the presentation of the strategy proposals in this Environmental Report and the format used in final consultation paper for the draft National Litter and Flytipping Strategy. However, the SEA has assessed the entirety of the strategy proposals and any discrepancies with the final presentation of the proposed actions is not considered material in terms of the assessment of environmental effects.

2.2.1 Behaviour change

This theme recognises the need for improved communications and engagement, but also the need to take a holistic approach to behaviour change; understanding key audiences, issues and developing a framework to identify solutions that enable behaviours to be changed. It should also be noted that the key behaviours related to litter will differ from those for flytipping.

Successful measures under this theme would improve the accessibility, consistency and nature of messaging that motivates people to change their behaviour.

2.2.2 Services and Infrastructure

This theme recognises that in order for prevention of litter and flytipping to be effective there needs to be services and infrastructure in place to support responsible behaviour. This includes services offered by local authorities, but also more widely looking to businesses and community groups.

Successful measures under this theme would ensure Scotland's services and infrastructure are fit for purpose and prioritise action and innovation that proactively prevents litter and flytipping and supports a circular economy.

2.2.3 Enforcement

Enforcement and deterrents have been identified as an important link in the chain for achieving the prevention of litter and flytipping, identified from numerous stakeholder calls to review the enforcement process and procedures and to understand if alternative solutions are available (such as education or volunteering for those who cannot afford to pay fines) with collaborative measures seen as crucial.

Success in relation to this theme would ensure there is a strong and consistent enforcement model across Scotland that acts as a proportional deterrent.

2.2.4 Data and research

Improved data is crucial to successfully understanding the root causes of the issue, evaluating the success of any interventions, collaborating successfully and monitoring progress. This includes reporting of issues by the public and communities, national reporting and monitoring, citizen science and measurable outcomes.

Success for this theme would include an improved understanding of the behaviours, attitudes and drivers behind both littering and flytipping behaviours and the development of an evidence base that can facilitate the implementation and monitoring of effective policy interventions.

2.3 Consideration of Reasonable Alternatives

The identification, development and refinement of alternatives to plans, programmes or strategies is an inherent part of sound plan and policy making. The Environmental Assessment (Scotland) Act 2005 formalises this and requires that the Environmental Report includes an "outline of the reasons for selecting the alternatives dealt with" (Schedule 3, (8)) and assessment of "the likely significant effects on the environment of implementing the reasonable alternatives to the plan or programme" (Section 14 (2)).

Reasonable alternatives were considered as part of a review of the existing National Litter Strategy completed in November 2019. The review identified areas of success of the strategy, good practice case studies and initial views of what the focus could be for

future strategy development. The review process considered the following with respect to reasonable alternatives:

- **Do-nothing alternative**

  Continuation of the existing National Litter Strategy was considered not to be viable option, i.e. a 'Do Nothing' scenario. Feedback from the review steering group noted that the policy landscape within which the strategy operates had altered significantly since its original publication in 2014. There was a consensus that a light touch revision would not therefore be sufficient and review participants supported a more substantive review and refresh to tackle litter and flytipping.

- **Scope of the new strategy**

  The existing National Litter Strategy included messages on flytipping, however, a decision was made to update the strategy as a new National Litter and Flytipping Strategy. This approach, reflecting feedback from stakeholders, recognised that whilst they are interrelated, they are separate issues with different drivers, and the distinction allowed a tailored approach to be taken to each of them. Whilst an alternative could be to retain the existing strategy emphasis, it is not considered reasonable to do so, given stakeholders responses. Another alternative could be to develop separate strategies; however, as such an approach limits the opportunity for integration and synergies and diminishes the value of the resultant strategies, it was not considered a viable alternative in this instance.

  The inclusion of quantifiable targets for the new National Litter and Flytipping Strategy was also considered but given that the strategy includes proposals that identify the need to improve data and understanding of current sources, levels and composition of litter and flytipping, it was decided that including such targets at this stage was not appropriate but should be an area for future development.

For this SEA, Scottish Government have assumed that, taken together, the proposed actions constitute all the reasonable alternatives that could be proposed for such high-level strategies.

3. The Approach to the Assessment

This section outlines the approach to the assessment and then summarises the process undertaken to produce this SEA. It outlines the SEA process to date, including the screening and scoping, including a consideration of the relevant SEA topics scoped in for assessment. For each topic, assessment criteria are detailed. Applying the assessment criteria will enable the likely significant effects associated with the Scottish Government's proposals for the new National Litter and Flytipping strategy to be identified, described and evaluated in relation to each of the environmental topic areas.

3.1 The SEA Process to Date

SEA has a number of distinct stages: screening, scoping, the environmental assessment, the production of an Environmental Report, consultation, the publication of a Post-Adoption Statement and monitoring. At screening, scoping and publication of the Environmental Report, contingent on the likely effects of the plan to be in Scotland, there is a requirement to consult with three statutory Consultation Authorities. These are Historic Environment Scotland (HES), NatureScot (formerly Scottish Natural Heritage) and the Scottish Environment Protection Agency (SEPA).

Screening has been undertaken to confirm that the National Litter and Flytipping Strategy should be subject to SEA. Responses received from HES, NatureScot and SEPA concur with the conclusion, and indicatively that some topics (such as population and historic environment do not need to be considered in the assessment as there are unlikely to be significant environmental effects for these topics).

The **scoping stage** of SEA leads to the production of a Scoping Report. This sets out the proposed scope and approach to assessing the potential environmental effects. The SEA Scoping Report for the new National Litter and Flytipping strategy was issued for consultation for a five-week period concluding on 20th October 2021. Three responses to the consultation were received from the statutory consultees, which resulted in some amendments to the proposed approach to assessment (a schedule of consultation responses to the Scoping Report is contained at **Appendix A**).

The proposed introduction of measures as part of the new National Litter and Flytipping strategy has been subject to assessment using the amended approach. The findings of these assessments are presented in this SEA Environmental Report.

The introduction of a draft National Litter and Flytipping Strategy, including proposed measures, will be consulted on alongside the SEA Environmental Report. Following that consultation, the Scottish Government will review and analyse the responses received on this Environmental Report and the content of the consultation paper.

Following adoption of the new National Litter and Flytipping strategy, as soon as is reasonably practicable, the Scottish Government will publish a Post Adoption Statement (PAS). This Statement will reflect on the findings of the SEA and the views expressed in the consultation, and outline how the issues raised have been considered in the finalisation of the policy measures and actions. Scottish Government will monitor the implementation and environmental effects resulting from the introduction of measures in the updated National Litter and Flytipping strategy.

3.2 Scope of the assessment

3.2.1 Overview

The aim of the SEA is to identify, describe and evaluate the likely significant environmental effects of measures proposed in the new National Litter and Flytipping strategy.

The 2005 Act requires that the assessment includes information on the "likely significant effects on the environment, including on issues such as: biodiversity; population; human health; fauna; flora; soil; water; air; climatic factors; material assets; cultural heritage, including architectural and archaeological heritage; landscape; and the inter-relationship between the issues referred to".

Consideration has been given to the relevant contextual information, together with the five-year review of the original National Litter Strategy[29] and the 2021 Litter Summit[30] hosted by Keep Scotland Beautiful (in partnership with Zero Waste Scotland and Scottish Government), to define the scope of the assessment.

3.2.2 Scoping Consultation

Consultation with the statutory consultees was undertaken on the proposed scope of the SEA for a 5-week period concluding 20th October 2021. Each statutory consultee was provided with the National Litter and Flytipping strategy SEA Screening and Scoping Report. Consultation responses were received from all three statutory consultees.

The consultees all welcomed the commission of the SEA for introducing new measures to prevent litter and flytipping in an updated National Litter and Flytipping strategy and provided comments on:

- the scope of the assessment and the corresponding topics to be included in the assessment;

- the proposed methodological approach to the assessment;

- clarifications regarding timescales for public consultation.

The full list of comments and responses are provided in **Appendix A**.

3.2.3 Current Scope

In Table 3-1, each of the 10 SEA topic areas is considered in isolation with a justification for whether each topic is scoped in or scoped out of this SEA. The overall rationale for scoping topics in, or out, has been derived from the Screening and Scoping Report and

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[29] https://www.gov.scot/publications/five-years-review-scotlands-national-litter-strategy/pages/1/

[30] https://www.keepscotlandbeautiful.org/news/mar-2021/scottish-litter-summit/#:~:text=On%20Wednesday%2017%20March%202021,of%20dog%20fouling%20and%20graffiti

has been updated to reflect the consultation responses from the Consultative Authorities (as detailed in Appendix A).

Table 3-1 SEA topics scoping and justification

SEA Topic	Scoped in/out	Reasons for inclusion / exclusion
Biodiversity, flora and fauna	In	Litter and flytipping adversely affects biodiversity through entanglement of fauna, ingestion of litter, particularly plastics, and the exposure to hazardous materials such as asbestos. The new strategy could have positive effects on biodiversity by reducing these problems.
Population	Out	No effects of litter and flytipping are anticipated on population (including demographics). Any effects on human health as discussed below.
Human health	In	Litter and Flytipping has the potential to affect human health, for example through exposure to hazardous materials. Studies suggest that neighbourhood environmental incivilities such as flytipping and litter have a real and meaningful impact on people's wellbeing and mental health[31]. Litter also affects the amenity of recreational assets such as beaches. It can also become entangled in the gear of recreational vessels, or cause divers to become entangled: both have human health and safety implications. The new strategy could have positive effects on human health by addressing these problems
Soil	Out	The presence of litter and flytipping may have adverse impacts on the physical and chemical structure of land-based soil systems, however, it is considered that the effects on soil are closely associated to the related effects on plants and animals, including soil ecosystems, and the net effects are captured in other environmental topics, particularly biodiversity, and to some extent water, landscape and human health.

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[31] https://d1ssu070pg2v9i.cloudfront.net/pex/pex_carnegie2021/2012/09/09205334/pub1455011643.pdf (2013)

SEA Topic	Scoped in/out	Reasons for inclusion / exclusion
		Reference to the effects on soil are highlighted in the scoped-in topic sections where relevant. The presence of litter and flytipping is not considered to result in significant morphological and/or physiological changes to seabed strata and/or bottom sediments.
Water	In	Litter and flytipping affects water quality and the ecological/ environmental status of water[32]. Effects on ecological/environmental status are covered under "biodiversity". Effects on water quality, including bathing waters, are explored under the "water" topic.
Air	Out	No effects of litter and flytipping are anticipated on air quality. For instance, the envisaged delivery measures do not include incineration.
Climatic factors	In	Litter and flytipping contribute to climate change in two main ways. The requirement to extract and transport raw materials results in additional carbon emissions, instead of using the resources and embodied carbon held in litter and flytipped materials. As well as the embodied energy of the resource itself being wasted, further carbon emissions are released during the collection and processing of litter or flytipped material, most of which can then only be sent to energy from waste or landfill, due to the poor quality of the material.
Material assets	In	Litter and flytipping affects economic operations in the terrestrial, coastal and marine environments, through fouling of equipment and delays for clean-up operations. It may also affect sectors which depend on environmental quality as the basis for their activities, e.g. recreation. The requirement for disposal of low quality waste streams in litter and flytipping also increases pressure on landfill sites.

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[32] The Water Framework Directive (WFD) relates to ecological status; the Marine Strategy Framework Directive (MSFD) relates to environmental status. We therefore refer to both in this report.

SEA Topic	Scoped in/out	Reasons for inclusion / exclusion
Cultural heritage and the historic environment	Out	No effects of litter and flytipping are anticipated on heritage assets. The potential improvement in the amenity of heritage assets is included in "landscape and visual impacts and human health". This view was corroborated by HES during scoping.
Landscape and visual impacts	In	Litter and flytipping affects the tranquillity and amenity of landscapes and seascapes. The SEA has focused on the potential effects on nationally important landscapes, given the high-level nature of the strategies.

In summary, pursuant to the consideration of the introduction of a new National Litter and Flytipping Strategy and the associated likely significant environmental effects, the following topic areas have been scoped into this SEA: biodiversity, flora and fauna; human health; water; climatic factors; material assets; and landscape and visual impacts. Furthermore, the assessment has considered the cumulative, secondary and synergistic effects from the introduction of new measures to prevent litter and flytipping which are summarised in the cumulative effects section (Section 10).

3.3 Context of the Assessment

3.3.1 Review of Plans and Programmes

The 2005 Act requires a report containing "an outline of the contents, main objectives of the plan or programme and relationship with other relevant plans and programmes" (Schedule 3(1)) as well as "The environmental protection objectives, established at international (European) Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation" (Schedule 3(5)).

A fundamental initial step in undertaking the SEA is to identify and review other relevant plans, programmes and strategies (PPS) which could influence the proposed strategy. These may be PPS at an international/European, national, regional or local level, commensurate with the scope of introducing new measures to prevent litter and

flytipping. The review aims to identify relationships between the implementation of measures proposed in the new National Litter and Flytipping strategy and the other PPS i.e. how measures proposed to prevent litter and flytipping could be affected by the aims, objectives and/or targets of other plans and programmes or how the new strategy could contribute to the achievement of the environmental and sustainability objectives of other PPS. Furthermore, the review of other PPS is also a useful source of information to support the completion of the environmental baseline analysis used to determine the key concerns relevant to the introduction of new measures to prevent litter and flytipping.

For each of the topic areas scoped into this SEA (and the ensuing topic sections), the SEA provides a review and summary of PPS relevant to the introduction of measures proposed in the new National Litter and Flytipping strategy.

With regard to the review of international PPS, it is noted that EU law has ceased to apply in the UK under the terms of the Withdrawal Agreement and EU Treaties. The European Union (Withdrawal) Act 2018 (EUWA) has established a new body of domestic law known as retained EU law. Any references to EU Directives in this report should be read as references to the domestic legislation that implemented the Directive (including that domestic legislation as it is revised or replaced from time to time).

3.3.2 Review of Environmental Baseline

The 2005 Act requires a report containing "The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme" (Schedule 3(2)), "The environmental characteristics of areas likely to be significantly affected" (Schedule 3(3)), and "Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Council Directive 79/409/EEC on the conservation of wild birds and Council Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna (as last amended by Council Directive 97/62/EC)" (Schedule 3(4)).

In each SEA topic section outlined in this report, an environmental baseline is provided of the existing receptors which will be impacted by the introduction of measures proposed to prevent litter and flytipping. Where possible, the environmental baseline provides information on some of the metrics relevant to the measures proposed to prevent litter and flytipping, such as the quantities and composition of litter and flytipped materials, and areas impacted by litter or incidents of flytipping (see Table 3-2).

Table 3-2 Environmental baseline metrics

Metric	Date	Baseline	
Litter			
Quantity	2013[33]	15,000 tonnes	
Composition	2013[34]	Plastic bottles/film/other plastic packaging	20%
		Newspapers & magazines/other paper	17%
		Food/kitchen waste	15%
		Other combustible items	11%
		Cardboard	9%
		Packaging glass	9%
		Other materials	8%
		Metal cans/other metal	7%
		Electricals	4%
Litter free areas	2020[35]	16% of sites audited (compared to 31% of sites audited in 2013)	
		8.1% in more urbanised authority areas	
		24.3% in more rural authority areas	
Flytipping			
Quantity	2013[36]	26,756 tonnes	
Composition	2013[37]	General household waste	15%
		Building waste	11%
		Sofa/Armchairs etc	11%
		Wooden Furniture	11%

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[33] https://www.gov.scot/publications/towards-litter-free-scotland-strategic-approach-higher-quality-local-environments/

[34] https://www.gov.scot/publications/towards-litter-free-scotland-strategic-approach-higher-quality-local-environments/

[35] https://www.keepscotlandbeautiful.org/media/1566897/leq-2020-report-final-041220.pdf)

[36] https://www.gov.scot/publications/towards-litter-free-scotland-strategic-approach-higher-quality-local-environments/

[37] Zero Waste Scotland – based on flytipping tonnages for 2013 reported in National Litter and Flytipping SEA Scoping Report (2021)

Metric	Date	Baseline	
		Carpets/Rugs	11%
		White Goods	11%
		Matresses	11%
		Clothes	7%
		Small WEEE	7%
		Other (not specified)	3%
Flytipping incidents	2020[38]	48,250 incidents reported by local authorities (compared to 38,513 incidents in 2014)*	

*Noting there are limitations in using the values provided to interpret a trend in levels of flytipping. See Section 8 Material Assets, Figure 8-2 regarding caveats on values reported.

Although the metrics highlight the need for more up to date information on material quantities and composition, the environmental baseline information is taken to represent the current situation, against which the introduction of measures proposed in the new National Litter and Flytipping strategy may be assessed to determine positive or negative impacts. The Scottish Government is in the process of commissioning further studies to evaluate the current quantity and composition of litter and flytipped materials in Scotland.

3.4 Significant Environmental Effects

The assessment considers significant effects associated with the introduction of actions proposed under the four strategy themes in the new National Litter and Flytipping strategy in relation to each of the six SEA topics identified (Sections 4.2 to 9.2).

The assessment criteria have therefore been developed to ensure that the SEA focuses on the significant environmental impacts relevant to each scoped in topic area.

The criteria are presented in Table 3-3 below.

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[38] Data up to 2019 comprised of information downloaded directly from WasteDataFlow (https://www.wastedataflow.org/) combined with environmental events/flytipping data reported to SEPA. Data for 2020 is solely made up of information from WasteDataFlow

Table 3-3   SEA Assessment Criteria

SEA Topic	SEA Criteria
Biodiversity, flora and fauna	• To safeguard terrestrial, marine and coastal ecosystems, including species and habitats, and their interactions • To avoid pollution of the terrestrial, coastal and marine environments • To maintain or work towards good ecological and environmental status
Human health	• To safeguard the amenity of recreational assets • To safeguard human health
Water	• To safeguard water quality, including bathing waters
Climatic factors	• To prevent any increase in net carbon impacts and to contribute to Scotland's journey to meet the 2045 net zero commitment.
Material assets	• To maintain the environmental quality which supports economic activities • To prevent increased pressure on material assets such as landfill sites
Landscape and visual impacts	• To protect and, where appropriate, enhance the landscape/seascape

An assessment is also included with respect to the compatibility of the higher level aims and objectives for each strategy theme with the SEA topics (Section 10.1).

3.5 Undertaking the Assessment

The activities associated with implementing measures proposed in the new National Litter and Flytipping strategy have been analysed to identify and evaluate (where applicable) the likely significant effects that could arise. The following key considerations have been used to inform the assessment:

• consultation with the consultative authorities (SEPA, NatureScot and Historic Environment Scotland) and other relevant stakeholders;

• all relevant contextual information including a review of associated PPS, the regulatory framework and the environmental baseline;

- the nature of the potential effect (what is expected to happen);

- the timing and duration of the potential effect (e.g. short, medium or long term);

- the geographic scale of the potential effect (e.g. local, regional, national);

- the location of the potential effect (e.g. whether it affects rural or urban communities);

- the potential effect on vulnerable communities or sensitive habitats (e.g. terrestrial or marine);

- the reasons for whether the effect is considered significant;

- the reasons for any uncertainty, where this is identified; and

- the potential to avoid, minimise, reduce, mitigate or compensate for the identified effect(s) with evidence (where applicable).

Where the baseline data has been slight, uncertain or incomprehensive, the best available information together with professional assumptions and judgement has been utilised to assess the anticipated significant effects of introducing new measures proposed to prevent litter and flytipping.

3.6 Assessment of Secondary, Cumulative and Synergistic Effects

Schedule 3 (6) (e) of the Environmental Assessment (Scotland) Act 2005 requires that the "secondary, cumulative and synergistic effects" of introducing measures proposed in the new National Litter and Flytipping strategy are assessed. Using the assessment framework approach detailed in Table 3-3, the cumulative effects assessment will present a summary of all the effects associated with the measures proposed in the new strategy, together with the in-combination effects with other plans and programmes.

In terms of the overall assessment of the cumulative effects, it should be noted that assessing the impact of measures proposed in the new National Litter and Flytipping strategy is challenging due to limitations on data available on levels of littering and

flytipping in Scotland (in common with some other countries[39]) and recognition of the high level nature of the measures proposed in the strategy. The resulting high-level commentary reflects these limitations.

3.7 Mitigation and Monitoring Proposals

The identification of effective mitigation measures is a fundamental element of the SEA process and, where significant adverse effects have been identified, appropriate mitigation measures have been proposed. The aim of such mitigation measures is to improve the effectiveness and reach of the measures proposed to prevent litter and flytipping.

Putting appropriate measures in place, such as those specified within the relevant sections, may assist in optimising carbon savings and realising greater reductions in litter and flytipping. Mitigation and enhancement measures have been identified for each of the topic areas scoped into the assessment where appropriate. In some instances, mitigation measures are also proposed for minor negative effects, with corresponding enhancement measures also recommended where appropriate. In order to ensure that the aims and objectives of the new National Litter and Flytipping strategy are realised, proposals for the development of a monitoring protocol have been recommended in Section 11.2. It is also anticipated that further information on the development of monitoring protocols associated with the proposed measures to prevent litter and flytipping will be set out in the Post Adoption Statement.

3.8 Summary and Overview of Difficulties Encountered

This SEA has focussed on the overall assessment of the introduction of measures proposed in the new National Litter and Flytipping strategy. The environmental assessment centres on comparing the anticipated effects, both positive and negative,

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[39] https://kenniswijzerzwerfafval.nl/sites/default/files/KplusV%20-%20i.o.v.%20MWE%20-%20Inventory%20of%20costs%2C%20amounts%20and%20assessments.pdf

against the existing baseline which is a continuation of the existing National Litter and Flytipping strategy.

The information used in the Environmental Report has been sourced, so far as is possible, from recent datasets utilising a wide range of authoritative and official sources. It is important to acknowledge that there are variable time lags between raw data collection and its publication. Consequently, at the time of this report's publication, the baseline or predicted future trends may have varied from those described for each environmental topic.

The main difficulties encountered in undertaking this environmental assessment are summarised below:

- **Data limitations:** The availability of recent and accurate data on litter and flytipping levels for Scotland has been limited. Values for litter and flytipping reported by Zero Waste Scotland in 2013 are widely reported in reference sources[40], which have been used to inform the review of baseline characteristics. However, is noted that the 2013 report identifies some issues with the accuracy of reporting levels of flytipping. This is partly due to the variation in size and composition of flytipping incidents and the ability to accurately reflect the actual tonnages of illegally dumped material, and also because it is recognised that not all incidents of flytipping may be reported, particularly incidents occurring on private land. Where the baseline data has been limited, inconclusive or conflicting, the best available information together with professional assumptions and judgement has been utilised to assess the anticipated effects for each environmental topic.

- **Evidence base:** The availability of evidence to determine baseline characteristics against which to assess proposals in the strategy is limited in some instances, both in terms of quantitative and qualitative information. Where this has influenced the assessment of effects on the environment for the strategy

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[40] https://www.zerowastescotland.org.uk/sites/default/files/Scotland%27s%20Litter%20Problem%20-%20Full%20Final%20Report.pdf

proposals, this has been reflected by an indication of uncertainty regarding the scoring in the assessment, with additional explanation included in the commentary.

- **COVID-19:** The data gathered to complete this baseline pre-dates the COVID-19 pandemic and its environmental, social and economic effects. Data that relates to these changes is only becoming available periodically and it may well be a number of years before the effects of the crisis can be determined, along with whether changes to the topics covered in the baseline have been short-term or sustained. This is an additional uncertainty within the assessment, and where relevant, some qualitative commentary may be provided.

4. Biodiversity, flora and fauna

This section outlines the assessment of the proposals for the prevention of litter and flytipping against the scoped in topic of biodiversity. Whilst the SEA legislation does not provide any definition of the term "biodiversity" NatureScot defines biodiversity as "all living things; the plants, animals and insects in our forests, mountains, rivers, seas, gardens and parks, right down to the things living in our soils"[41].

This section provides the contextual information to inform the assessment (in terms of the review of Plans, Programmes and Strategies (PPS) and the baseline information) as well as an assessment of the effects of the proposals for the prevention of litter and flytipping, regarding biodiversity impacts.

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[41] https://www.nature.scot/sites/default/files/2017-09/Guidance%20-%20Strategic%20Environmental%20Assessment%20-%20Biodiversity%20and%20Geodiversity%20Considerations%2005%20Aug%202013.pdf

4.1 Relationship with other Plans, Programmes, Strategies and Environmental Objectives

The PPS that are relevant to biodiversity topic that have been reviewed to inform the assessment of the proposals for the prevention of litter and flytipping are shown in Figure 4-1 and summarised thereafter.

Figure 4-1 Plans, Policies and Strategies related to Biodiversity
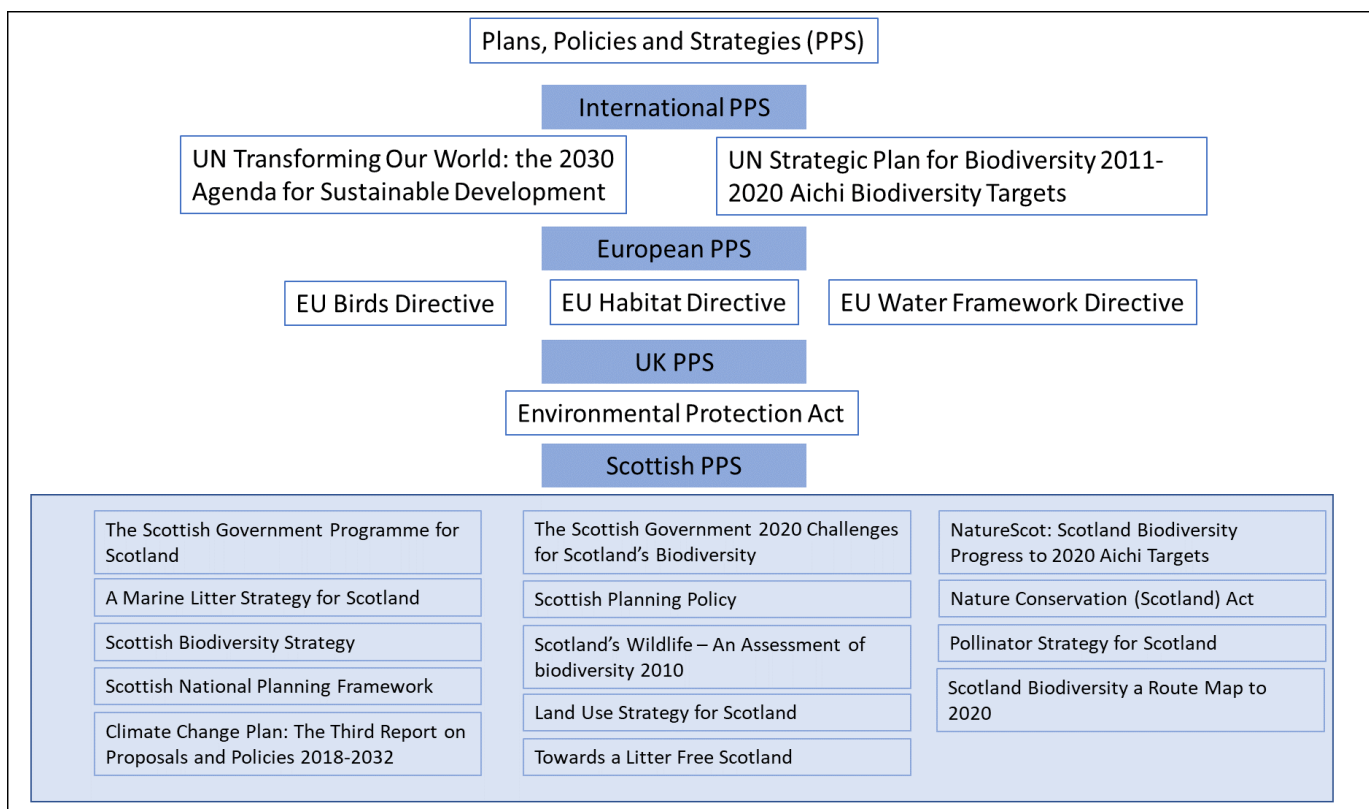
4.1.1 International level

United Nations (2015): Transforming our World - the 2030 Agenda for Sustainable Development sets out 17 global goals agreed by the United Nations. These goals are embedded within the agenda for 15 years and include commitments to protect the planet through sustainable consumption and sustainable management of resources. The new National Litter and Flytipping Strategy supports the 17 global goals in seeking to embed sustainability and resource minimisation across all sectors of society. One of

the key sustainable development goals relevant to Biodiversity is Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

UN Strategic Plan for Biodiversity 2011-2020, including Aichi Biodiversity Targets. This Plan provided an overarching framework on biodiversity, not only for the biodiversity-related conventions, but for the entire United Nations system and all other partners engaged in biodiversity management and policy development. There are 20 Aichi targets organised under 5 strategic goals (A to E) as detailed below:

- Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society

- Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use

- Strategic Goal C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity

- Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services

- Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building

4.1.2   European level

European Commission: The EU Water Framework Directive (2000) replaces 7 previous directives and seeks to protect the water habitats in lakes, rivers, groundwater and coastal beaches. The policy aims to restore polluted waterways. The Directive combines a range of Integrated Catchment Management and introduces new ways of protecting and improving bodies of water to maximise the best environmental outcomes. The directive acknowledges the interdependency of waterways and local environs.

The **Habitats Directive (92/43/EEC)** and **Birds Directive (2009/147/EC)** include measures to maintain or restore important natural habitats and species including through the designation of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). These Directives are transposed into British law through a number of regulations and planning policy documents.

4.1.3 UK level

UK Government (1990): The Environmental Protection Act seeks to improve resource use and environmental conditions through the control of pollutions from waste collections and management across the UK to protect air, water and land. The Act designates the regime for licensing of waste operations and provides the first definition of "controlled wastes" (known as Hazardous Wastes in Scotland). The Act introduces the Duty of Care for producers, carriers, importers and exporters. The Act also introduced criminal offences regarding litter in a bid to reduce littering across the UK. The Act requires the UK to tightly control the movement and handling of wastes.

4.1.4 Scottish level

Scottish Executive (2004) Nature Conservation (Scotland) Act aims to conserve biodiversity and habitats across Scotland. The Act requires public bodies and office-holders to consider the effect of their actions at a local, regional, national and international level through a new general duty. The Act extends the laws surrounding Sites of Special Scientific Interest (SSSIs), of which Scotland now has over 1,400 sites, and wildlife by promoting stewardship of individual species as well as the overarching diversity of the habitats and regulates land management operations. The Act introduces a framework under which the flora and fauna of Scotland, geological and geomorphological features, can be conserved by designating the land as SSSIs. Police powers are further enhanced to protect wildlife.

Scottish Natural Heritage (2010): Scotland's Wildlife – An assessment of biodiversity in 2010 demonstrates that of 8 priority coastal and marine habitats appraised 38% were recorded as declining, in woodlands, 28% of 31 priority species

were declining, and assessments on upland species demonstrated declining numbers across the board. Overall, across Scotland, 31% of priority habitats were declining whilst 41% were improving. Overall, the assessment reports that Scotland is on target for 22 actions as of 2010, with 9 requiring improvement and 6 not on target. In a survey, adults responded positively to questions around biodiversity and an increasing proportion are members of biodiversity NGOs. The new National Litter and Flytipping Strategy for Scotland can build upon the positive behaviours of residents to better protect habitats through reduced littering and flytipping.

Scottish Government (2011): The first land use strategy for Scotland, **Getting the best from our land - A land use strategy for Scotland**, had the objectives of: land-based businesses working with nature; responsible stewardship of Scotland's natural resources; and urban and rural communities better connected to the land. The vision, objectives and principles of the strategy were retained and built upon by the second land use strategy, **Getting the Best From Our Land: A Land Use Strategy For Scotland 2016-2021**, published in 2016. The strategy notes the declines in biodiversity across Scotland – notably in the agriculture and woodlands industries - and seeks to conserve ecosystems through better use of land including input from communities on local decisions.

Scottish Government (2014): The Scottish National Planning Framework and **Scottish Planning Policy** are two documents which promote waste as a resource. The framework and the planning policy recognise that the design of places can support local ecosystems and habitats. The documents note the importance of peatland habitats as both carbon stores and wildlife habitats. The documents note the importance of the planning scheme in conserving these spaces as well as ensuring a balance in safeguarding spaces whilst facilitating changes in land-deprived areas. The Framework reiterates the principles of the Land Use Strategy to make the most of Scottish assets and to take into account the costs arising from poor planning decisions.

Scottish Government (2014): A Marine Litter Strategy for Scotland identified five proposed strategic directions to reach a Zero Waste Scotland, supported by responsible

behaviours. The issue of marine litter is an important topic in society today with significant efforts being undertaken across businesses and governments to eliminate marine litter. The strategy notes the harm posed to the marine environment from marine litter. The strategy seeks to address litter within the marine environment between 2013 and 2020. The objectives of the strategy are to enhance current legislation to promote effective clean-up of contaminated areas, whilst supporting local and national stakeholders to understand, and support, litter free urban areas. The strategy seeks to reduce the litter entering the marine environment, by educating visitors to reduce littering and promote recycling of wastes with ZWS (both onshore and offshore – such as fish nets), incentivising better harbourside recycling infrastructure and behaviour changes, improving monitoring protocols and recording mechanisms, in conjunction with local stakeholders. A new National Litter and Flytipping Strategy would support the drive to reduce damage across the marine environment.

Scottish Government (2014): Toward a Litter free Scotland - The National Litter Strategy sets clear actions which have an impact upon material assets, when seeking to improve the environment through targeted approaches to litter and flytipping. The strategy seeks to educate the public to adopt alternative behaviours to waste management, through access to improved recycling opportunities, improved product design, awareness campaigns and targeted exploration to tackle litter on beaches. The strategy also proposes exploring enforcement opportunities and identifying pilot solutions to litter. The new National Litter and Flytipping Strategy will enhance these actions and ambitions.

Scottish Government (2017) Pollinator Strategy for Scotland is the Governments strategy to manage the threats to pollinators from land use, habitat fragmentation, disease and pesticide. The strategy aims to "address the causes of decline in populations, diversity and range of our pollinator species and to help them thrive into the future". By 2027, the strategy intends to embed support for pollinators into strategies and policies across the public sector, improve understanding of pollinators and to regulate imports of species to minimise disease. The new National Litter and Flytipping

Strategy may support the pollinator strategy in preserving habitats and biodiversity through reductions in litter which improve habitat quality.

Scottish Government (2018): Climate Change Plan - The Third Report on Proposals and Policies 2018-2032 continues to focus on the required seven key sectors: electricity, industry, buildings, transport, agriculture, waste, and land use, land use change and forestry (LULUCF). The documents identified that the key pressures for biodiversity include land use intensification and modification, pollution, urban development, nutrient enrichment and over exploitation of natural resources. Climate change also poses a significant risk to biodiversity.

Scottish Executive: The Scottish Biodiversity Strategy (2004) was supplemented by **The Scottish Governments 2020 Challenge for Scotland's Biodiversity (2013)** document; both of which combine to form the **Scottish Biodiversity Strategy.** The aims of the 2020 challenge are to sustain and enhance the ecosystems on both land and at sea so to maximise benefits to Scotland through natural diversity and economic growth. Actions are detailed in the **Scotland's Biodiversity A Route Map to 2020**. Progress is measured using the **Scottish Biodiversity Strategy Indicators**. The strategy brings together public bodies (SEPA, NatureScot, Local Authorities etc) to restore ecosystem health across Scotland. Land use plans will take account of nature and how nature operates so to provide valuable services to communities and the economy – supported by effective data which assesses and monitors local ecosystems. The documents note that air, water and soil quality have declined over the previous 60 years in Scotland. The strategy will encourage environmental accounting within business decision making processes, whilst government will invest in research and investment to explore ways to work with nature to reduce natural costs from business.

The biodiversity indicators will provide a focus on the identified areas and will support delivery of the principles by including specific measures to integrate biodiversity values into national and local development strategies and planning processes. The indicators include a requirement for government and businesses to implement plans for

sustainable productions and consumption and to keep natural impacts within safe ecological limits.

- By 2020 habitat loss is to be halved to brought as close as possible to zero.

- By 2020, fish and invertebrate stocks are to be managed legally and sustainably.

- By 2020, at least 17% of terrestrial and inland water (plus 10% coastal marine areas) are to be conserved and effectively managed.

- By 2020, ecosystems that provide essential services related to water, health, livelihoods etc are to be restored and safeguarded.

The Scotland Biodiversity Progress to 2020 Aichi Targets, Final Report 2021[42] reports on Scotland's progress toward 20 Aichi targets set by the UN Convention on Biological Diversity. NatureScot assessed Scotland as having met nine of the twenty targets. Progress has been made on the remaining eleven but was insufficient to meet the target by 2020. Even where targets have been met, the pressures on biodiversity remain. The creation of Scotland's National Marine Plan and the reformed Common Fisheries Policy, along with the Marine Strategy Framework Directive are all helping to focus efforts towards sustainable management in the marine environment. In December 2020 the Scottish biodiversity strategy post-2020: statement of intent[43] was published, setting the direction for a new biodiversity strategy which will respond to the increased urgency for action to tackle the twin challenges of biodiversity loss and climate change.

Scottish Government: Protecting Scotland, Renewing Scotland: The Scottish Government Programme for Scotland 2020-2021 states the Government's commitment to tackle climate change and to prepare Scotland for the new, low carbon world and reach the statutory commitment to be a net zero society by 2045. This

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[42] https://www.nature.scot/sites/default/files/2017-09/Guidance%20-%20Strategic%20Environmental%20Assessment%20-%20Biodiversity%20and%20Geodiversity%20Considerations%2005%20Aug%202013.pdf

[43] https://www.gov.scot/publications/scottish-biodiversity-strategy-post-2020-statement-intent/pages/1/

Programme sets out the next phase of our Green New Deal announced in 2019. The programme protects Scotland's biodiversity by providing Police Scotland with new resources to tackle wildlife crime, to establish independent groups to manage grouse moors and to explore management of deer populations. The programme will develop

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Local Biodiversity Action Partnership Plans

Scottish Local Authorities have produced a range of Local Biodiversity Action Partnership Plans, written (in some instances) and supported by interest groups. The plans seek to conserve existing habitats whilst restoring lost or damaged ecosystems. The plans aim to monitor and assess current conditions in each region, whilst identifying – through partnership with local communities – actions to be undertaken to conserve habitats.

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the Central Scotland Green Network – Europe's largest greenspace project including 25 pollinator projects. **A Fairer, Greener Scotland: Programme for Government 2021-22** planned to invest an additional £500 million to support the new, good and green jobs of the future, including upskilling and reskilling people.

4.2 Baseline Characteristics

This section of the Environmental Report identifies and characterises current environmental baseline conditions for biodiversity, flora and fauna. This baseline highlights designated nature conservation sites, for example Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Sites of Special Scientific Importance (SSSIs), Ancient Woodlands, Marine Protected Areas and Ramsar (wetland) Sites. It considers current pollution of terrestrial, coastal and marine environments and the effect this has on these ecosystems, including species and habitats, and their interactions.

4.2.1 Designated Biodiversity Sites

Designated sites, including Ramsar, SPAs, SACs and SSSI sites protect flora, fauna, geological or physiographical features of outstanding quality in terrestrial and coastal environments.

Figure 4-2 identifies the designated nature conservation areas in Scotland.

Figure 4-2 Map of Nature Conservation Areas in Scotland[44]
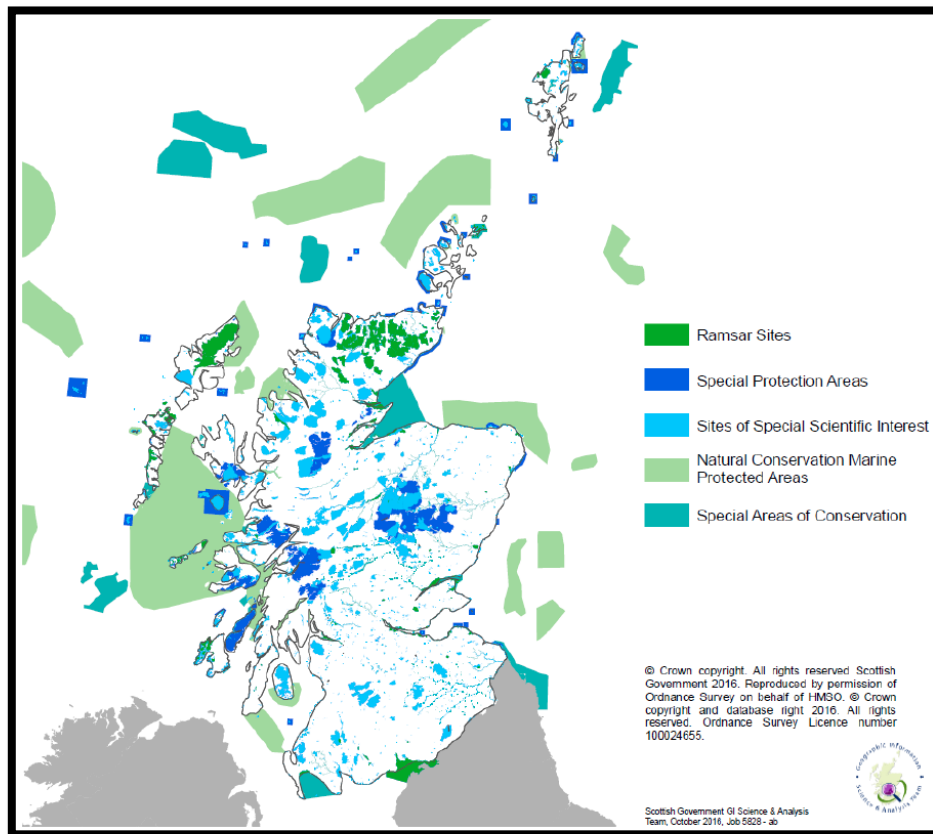
Source: The Scottish Government (2016) Key Scottish Environment Statistics

There are also additional areas outwith the area shown on the map (65% of Special Areas of Conservation and 71% of Nature Conservation Marine Protected Areas are located outside the area pictured)[45]. Designated nature conservation areas in the Scotland include:

- As of December 2020, 161 SPAs, covering an area of 2,669,615 hectares (including three offshore SPAs covering an area of 1,011,940 hectares)[46],

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[44] https://beta.gov.scot/publications/key-scottish-environment-statistics-2016-9781786525505/pages/11/

[45] https://beta.gov.scot/publications/key-scottish-environment-statistics-2016-9781786525505/pages/11/

[46] http://jncc.defra.gov.uk/page-4

- As of 18 December 2020, 239 SACs covering an area of 2,288,674 hectares (in addition to three sites that straddle the border with England and is included under the England section above)[47],

- As of 22 May 2018, 50 Ramsar sites covering a total area of 283,083 hectares (in addition to one site which straddles the border with England and is included under the England section above)[48], and

- As of June 2021, 1,422 SSSIs covering 1,011,000 hectares or 12.6% of Scotland[49].

Figure 4-3 demonstrates the growth of designated areas within Scotland between 1991 and 2016.

Figure 4-3 Designated areas: 1991-2016 (Areas thousand hectares)
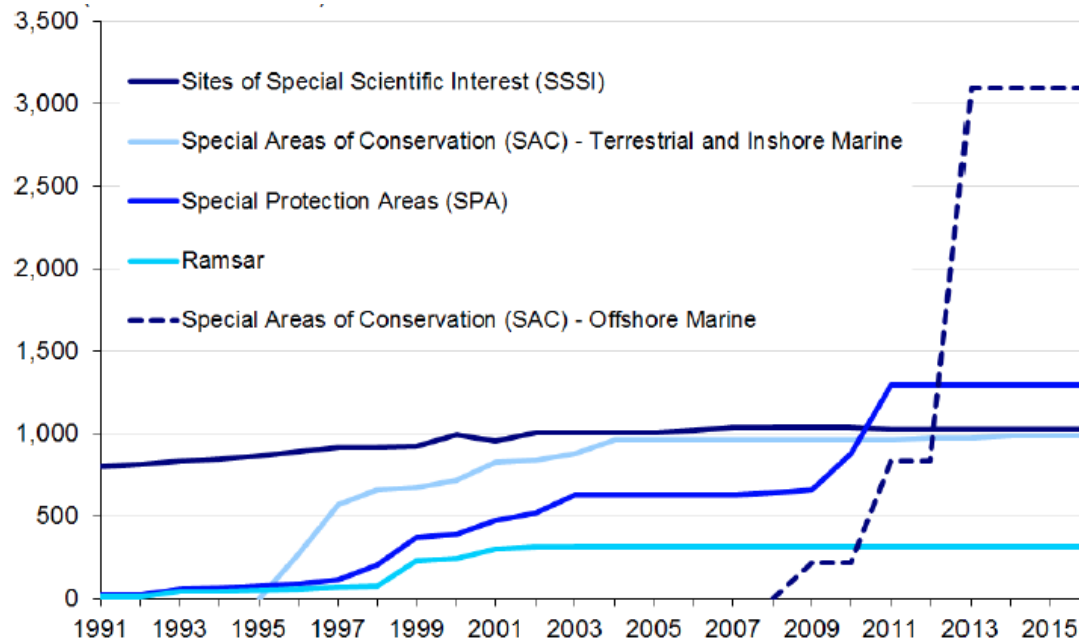
Source: The Scottish Government (2016) *Key Scottish Environment Statistics*. Available online: https://beta.gov.scot/publications/key-scottish-environment-statistics-2016-9781786525505/pages/11/

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[47] http://jncc.defra.gov.uk/page-23

[48] http://jncc.defra.gov.uk/page-1388

[49] https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/national-designations/sites-special-scientific-interest-sssis

In March 2021, 78.3% of natural features on protected nature sites were assessed as being in favourable or unfavourable recovering condition[50].

Figure 4-4 below shows the condition of designated sites from 2005 and 2021[51]. In 2018 this included:

- Favourable: 65.1%

- Unfavourable Recovering: 6.4%

- Unfavourable Recovering Due to Management Change: 6.7%

Figure 4-4 Condition of designated sites from 2005-2021[52]
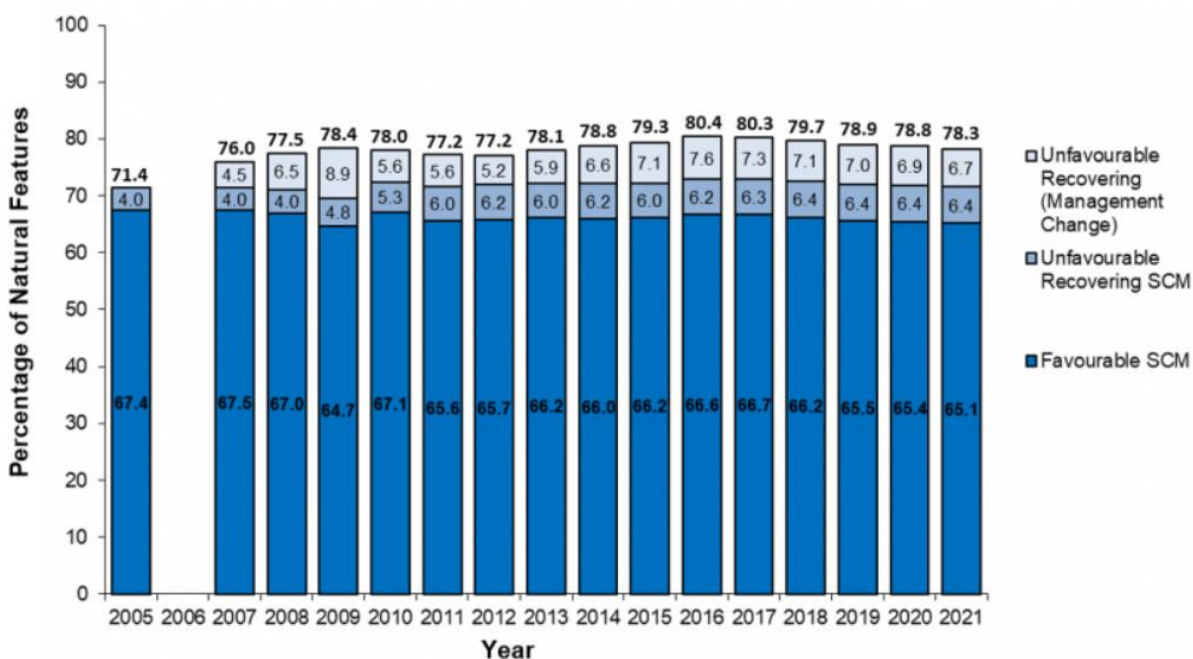
The reasons for unfavourable conditions are numerous, reflecting the range of sites designated, and include:

- water pollution from agriculture/run off;
- undergrazing;

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[50] Scottish Natural Heritage - Site of Special Scientific Interested (2021)

[51] Scottish Natural Heritage - Official Statistics for Protected Sites (2021)

[52] Scottish Natural Heritage - Official Statistics for Protected Sites (2021)

- inappropriate scrub control;

- invasive species;

- forestry and woodland management;

- moor burning;

- water pollution from point discharges;

- public access/disturbance;

- coastal squeeze.

4.2.2 Pollution of environments and ecosystems

Marine Environment

It is estimated that 267 species are affected by marine litter globally of which 86% of all sea turtle species, 44% of seabird species, 43% of marine mammal species are with plastic based litter, responsible for the direct or indirect deaths of over one million seabirds, 100,000 marine mammals (including 30,000 seals) and 100,000 turtles globally every year, through ingestion or entanglement[53]. Plastics account for much of the litter that ends up in the sea, as these items are lightweight and easily enter streams and rivers, which are then deposited in the ocean. When exposed to salt water and ultraviolet light, these plastic items can fragment into "microplastics" small enough to be mistakenly eaten by fish and other marine wildlife. This has knock on effects further up the food chain.

The latest assessment of beach litter from Marine Scotland includes a summary of Marine Conservation Society (MCS) surveys for five Scottish sub-regions and Firth of Forth harbours for the period from 2008 to 2017 (Figure 4-5). This highlights the prevalence of plastic and sanitary materials in beach litter for the locations during this period. However, the report covers a total of 15 sub-regions (Figure 4-6) and also identifies that the abundance of plastic bags and plastic bottles is decreasing in all of the areas assessed.

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[53] http://www.onegreenplanet.org/.

Figure 4-5 **Composition of beach litter in the five Scottish sub-regions and Firth of Forth harbours averaged for 2008 to 2017, and with 2017 also shown separately (sub-regions presented are those with sufficient data for assessment)[54]**

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[54] https://marine.gov.scot/sma/assessment/beach-litter
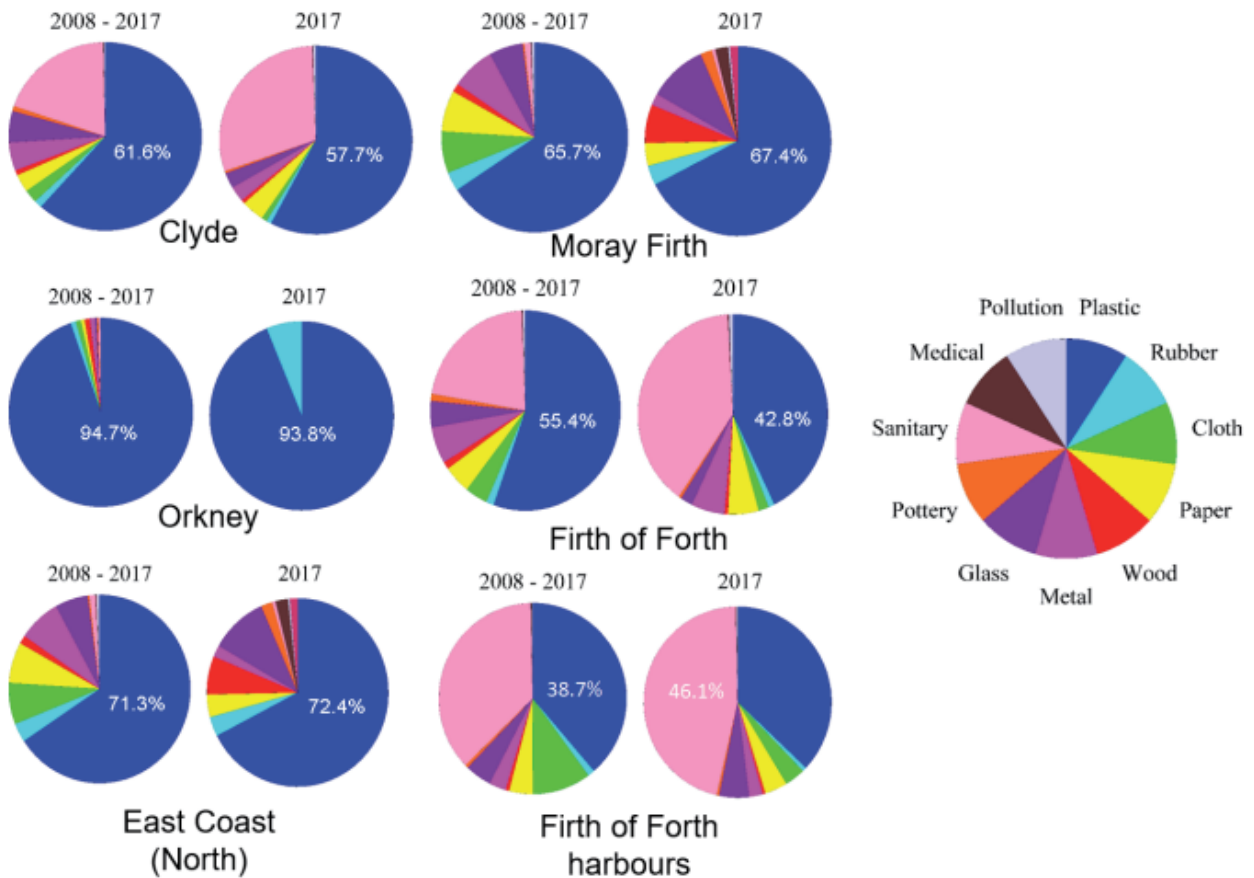
Figure 4-6   Map showing location of all MCS foreshore surveys, arranged in 15 subregions[55]
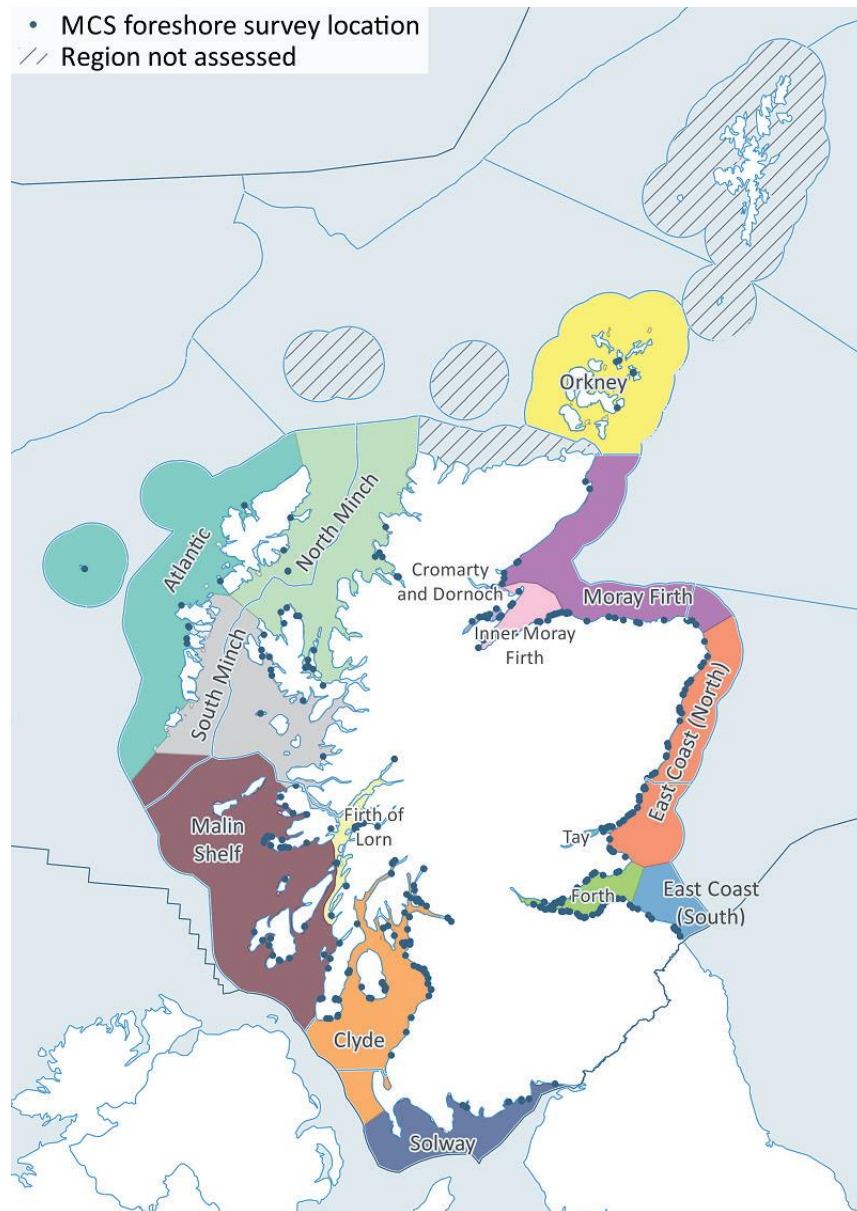
The Marine Conservation has reported that based on results from the 2020 Great British Beach Clean, on average, 298 pieces of litter per 100m were collected from beaches surveyed in Scotland[56], of which 184 were plastic; a breakdown of some of the most

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[55] https://marine.gov.scot/sma/assessment/beach-litter
[56] Marine Conservation Society (2020) Response to Scottish government consultation on introducing market restrictions on single use plastic items.

common items collected in the survey are shown in Table 4-1[57]. This is significantly less than the 559 items/100m reported for Scotland in 2018[58] and 492 items/100m reported for 2019[59], although noting that beach litter survey data for 2020 may reflect the impact of restrictions for COVID-19. The abundance of plastic bags and plastic bottles has decreased in all areas assessed. Seafloor litter, mainly plastics, was also observed in 44% of trawls off the coast of Scotland between 2012 and 2018[60]. The composition of this is shown in Table 4-2.

Table 4-1   MCS Beachwatch data 2020: Number of commonly littered items collected per 100m on Scotland's beaches

Category	Item Description	Item Average/100m
Plastic/polystyrene	Pieces (0-50cm)	78.2
Sanitary	Wet wipes	45.8
Plastic/polystyrene	Packets (crisp, sweet, lolly, sandwich)	26.5
Sanitary	Cotton bud sticks	19.9
Plastic/polystyrene	String	15.6
Plastic/polystyrene	Caps/lids	10.5
Paper / Cardboard	Cigarette stubs	7.5
Glass	Others (count)	7.5
Plastic/polystyrene	Rope	4.9
Plastic/polystyrene	Drinks bottles	4.7

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[57] Marine Conservation Society (2021): Beachwatch dataset http://www.mcsuk.org/beachwatch/

[58] Marine Conservation Society (2019). Great British Beach Clean Report for 2018.
https://ntpurbeckcoast.files.wordpress.com/2019/01/gbbc-2018-report.pdf

[59]https://media.mcsuk.org/documents/MCS_Scottish_Government_single_use_plastics_consultation_response_Dec_2020.pdf

[60] Scottish Government - Clean and Safe: Marine Litter: Sea Floor Litter (2020)

Table 4-2   Number of items collected over 1,635 sea-floor trawls off the coast of Scotland between 2012-2018

Category	Number	Percentage
Plastic	1,135	74%
Rubber	127	8%
Natural Products & Clothes	92	6%
Metals	90	6%
Glass & Ceramics	16	1%
Miscellaneous	73	5%

Terrestrial Environment

While there is extensive information on the effects of litter and flytipping materials in the marine environment, the effects of these types of waste on land-based biodiversity, flora and fauna is less widely reported. The issue of microplastics observed in the marine environment is of similar concern to terrestrial ecosystems. A research study in 2017 reports that microplastic contamination on land might be 4 to 23 fold larger than in the oceans and agricultural soils might store more microplastics than oceanic basins, highlighting that more careful analyses of the dangers of microplastic pollution to terrestrial biodiversity is required[61]. The study identifies the potential for physical and chemical effects from plastic litter on biodiversity, also presenting the link between contamination of soil ecosystems and uptake of microplastic and nanoplastic decomposition products by plants and animals (see Figure 4-7).

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[61] https://onlinelibrary.wiley.com/doi/10.1111/gcb.14020 (

Figure 4-7   Microplastics as trigger of combined physical or chemical-like effects[62]
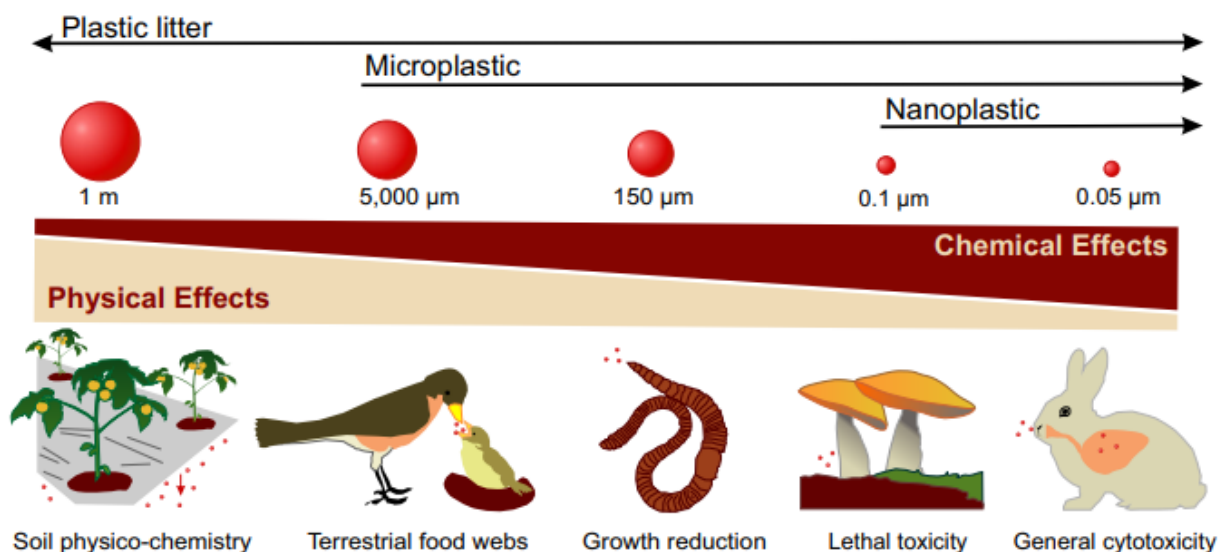
In addition to contamination from plastic decomposition products, land-based animals are at risk of consuming hazardous materials present in litter and flytipping as food or becoming entangled and trapped in the waste. A study in Shetland identified £215,000 of costs associated with injuries to cattle – largely caused by plastic litter blown ashore. The same study suggests that at least £100,000 may be spent in Scotland rescuing animals caught in litter[63]. It is also recognised that animals are susceptible to the carcinogenic effects of hazardous materials that may be present in litter and flytipping materials, including asbestos[64].

4.2.3   Likely Evolution of the Baseline without the NLFS

The Convention on Biological Diversity (CBD) set 20 global targets, known as the Aichi Targets. The 2020 review of Scotland's progress towards meeting the Aichi 2020 Targets, identifies that nine of the twenty targets were met:

- Target 1 – Awareness increased

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[62] Figure reproduced from https://onlinelibrary.wiley.com/doi/10.1111/gcb.14020

[63] https://www.zerowastescotland.org.uk/litter-flytipping/impacts (undated)

[64] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1475401/

- Target 2 – Biodiversity values integrated

- Target 8 – Pollution reduce

- Target 13 – Genetic diversity maintained

- Target 15 – Ecosystems restored and resilience enhanced

- Target 16 – Nagoya Protocol in force and operational

- Target 17 – National biodiversity strategy and action plan

- Target 18 – Traditional knowledge respected

- Target 19 – Knowledge improved, shared and improved

Progress has been made on the remaining eleven but was insufficient to meet the target by 2020, such as Target 4: Sustainable consumption and production, and Target 5: Habitat loss halved or reduced. Even where targets have been met, the review highlights that pressures on biodiversity remain.

Reported marine litter on UK beaches has increased year on year since 2013 despite a fall in 2020. However, this could be due to reduced littering and flytipping as a result of national lockdowns in response to the Coronavirus pandemic.

In the absence of the new National Litter and Flytipping strategy, littering and flytipping is expected to continue increasing as the economy returns to pre-pandemic levels. Marine and terrestrial biodiversity is likely to continue declining as a result.

4.3 Consideration of likely significant effects

4.3.1 Methodology

The new National Litter and Flytipping strategy has the potential to have a range of effects on Scottish biodiversity flora and fauna by preventing or limiting waste materials entering and affecting the environment. The assessment considers the anticipated changes to Scottish biodiversity through the implementation of the proposed actions to prevent litter and flytipping, developed across the four strategy themes: behaviour change; infrastructure and services; enforcement; and data and research.

Although the adverse impacts of litter and flytipping on biodiversity may be similar it is recognised that litter and flytipping are distinct issues with different drivers, so the assessment provides separate appraisals of the actions proposed for the Litter strategy (Table 4-3) and the Flytipping strategy (Table 4-4). The SEA criteria for assessing the effects on biodiversity, flora and fauna are listed at the start of each table. The effects against these criteria are considered against a baseline which is effectively a continuation of the existing National Litter Strategy.

4.3.2 Results

The tables below provide summary assessments of the likely significant environmental effects of implementing proposed actions to prevent litter and flytipping across the four strategy themes, with regard to biodiversity, flora and fauna. Table 4-3 presents the results of the assessment of actions for Litter and Table 4-4 present the findings assessing the actions for the Flytipping.

The key to each assessment score is shown below:

Score Key:	++	+	0	-	--	?
	Significant positive effect	Minor positive effect	No overall effect	Minor negative effect	Significant negative effect	Score uncertain
NB: Where a box is coloured but also contains a "?" this indicates uncertainty over whether the effect could be a minor or significant effect although a professional judgement is expressed in the colour used. A conclusion of uncertainty arises where there is insufficient evidence for expert judgement to conclude an effect.						

Table 4-3 Assessment of Effects of Litter Actions on SEA Criteria for Biodiversity, Flora and Fauna

Litter Strategy	
Biodiversity, Flora and Fauna	
SEA Criteria: • To safeguard terrestrial, marine and coastal ecosystems, including species and habitats, and their interactions. • To avoid pollution of the terrestrial, coastal and marine environments. • To maintain or work towards good ecological and environmental status.	

Behaviour Change – Actions	**Overall Score**
	+/?
	Action Score
Conduct research to understand the full range of influences on littering behaviours across various contexts and audience groups.	**+/?**
Develop a sustained, evidence based, national anti-littering campaign and deliver this consistently and collaboratively across Scotland.	**+**

Commentary:

The actions for behaviour change on littering are expected to provide increased awareness of both the reasons for littering and how these interplay with impacts on biodiversity. However, the effectiveness of research in preventing the harmful impacts of littering on biodiversity are as yet unproven, so the significance of the effects from behaviour change are uncertain.

Public perception of biodiversity in green spaces presupposes a litter free environment[65]. Actions for the development of a national campaign to litter prevention and behaviour

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[65]https://www.researchgate.net/publication/351919842_Public_Perception_of_Biodiversity_A_Literature_Review_of_Its_Role_in_Urban_Green_Spaces

change is considered to have beneficial effects, which are likely to raise awareness of the need to safeguard ecosystems, systems and habitats from the effects of littering, avoid pollution, and improve the status of ecosystems and habitats.

Services and Infrastructure – Actions	Overall Score
	+
	Action Score
Explore the use of flexible and innovative interventions to support litter prevention and removal.	+
Establish an action focused group to encourage collaboration and share best practice between local authorities, national parks and other duty bodies to optimise services	++
Create a national litter hub to provide information and advice to community groups.	+
Increase the use of citizen science to support data on levels and composition of litter.	+
Carry out a review of the development, implementation and progress of the Code of Practice for Litter and Refuse (2018).	?

Commentary:

Exploring innovation and flexibility in services and infrastructure for litter prevention and removal are expected to provide original solutions to tackle littering that provide positive effects with respect to the SEA Biodiversity criteria, especially if the design of waste services and infrastructure takes into account ways to prevent pollution entering the physical environment, with subsequent safeguarding of ecosystems, systems and habitats.

Actions enabling a better communication for the community and the public services are expected to provide better direction for on the ground actions. Keep Scotland Beautiful Citizen Science Report demonstrated that data gathering from community work can be an important and useful tool supporting action on litter and informing future policy

making. It is anticipated that the collaboration scheme would help avoid pollution from litter entering ecosystems, therefore increased collaboration and information sharing is assessed as having a significant positive impact on biodiversity.

Actions aimed at encouraging a national information hub can encourage a renewed motivation to eliminate litter thus protecting biodiversity, flora and fauna. Encouraging the use of citizen science is anticipated to have a positive effect on biodiversity as the aims of groups with strong public involvement, such as the Marine Conservation Society or Keep Scotland Beautiful, are aligned with the SEA Biodiversity criteria.

It is not clear whether a review of the Code of Practice for Litter and Refuse (COPLAR) will result in any changes beyond those currently established for preventing and reducing the impacts of litter in the environment, so this is considered to have an uncertain effect for biodiversity at this stage.

	Overall Score
Enforcement – Actions	**+/?**
	Action Score
Conduct an evidence review of barriers to enforcement of litter offences.	**++/?**
Explore raising current fixed penalty notice amounts for a litter offence.	**+/?**
Develop guidance on enforcement best practices and seek agreement for this to be voluntarily adopted by Local Authorities and National Parks.	**++/?**
Review current powers for enforcing littering offences.	**+/?**
Explore potential alternative penalties to monetary fixed penalties for a litter offence.	**?**
Explore using civil penalties in relation to littering offences.	**?**
Create fixed penalties for the registered keeper of the vehicle for littering from vehicles.	**+/?**
Commentary:	

There is evidence to suggest that with more stringent enforcement measures, fewer litter incidences occur, for example Doncaster Metropolitan Council's zero-tolerance policy has led to a dramatic improvement in some of the town's busiest areas[66]. It is anticipated that an evidence review exploring barriers to enforcement and the development of best practice and better guidance for enforcement officers, will help in the implementation of existing legislation, which is considered to have the potential for significant positive effects for the prevention of littering and biodiversity. However, this would be dependent on the extent to which enforcement measures are adopted. It is considered that reviewing existing powers for enforcement also has the potential to deter littering, with subsequent benefits for biodiversity.

Scotland has already implemented measures to raise fixed penalties for littering offences. On 1 April 2014 the Fixed Penalty Notices (FPNs) for littering rose to an £80 penalty, up from £50. Additionally, potential fines for prosecution for littering are up to £2,500. Focus group research in Scotland has found public scepticism around the idea of fines and enforcement[67]; although fines were seen as an effective deterrent for some who feared being caught, they were also considered difficult to enforce. A report by Scottish Public Health Network (ScotPHN) identified that issues with the loss of funding for community wardens is responsible for a reduction in the number of fines issued for littering and dog fouling, with fines collected falling from £0.97m from £1.6m in three years from 2015/16[68]. The ScotPHN report states that in Glasgow, for the 3 years up to March 2018, the number of FPNs issued halved to 9,954, 46% of fines were not paid, and no unpaid fines were referred to the Crown Office and Procurator Fiscal Service. Over the same period the number of wardens was reduced by a third. An increase in FPNs for littering or introducing legislation to strengthen enforcement of litter from vehicles by issuing a fine to the registered keeper of the vehicle, may have positive

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[66] Zero Waste Scotland - National Litter Strategy Partner Guide Part One: Enforcement (undated)

[67] Zero Waste Scotland - Rapid Evidence Review of Littering Behaviour and Anti-Litter Policies (2013).

[68] Scottish Public Health Network - An Overview of Local Authority Powers Relating to Public Health (2019)

effects for biodiversity in terms of reducing littering, although given some of the issues identified with implementation, the level of significance is uncertain.

Actions exploring the use of civil penalties and alternatives to financial penalties may assist in deterring littering, particularly where offenders cannot afford to pay fines, although further details on potential actions and effectiveness are required before the effects can be determined, so these actions are assessed as uncertain impacts for biodiversity.

	Overall Score
Data and Research – Actions	**+/?**
	Action Score
Review the available litter data and approach to data collection across Scotland and reach an agreement between stakeholders on a common approach to collecting data.	**++/?**
Identify commonly littered items and litter hotspots and work with Local Authorities and other duty bodies to develop targeted interventions to reduce litter.	**+/?**

Commentary:

Whilst consistent monitoring for terrestrial biodiversity in conservation areas has been established since 2007, littering data is limited. Keep Scotland Beautiful LEAMS data and Marine Conservation Society Beach clean-up data both provide annual sample data on litter arisings but there is no comprehensive or consistent central database for local authorities to report litter arisings. The last study to accurately estimate Scottish litter arisings was conducted in 2013. Improved consistency in data collection between duty bodies would allow for more reliable monitoring by geographic area and examine its impact on local terrestrial biodiversity/

A review of available litter data and approach to data collection would provide valuable information against which progress can be monitored and provide insight into the effects

of the new National Litter and Flytipping Strategy (noting that this has close links to the optimisation of services identified in the Infrastructure and Services strategy theme). This is considered to be a significant positive impact for biodiversity.

The identification of litter composition and hotspots may help to tackle persistent littering issues, particularly where this is linked to a targeted response for intervention (which also has close links to the Infrastructure and Services strategy theme). The expected reduction of litter in the environment is considered to be a positive effect for biodiversity.

For both of these actions some uncertainty on the significance of the effects is recorded, noting that the measures are dependent on agreement and practical implementation with the relevant stakeholders.

Table 4-4   Assessment of Effects of Flytipping Actions on SEA Criteria for Biodiversity, Flora and Fauna

Flytipping Strategy		
Biodiversity, Flora and Fauna		
SEA Criteria: • To safeguard terrestrial, marine and coastal ecosystems, including species and habitats, and their interactions. • To avoid pollution of the terrestrial, coastal and marine environments. • To maintain or work towards good ecological and environmental status.		
		Overall Score
Behaviour Change – Actions		**+/?**
		Action Score

Conduct research to understand the full range of influences on flytipping behaviour across various context and audience groups and use this to design effective responses.	**+/?**
Develop a sustained, evidence based, national anti-flytipping campaign and deliver this consistently and collaboratively across Scotland.	**++**
Develop social media campaigns and guidance targeted at waste carriers and other businesses[69].	**+/?**

Commentary:

Research into understanding influences on flytipping behaviour should help to support the development of measures that can prevent flytipping and so reduce subsequent impacts on biodiversity. There is uncertainty though whether the proposed research would enhance the existing understanding of flytippng behaviour (e.g. Zero Waste Scotland, Evidence Review of Flytipping Behaviour, 2017).

Actions relating to a coordinated national flytipping campaign are expected to produce results in relation to behaviour change. Previous national campaigns have been successful in addressing people's behaviour especially when they are targeting the causes of flytipping. Documentaries, such as the BBC's Blue Planet series, are also considered to have been effective at raising public awareness of the interaction between human activity and ecosystems, habitats and species, including the impact of waste materials entering the environment. Actions that build on this realisation are anticipated to have a significant positive impact in reducing flytipping.

The development of social media campaigns and guidance may help to raise awareness of the need to protect biodiversity from the effects of flytipping, although the level of positive effect is uncertain as waste carriers and businesses should already be aware of the potential impacts of flytipping on the environment.

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[69] This action would build on work that is already being carried out by SEPA to target individuals looking to dispose of household waste and businesses offering waste collections.

Services and Infrastructure – Actions	Overall Score
	+
	Action Score
Support and encourage information and resource sharing between Local Authorities, waste sector, SEPA and other organisations through the flytipping forum.	**+**
Explore the role of technology in assisting private landowners and land managers deter flytipping on their land.	**+/?**
Produce updated guidance for private landowners on dealing with flytipping.	**+**
Explore alternative financial support mechanisms available to private landowners.	**+**
Explore how to support and encourage more reuse and repair of products that are commonly flytipped.	**++/?**
Explore a flexible approach to waste disposal (such as mobile HWRCs and targeted amnesties), and targeted interventions, with a view to trial these.	**+**
Carry out research to create a single information point on the disposal of commonly flytipped materials.	**+**

Commentary:

Encouraging information and resource sharing is expected to improve on the use of services and infrastructure for managing waste material from flytipping, especially if the data reporting is joined up across Scotland (i.e. from local authorities, landowners and other organisations that have a statutory duty to keep land free from flytipping). The action is considered to have a minor positive impact in terms of the SEA Biodiversity

criteria, as it does not prevent material being flytipped but may help to reduce the duration that flytipped material is present in the physical environment.

Exploring the role of technology for landowners to deter flytipping could be beneficial in reducing impact of the material on biodiversity. However, the effectiveness and practicalities of implementing technological deterrents are still to be determined, so the significance of the impacts are uncertain.

The provision of further guidance to landowners (including other organisations which have an estate to manage) on managing flytipping, should help to either deter flytipping or improve the management of flytipped material, which is deemed to have some positive impacts for biodiversity. Exploring alternative financial support mechanisms for private landowners in terms of services and infrastructure for dealing with flytipped material may encourage a quicker and optimal approach for managing the waste, which limits the potential for adverse effects on biodiversity.

Support in encouraging more reuse and repair of products is considered to have potential for significant positive effects, as this would prevent items being flytipped and so remove adverse effects from waste items and pollution on ecosystems, habitats and species. Further monitoring would be required though to confirm the effectiveness of the action.

Exploring a more flexible approach to waste disposal and interventions to prevent flytipping, as well as creation of a single information point, are expected to help improve the management of flytipped material through the coordination of relevant services and visibility of information on flytipping. The actions may help prevent flytipping, which should help to reduce impacts on biodiversity.

	Overall Score
Enforcement – Actions	**+/?**
	Action Score

Conduct an evidence review of barriers to enforcement.	**+/?**
Develop guidance on enforcement best practices, including on private land and seek for this to be voluntarily adopted by statutory bodies.	**+/?**
Initially raise current fixed penalties issued by Police, Loch Lomond and Trossachs National Park for flytipping to the maximum (£500) and explore possibility of raising the maximum further at a later date.	**+/?**
Explore raising current fixed penalties that can be issue by SEPA for flytipping offences to the maximum (£1000) and explore possibility of raising the maximum further at a later date.	**+/?**
Review existing legislative powers for enforcing flytipping offences.	**+/?**
Explore the ability to remove, suspend or deny Waste Carrier's Registration to individuals/companies fined for flytipping.	**+/?**
Support information sharing on flytipping incidents and offenders between Local Authorities, Police and National Parks.	**+**
Create powers to enable seizure of vehicles by SEPA used in flytipping.	**+/?**
Explore the possibility and benefits of using civil penalties to enforce flytipping offences.	**?**

Commentary:

It is understood that the low probability of being caught is one of the drivers for flytipping offences for those with low levels of guilt towards these crimes[70]. A report by Scottish Public Health Network (ScotPHN) in 2019 indicates that there have been very few prosecutions, and convictions (not including FPNs, referral to community police or verbal and written warnings) for flytipping offences, reporting that in 2017/18 there were six successful prosecutions and in 2016/17 there were seven prosecutions; 2007/08 was a

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[70] Zero Waste Scotland - Evidence Review of Flytipping Behaviour (2017).

peak year for convictions at 27; and in most years convictions have been approximately 12 or 13[71]. In 2017, the UK Government introduced more stringent waste management measures in England and developed new sentencing guidelines to provide tougher sentences for environmental crimes, including flytipping and other waste crimes[72]. Following the introduction of these measures local authorities in England were reported to have carried out 474,000 enforcement actions for flytipping offences in 2019/20, a decrease of 26,000 actions (5%) from 501,000 in 2018/19, and over the same time period there was a 2% increase in reported flytipping incidents, from 957,000 in 2018/19 to 976,000 in 2019/20[73]. In this instance, the effectiveness of implementing new enforcement measures is unclear, or what the effect of stricter enforcement measures may be on flytipping incidents in the long term. However, it is noted that further measures are being considered in the UK Environment Bill to develop a more targeted approach to prevent, detect and deter waste crime, including flytipping, focussed on a reform of the waste carrier, broker, and dealer regime[72].

Overall, the actions proposed in the National Litter and Flytipping strategy for a review of enforcement measures (including barriers to enforcement, existing powers, guidance on best practice, removal of Waste Carrier Registrations, and seizure of vehicles), would be beneficial in helping to understand what is effective in combating flytipping. These actions are not considered to be neutral, as a reduction in flytipping would be beneficial for biodiversity, but there is uncertainty on the level of significance for positive effects.

Sharing information on flytipping between Local Authorities, Police and National Parks should improve the opportunities for managing flytipped material and may potentially help to prevent flytipping, which would have some positive impacts for biodiversity.

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[71] Scottish Public Health Network - An Overview of Local Authority Powers Relating to Public Health (2019)

[72] House of Commons Library - Fly-tipping: the illegal dumping of waste. Commons Library Research Briefing (2021).

[73] Department for Environment & Rural Affairs - Fly-tipping statistics for England, 2019/20 (2021).

From the 1st April 2014 Fixed Penalty Notices (FPNs) for flytipping were increased from £50 to £200 (with potential fines for prosecution for flytipping of up to £40,000), although this has not necessarily reduced incidents in relation to flytipping, which some reporting indicates has increased from 38,513 incidents in 2014 to 48,250 in 2020[74]. There is research for Germany indicating that high rates of tried offenders and prison sentences can be effective deterrents against waste crime, although the severity of fines or convictions does not appear to create significant effects[75]. Also, research for the United States indicates that where conviction rates are low, the deterrent effect of a high penalty is doubtful[76]. It is considered that an increase in fines for flytipping offences should provide some form of deterrent and subsequent positive effects for biodiversity, although the level of significance is uncertain at this stage.

The possibility of using of civil penalties to enforce flytipping offences may help to deter flytipping, although further details are required before the effect can be determined, so this is considered to be an uncertain impact for biodiversity.

Data and Research – Actions	Overall Score
	+/?
	Action Score
Create a data sharing agreement and work with Local Authorities, other duty bodies, National Parks, private landowners and land managers, businesses and the third sector to improve consistency of data collected in Scotland.	+

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[74] Data up to 2019 comprised of information downloaded directly from WasteDataFlow (https://www.wastedataflow.org/) combined with environmental events/flytipping data reported to SEPA. Data for 2020 is solely made up of information from WasteDataFlow

[75] Almer, C. and Goeschl, T. - The sopranos redux: The empirical economics of waste crime, Rochester, NY: Social Science Research Network (2010b)

[76] Lynch, M.J., Barrett, K.L., Stretesky, P.B., Long, M.A. - The Weak Probability of Punishment for Environmental Offenses and Deterrence of Environmental Offenders: A Discussion Based on USEPA Criminal Cases, 1983–2013, Deviant Behaviour, 37(10), 1095-1109 (2016).

Explore and seek to support the use of appropriate technology in data collection.	**+/?**
Work with stakeholders to improve consistency of data collection in Scotland	**++**
Explore incorporating data into a national database.	**+/?**
Review the Dumb Dumpers system and ensure that a fit for purpose mechanism for citizen reporting of flytipping exists in Scotland.	**+/?**
Explore the development of a live picture of flytipping across Scotland.	**0/?**

Commentary:

Whilst consistent monitoring for terrestrial biodiversity in conservation areas has been established since 2007, flytipping data is limited. Improved data sharing between SEPA, Police, Local Authorities and other statutory bodies would allow for better data collection and interpretation to monitor the impact of flytipping on local biodiversity, which is assessed to have a positive impact on biodiversity.

Exploration of technology to streamline and facilitate the reporting of data may improve reporting rates by local authorities and landowners, though it is not clear how this would be implemented or received by users to prevent flytipping or improve management of flytipped material. Therefore, although there is potential for positive impacts with respect to the SEA Biodiversity criteria, the significance of the benefits is uncertain.

Differences in reporting techniques between authorities means data is often incomplete and complicates interpretation of data. Therefore, a more consistent approach, including more frequent and localised data, would aid monitoring and identify areas of concern, which is expected would deliver significant benefits in assessing the overall status of flytipping in Scotland, with subsequent beneficial effects for biodiversity.

There should be positive effects from incorporating data on flytipping in a national database, that would improve opportunities to prevent or manage flytipped material and reduce impacts on biodiversity. National flytipping databases (FlyCapture and

WasteDataFlow (WDF)) are currently in use. However, they have not been adopted universally by authorities and is therefore not comprehensive, so there is uncertainty regarding the significance of the benefits for this action. Similarly, a review of the Dumb Dumpers platform for citizen reporting of flytipping incidents should support more effective management of flytipped material, although the level of significance for biodiversity is uncertain.

Due to uncertainty regarding the complexity of reporting 'live' data it is considered that this would have little to offer in terms of effects on the biodiversity criteria.

4.4 Mitigation and Enhancement

The following measures are suggested to enhance the proposals in the new National Litter and Flytipping strategy, with respect to biodiversity:

- Carry out research to clarify the link between litter and flytipping and adverse effects on land-based biodiversity and ecosystems, using case studies to promote issues and support behavioural change.

- The size and nature of designated sites may limit the ability to maintain a presence of litter wardens, so other forms of surveillance (e.g. drones) or the availability of recycling facilities for visitors may help to improve the management of litter and flytipping.

- Ensure that services and infrastructure are optimised for particularly sensitive habitats, e.g. through the provision and design of recycling facilities or enabling a rapid response to clear-up of flytipping incidents.

The following potential mitigation measures are also recommended, although it is acknowledged these suggestions support the wider aims to prevent or improve management of litter and flytipped materials, so are considered to be common to each of the environmental topics:

- Improved consistency in data collection between duty bodies should be encouraged and informed through guidance. Data reporting should be made clear and simple to users to maximise reporting rates.

- Improving shared access to information on enforcement and prosecutions for littering and flytipping may assist in deterring repeat offenders who might cross local boundaries. Enforcement levels could also be analysed against flytipping levels per local authorities/relevant organisations to find gaps or shortcomings.

- Whilst incorporating information on flytipping into a national database would be beneficial, efforts must be made to ensure that reporting is consistent and comprehensive. This has not been the case for Waste Data Flow where mandatory data reporting has been inconsistent and incomplete.

- Consider the use of technology to streamline and facilitate the reporting of data on litter and flytipping to determine how it can improve reporting by local authorities and landowners.

- Consider increasing the prominence of enforcement in nudging behavioural change, such as emphasising the consequences of failing to pay a fixed penalty notice and the level of potential fines associated with prosecution (i.e. up to £2,500 for littering and up to £40,000 for flytipping).

- Provide reminders on the availability of waste recycling facilities, including the option that using recycling facilities at home may provide better outcomes for waste material rather than littering.

5. Human health

Human health consists of a person's physical, mental and social well-being and the environment in which they live has an important influence on these factors. Scotland still has significant public health challenges to overcome. Socio-economics are a significant influence on population and human health[77]. A variety of policies and statutes, either directly or indirectly influence human health and many of these cut across many other

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[77] Scottish Government - The Scottish Index of Multiple Deprivation (SIMD) (2018)

SEA topics, including air and water quality, management of flood risk and climate change.

A positive sense of place is important to people, and the importance of the quality of the environment raises concerns that detrimental effects on amenity could affect well-being, perceptions of locations as well as property values and businesses.

This section provides the contextual information to inform the assessment (in terms of the review of Plans, Programmes and Strategies (PPS) and the baseline information) as well as an assessment of the effects of the proposals for the prevention of litter and flytipping, regarding human health impacts.

5.1 Relationship with other Plans, Programmes, Strategies and Environmental Objectives

The PPS that are relevant to human health topic that have been reviewed to inform the assessment of the proposals for the prevention of litter and flytipping are shown in Figure 5-1 and summarised thereafter.

Figure 5-1 Plans, Policies and Strategies related to Human Health

Plans, Policies and Strategies (PPS)

International PPS

UN Transforming Our World: the 2030 Agenda for Sustainable Development	International Health Regulations (IHR)	Protocol on Water and Health (programme 2020-2022)

European PPS

Single Use Plastics Directive · Waste framework Directive · Bathing Water Quality Directive

Drinking Water Directive · Seveso III Directive

UK PPS

Environmental Protection Act · Control of Major Accident Hazards Regulations

Scottish PPS

The Land Reform (Scotland) Act	The Scottish Soil Framework	The Scottish Government Programme for Scotland
Bathing Water (Scotland) Regulations	Public Water Supplies (Scotland) Regulations	Cleaner Air for Scotland: The Road to a Healthier Future
Bathing Water (sampling & analysis) Directions	National Planning Framework 3	Scottish Government 2020 Challenge for Scotland Biodiversity
Scotland's Biodiversity A route Map to 2020	Scottish Biodiversity Strategy	

5.1.1 International level

International Health Regulations (IHR) in 2005, the international community agreed to improve the detection and reporting of potential public health emergencies worldwide. The regulations require that all countries have the ability to detect, assess, report and respond to public health events.

United Nations (2015): Transforming our World - the 2030 Agenda for Sustainable Development sets out 17 global goals agreed by the United Nations. These goals are embedded within the agenda for 15 years and include commitments to protect the planet through sustainable consumption and sustainable management of resources. The new National Litter and Flytipping Strategy supports the 17 global goals in seeking

to embed sustainability and resource minimisation across all sectors of society. Some of the key sustainable development goals relevant to Human Health are, Goal 3: Ensure healthy lives and promote well-being for all at all ages; Goal 6: Ensure availability and sustainable management of water and sanitation for all; Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable; Goal 12: Ensure sustainable consumption and production patterns; and Goal 13: Take urgent action to combat climate change and its impacts. **The Protocol on Water and Health (programme 2020-2022)**, jointly serviced by UNECE and WHO-Europe, is a unique legally binding instrument aiming to protect human health by better water management and by reducing water-related diseases. The Protocol provides a practical framework to translate into practice the human rights to water and sanitation and to implement Goal 6.

5.1.2 European level

The Waste Framework Directive (as amended) (2006/12/EC): seeks to protect human health and the environment against harmful effects caused by the collection, transport, treatment, storage and tipping of waste. Specifically, by requiring the development of waste management plans, and encouraging the recovery of waste and the use of recovered materials as raw materials in order to conserve natural resources.

The Drinking Water Directive (98/83/EC) set legislation in place to prevent and control any adverse health effects arising from the contamination of drinking water resources.

Bathing Water Quality Directive (2006/7/EC) prevents and controls any adverse health effects arising from the contamination of water resources.

Directive 2012/18/EU (the Seveso III Directive) strengthens preceding legislation aimed at reducing the incidence of major industrial accidents as well as pre-emptively mitigating their environmental effects, with an emphasis on limiting consequences to human health.

European Union (2019): Single Use Plastics Directive. The Directive highlights the significant negative environmental, health and economic impact of certain plastic

products with a particular focus on single-use plastic items. The Directive draws attention to the significant negative environmental, health and economic impact of littered products and associated deleterious materials. Restricting the prevalence of plastics in litter and flytipped materials in Scotland could reduce pollution and enhance health and well-being.

5.1.3 UK level

The Environmental Protection Act 1990 protects people against exposure to pollution and disturbance and promotes the remediation of contaminated land.

Control of Major Accident Hazards Regulations 2015 implements the Seveso III Directive.

5.1.4 Scottish level

The Land Reform (Scotland) Act 2003 introduced a new right of responsible access covering Scottish onshore, inland water, and coastal environments**. The Land Reform (Scotland) Act 2016,** making minor amendments to the previous Act regarding access to land. The new National Litter and Flytipping Strategy complements these responsible access regulations by seeking to keep the Scottish landscape free of litter and waste materials.

Bathing Waters (Scotland) Regulations 2008 (as amended) and **the Bathing Waters (Sampling & Analysis) (Scotland) Directions 2008** transpose the European Bathing Water Quality Directive (2006/7/EC). The new National Litter and Flytipping Strategy aims to reduce littering of the marine and coastal environment by concentrating on reducing the number of waste items going into the water drainage systems and entering the seas.

The Public Water Supplies (Scotland) Regulations 2014 regulations transpose the Drinking Water Directive. Flytipping near reservoirs or water courses can affect public water supply quality, as such the new National Litter and Fytipping strategy can help protect public drinking water.

The National Planning Framework 3 (2014) promotes physical activity, active travel and access to greenspace with associated health benefits. These aims are also supported through Let's make Scotland more active: A Strategy for Physical Activity[78] and the Cycling Action Plan for Scotland[79]. Maintaining clean and litter free local amenities can encourage physical activity and healthy benefits.

Cleaner Air for Scotland: The Road to a Healthier Future, 2015: Sets out proposals to further reduce air pollution to protect human health and comply with European and Scottish legal requirements relating to air quality.

The Scottish Government Programme for Scotland. A Fairer, Greener Scotland: Programme for Government 2021-2022. Plans to improve national well-being with increased investment in mental health – at least 25% over this Parliament by providing £120 million specifically to support the recovery and transformation of services, with a renewed focus on prevention and early intervention. By aiming to keep the environment free of litter, the new National Litter and Flytipping Strategy may contribute to support human health and wellbeing.

Scottish Executive: The Scottish Biodiversity Strategy (2004) was supplemented by **The Scottish Governments 2020 Challenge for Scotland's Biodiversity (2013)** document; both of which combine to form the **Scottish Biodiversity Strategy.** The aims of the 2020 challenge are to sustain and enhance the ecosystems on both land and at sea so to maximise benefits to Scotland through natural diversity and economic growth. Actions are detailed in the **Scotland's Biodiversity A Route Map to 2020**. Progress is measured using the **Scottish Biodiversity Strategy Indicators**. The biodiversity indicators include a requirement for government and businesses to implement plans for sustainable productions and consumption and to keep natural impacts within safe ecological limits, including by 2020, ecosystems that provide

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[78] Physical Activity Task Force - Let's make Scotland more active A Strategy for Physical Activity (2003)

[79] Scottish Government - Cycling Action Plan for Scotland More people cycling more often (2010)

essential services related to water, health, livelihoods etc are to be restored and safeguarded.

5.2 Baseline Characteristics

There are limited studies on the health impacts of litter, with most studies associating high incidences of litter as contributory effects to adverse mental health impacts, particularly anxiety and depression. The potential for physical health hazards from litter and flytipping is also acknowledged but information is limited in terms of the scale of the effects on physical health and differentiating between the level of risk associated with materials present in the waste, e.g. injury or disease from sharps or glass, toxins from chemicals or animal waste, or asbestos-related diseases.

5.2.1 Quality of life

Poverty and mental health issues are highly interlinked, and poor environment- as created by littering- tends to be found in deprived areas. In addition, as was found by the Scottish Household Survey, and in surveys completed in other parts of the UK[80]- those living in deprived areas are more likely than those that are not to experience litter or rubbish, 27% compared with 18%.

Although it is difficult to establish the extent to which littering contributes to poor mental health, researchers have found that even when other contributory factors to mental health conditions (such as age, gender or socioeconomic status), are taken into account, those who reported the highest incidence of environmental incivilities, were more likely to report anxiety, depression, poor health, smoking and poor exercise, than those with more positive views on this aspect of their local environment[81]. Another study found that even with the introduction of new community resources, the severity of depression in littered communities remained stable or increased[82]. Studies in the United

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[80] Carnegie - Pride in Place: Tackling Incivilities (2013)

[81] Carnegie - Pride in Place: Tackling Incivilities (2013)

[82] Curry - Neighborhood Disorder and Depression: Multi-level Relationships at Three Levels of Aggregation. Digital Commons Network (2004)

States (US) that used the US Departments of Health and Human Services Center for Epidemiological Depression scale and Patient Health Questionnaire to measure the correlation between litter and mental health, support these conclusions, finding that patients who communicated a more negative perception of neighbourhood characteristics displayed more depressive symptoms[83].

Littering and flytipping may also contribute to hindering recovery for those with existing mental health ailments. A study analysing marine litter used photographs to analyse the psychological impacts of visiting littered beaches. Researchers found that photographs that showed un-littered coasts tended to provide participants with a sense of happiness and less stress; in contrast, photographs exhibiting littered coasts caused participants to exhibit stress and a lack of the positive psychological benefits that beach destinations normally provide[84].

5.2.2 Physical Health Risks

As well as their contribution to mental conditions, litter and flytipped material can present a health hazard to the local community[85]. Littered food attracts scavenger animals and raises the risk of spreading disease, particularly airborne scavengers, such as gulls, which may contribute to risks of contamination of surfaces and swimming waters through the associated faeces[86]. Plastic, when eroded into microplastics, can

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[83] Perez, L. G., Arredondo, E. M., Mckenzie, T. L., Holguin, M., Elder, J. P., & Ayala, G. X. - Neighbourhood Social Cohesion and Depressive Symptoms among Latinos: Does Use of Community Resources for Physical Activity Matter? Journal of Physical Activity and Health (2015)

[84] Wyles, K. J., Pahl, S., Thomas, K., & Thompson, R. C. - Factors That Can Undermine the Psychological Benefits of Coastal Environments. Environment and Behaviour (2016)

[85] Journal of Litter and Environmental Quality - Beacons of litter: A social experiment to understand how the presence of certain littered items influences rates of littering (2017)

[86] Reagan, R., Converse, J., Sams, E., Hudgens, E., Dufour, A., Ryu, H., Santo-Domingo, J., Kelty, C., Shanks, O., Siefring, S., Haugland, R. and Wade, T. - "Dramatic improvements in beach water quality following gull removal", Environmental Science and Technology, 46(18): 10,206–10,213 (2012)

resemble food to sea creatures and transfer through the food web (i.e. indirect impact as it enters the human food chain)[87].

It is reported that contact with drug-related litter (needles or chemicals) can result in expensive medical investigations, fear on part of the victim, along with the risk, albeit small, of contracting a life-altering illness[88]. The report highlights that studies investigating the risk of disease transmission from 'community acquired needle-stick injury' (i.e. from discarded needles), identify that the risk of transmission is low, although it is acknowledged that there are a number of well-attested cases where infection has been passed on in this way.

The presence of asbestos in flytipped materials can release microscopic fibres and dust into the air, which if ingested may lead to an aggressive form of lung cancer called mesothelioma[89]. Asbestos waste requires specialist handling and controlled disposal in dedicated landfill cells to prevent the uncontrolled release of fibres into the environment, therefore, asbestos in flytipped material presents a health risk to members of the public, as well as though carrying out the illegal dumping of asbestos. There are several reports highlighting the problems associated with asbestos flytipping in Scotland[90,91], although there is limited information regarding the scale of the issue or the level of risk to human health from asbestos in flytipped material. Based on the latest flytipping statistics available for England, asbestos accounted for less than 1% of total flytipping incidents reported in 2019/20[92].

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[87] S. Hann, C. Sherrington, O. Jamieson, M. Hickman, P. Kershaw, A. Bapasola, G. Cole, Investigating Options for Reducing Releases in the Aquatic Environment of Microplastics Emitted by (but Not Intentionally Added in) Products, Eunomia (2018)

[88] Journal of Litter and Environmental Quality - Beacons of litter: A social experiment to understand how the presence of certain littered items influences rates of littering (2017)

[89] Acorn Analytical Services - Asbestos fly tipping and the threat to public health (undated)

[90] Glasgow Times - Asbestos-ridden flytipping dump used by Glasgow gangs is cleared (2021)

[91] South Lanarkshire Review - Reckless fly tipping could have led to serious accident (2021)

[92] Department for Environment, Food and Rural Affairs - Fly-tipping statistics for England, 2019/20 (2021)

5.2.3 Likely Evolution of the Baseline without the NLFS

It is difficult to quantify, and subsequently project, the impact of litter on health as litter and its effects are pervasive with effects not easily associated to, and subsequently recorded, as being related to litter. However, in 2018/9, 12% of adults reported two or more depression symptoms, and 14% reported two or more anxiety symptoms in Scotland. This prevalence has increased since 2012/3[93]. As section 5.2.1 highlights, decreasing litter can help alleviate mental health conditions of patients and contribute to recovery.

Without the implementation of proposals in the new National Litter and Flytipping strategy it is considered that there would be no improvement to the effects on human health, with the potential for a worsening of effects if incidents of littering and flytipping increase.

5.3 Consideration of likely significant effects

5.3.1 Methodology

The new National Litter and Flytipping strategy has the potential to have a range of effects on the health of people in Scotland by preventing or limiting waste materials entering and affecting the environment. The assessment considers the potential impacts on human health through the implementation of the proposed actions to prevent litter and flytipping, developed across the four strategy themes: behaviour change; infrastructure and services; enforcement; and data and research.

Although the adverse impacts of litter and flytipping on human health may be similar it is recognised that litter and flytipping are distinct issues with different drivers, so the assessment provides separate appraisals of the actions proposed for the Litter strategy (Table 5-1) and the Flytipping strategy (Table 5-2). The SEA criteria for assessing the effects on human health are listed at the start of each table. The effects against these

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[93] Scottish Government - Mental health and depression (2020)

criteria are considered against a baseline which is effectively a continuation of the existing National Litter Strategy.

5.3.2 Results

The tables below provide summary assessments of the likely significant environmental effects of implementing proposed actions to prevent litter and flytipping across the four strategy themes, with regard to Human Health. Table 5-1 presents the results of the assessment of actions for Litter and Table 5-2 present the findings assessing the actions for the Flytipping.

The key to each assessment score is shown below:

Score Key:	++	+	0	-	--	?
	Significant positive effect	Minor positive effect	No overall effect	Minor negative effect	Significant negative effect	Score uncertain
NB: Where a box is coloured but also contains a "?" this indicates uncertainty over whether the effect could be a minor or significant effect although a professional judgement is expressed in the colour used. A conclusion of uncertainty arises where there is insufficient evidence for expert judgement to conclude an effect.						

Table 5-1   Assessment of Effects of Litter Actions on SEA Criteria for Human Health

Litter Strategy
Human Health
SEA Criteria: • To safeguard the amenity of recreational assets. • To safeguard human health.

	Overall Score
Behaviour Change – Actions	**+/?**
	Action Score
Conduct research to understand the full range of influences on littering behaviours across various contexts and audience groups.	**+/?**
Develop a sustained, evidence based, national anti-littering campaign and deliver this consistently and collaboratively across Scotland.	**+**

Commentary:

There are global studies that raise concerns that litter, especially plastics and microplastics, are causing negative impacts on human health[94]. Actions enabling research focused on littering behaviour are expected to be beneficial in terms of reduce littering and safeguarding recreational assets and human health. There are very few studies that have examined the impact of littering on human health, so if research into littering behaviour can encompass a review of effects on well-being and health this should also deliver benefits.

The development of a national campaign for litter prevention and collaboration between organisations could improve understanding of littering behaviour and measures for prevention, which has the potential to deliver positive effects for human health. A coordinated campaign could also gather information on the prevalence of litter and build on the experience of local litter picking campaigns.

	Overall Score
Services and Infrastructure – Actions	**+**

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[94] World Health Organisation Microplastics in drinking-water (2019)

	Action Score
Explore the use of flexible and innovative interventions to support litter prevention and removal.	+
Establish an action focused group to encourage collaboration and share best practice between local authorities, national parks and other duty bodies to optimise services	+
Create a national litter hub to provide information and advice to community groups.	+
Increase the use of citizen science to support data on levels and composition of litter.	+
Carry out a review of the development, implementation and progress of the Code of Practice for Litter and Refuse (2018).	?

Commentary:

The proposed actions do not principally relate to the direct construction and operational effects of infrastructure and operational facilities on human health but are indirectly expected to benefit human health by reducing and removing litter from the Scottish environment. Exploring innovation and flexibility of services and infrastructure should have some positive impacts on safeguarding the amenity of recreational assets and human health. For example, this may include prevention of litter causing blockages and flooding of drainage infrastructure, detrimental to human health. Increased collaboration can encourage sharing information on best practice and ensure a more coordinated approach to the use of litter and waste services and infrastructure, which would help reduce the presence of litter in the physical environment and improve the quality of recreational assets and human health.

The creation of a national litter information hub may allow for more effective clean-up of littering in local communities, which would be beneficial to human health, as well providing information on health and safety aspects for litter picking groups.

The scope for actions in citizen science and collaboration between organisations is varied and wide, for example it could focus on a social study gathering information on litter picking experience and impacts on health and wellbeing. Actions using citizen science are assessed as having a positive impact on human health.

It is not clear whether a review of the Code of Practice for Litter and Refuse (COPLAR) will result in any changes beyond those currently established for preventing and reducing the impacts of litter in the environment, so this is considered to have an uncertain effect for human health at this stage

Enforcement – Actions	Overall Score
	+/?
	Action Score
Conduct an evidence review of barriers to enforcement of litter offences.	++/?
Explore raising current fixed penalty notice amounts for a litter offence.	+/?
Develop guidance on enforcement best practices and seek agreement for this to be voluntarily adopted by Local Authorities and National Parks.	++/?
Review current powers for enforcing littering offences.	+/?
Explore potential alternative penalties to monetary fixed penalties for a litter offence.	?
Explore using civil penalties in relation to littering offences.	?

Create fixed penalties for the registered keeper of the vehicle for littering from vehicles.	**+/?**

Commentary:

Evidence suggests that stringent enforcement measures will lead to less incidences of littering (see Table 4-3 for Biodiversity), so it is anticipated that actions exploring barriers to enforcement and the development of best practice for enforcement bodies, will help to reduce incidents of littering. Due to the association between littering and poor effects on health actions that support improved enforcement are considered to create positive benefits for recreational sites and human health. This would be dependent though on the extent to which enforcement measures are adopted by Local Authorities and other organisations with an enforcement role. Reviewing existing powers for enforcement also has the potential to deter littering, with subsequent benefits for human health.

As discussed in the assessment of Enforcement actions in relation to Biodiversity (see Table 4-2), the further raising of fixed penalties or introducing legislation to strengthen enforcement of litter from vehicles by issuing a fine to the registered keeper of the vehicle is expected to deter littering, although the level of significance for human health is uncertain.

It is considered that further details on civil penalties and potential alternatives to financial penalties and their effectiveness are required before the effects on human health can be determined, so these are assessed to be uncertain impacts.

	Overall Score
Data and Research – Actions	**+/?**
	Action Score
Review the available litter data and approach to data collection across Scotland and reach an agreement between stakeholders on a common approach to collecting data.	**+/?**

Identify commonly littered items and litter hotspots and work with Local Authorities and other duty bodies to develop targeted interventions to reduce litter.	+/?

Commentary:

Whilst there is established research into the correlation between areas of high deprivation and poor mental health, there is limited research into the direct impact of littering on human health.

The action to review available litter data and approach to data collection (including from public health bodies), may allow for a holistic understanding of the impacts of littering on human health, although the level of significance is not certain.

The identification of litter composition and hotspots may help to tackle persistent littering issues (which is noted to have close links to the Infrastructure and Services strategy theme). The potential reduction of litter in the environment is assessed to be a positive effect for human health, although there is some uncertainty regarding the practical implementation of interventions by Local Authorities and other duty bodies.

Table 5-2 Assessment of Effects of Flytipping Actions on SEA Criteria for Human Health

Flytipping Strategy	
Human Health	
SEA Criteria: • To safeguard the amenity of recreational assets. • To safeguard human health.	
	Overall Score

Behaviour Change – Actions	+/?
	Action Score
Conduct research to understand the full range of influences on flytipping behaviour across various context and audience groups and use this to design effective responses.	**+/?**
Develop a sustained, evidence based, national anti-flytipping campaign and deliver this consistently and collaboratively across Scotland.	**+**
Develop social media campaigns and guidance targeted at waste carriers and other businesses[95].	**+/?**

Commentary:

Conducting research to understand how to safeguard the amenity of recreational assets in relation to flytipping behaviour could have a positive impact effect on human health, if this was included as part of the scope of the commissioned research. There is uncertainty though whether the proposed research would enhance the existing understanding of flytippng behaviour (e.g. Zero Waste Scotland, Evidence Review of Flytipping Behaviour, 2017). Linking the research to a review of the effects of flytipping on well-being and health could deliver further benefits.

Encouraging a national campaign against flytipping is expected to have some positive impacts in safeguarding recreational assets and human health.

The development of social media campaigns and guidance may help to raise awareness of the adverse effects of flytipping, although the level of positive effect for human health is uncertain as waste carriers and businesses should already be aware of their responsibilities and the potential impacts of flytipping in the environment.

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[95] This action would build on work that is already being carried out by SEPA to target individuals looking to dispose of household waste and businesses offering waste collections.

Services and Infrastructure – Actions	Overall Score +/? Action Score
Support and encourage information and resource sharing between Local Authorities, waste sector, SEPA and other organisations through the flytipping forum.	+
Explore the role of technology in assisting private landowners and land managers deter flytipping on their land.	?
Produce updated guidance for private landowners on dealing with flytipping.	?
Explore alternative financial support mechanisms available to private landowners.	?
Explore how to support and encourage more reuse and repair of products that are commonly flytipped.	++/?
Explore a flexible approach to waste disposal (such as mobile HWRCs and targeted amnesties), and targeted interventions, with a view to trial these.	+
Carry out research to create a single information point on the disposal of commonly flytipped materials.	+
Commentary: Information and resource sharing of services between organisations could help to highlight areas where flytipping adversely effects recreational assets, and human health and improve measures to mitigate the impact of flytipping on human health.	

The extent to which flytipping on private land effects human health is not clear, so actions relating to private landowners are assessed as a potential neutral impact with respect to the Human Health SEA criteria.

Support in encouraging more reuse and repair of products is considered to have potential for significant positive effects, as this would prevent items being flytipped and so remove adverse effects on human health. Further monitoring would be required though to confirm the effectiveness of the action.

Exploring a more flexible approach to waste disposal and interventions to prevent flytipping, as well as creation of a single information point are expected to help improve the management of flytipped material through the coordination of relevant services and visibility of information on flytipping. The actions may help prevent flytipping, which should help to reduce impacts on human health.

Enforcement – Actions	Overall Score
	+/?
	Action Score
Conduct an evidence review of barriers to enforcement.	+/?
Develop guidance on enforcement best practices, including on private land and seek for this to be voluntarily adopted by statutory bodies.	+/?
Initially raise current fixed penalties issued by Police, Loch Lomond and Trossachs National Park for flytipping to the maximum (£500) and explore possibility of raising the maximum further at a later date.	+/?
Explore raising current fixed penalties that can be issue by SEPA for flytipping offences to the maximum (£1000) and explore possibility of raising the maximum further at a later date.	+/?

Review existing legislative powers for enforcing flytipping offences.	**+/?**
Explore the ability to remove, suspend or deny Waste Carrier's Registration to individuals/companies fined for flytipping.	**+/?**
Support information sharing on flytipping incidents and offenders between Local Authorities, Police and National Parks.	**+**
Create powers to enable seizure of vehicles by SEPA used in flytipping.	**+/?**
Explore the possibility and benefits of using civil penalties to enforce flytipping offences.	**?**

Commentary:

There is limited evidence available to confirm the effectiveness of more stringent enforcement measures at preventing flytipping (see Table 4-3 for Biodiversity). It is understood though that the low probability of being caught for flytipping offences is a significant factor contributing to incidents of flytipping[96], therefore, the actions proposed in the new National Litter and Flytipping strategy for a review of enforcement measures (including barriers to enforcement, existing powers, guidance on best practice, removal of Waste Carrier Registrations, and seizure of vehicles), should be beneficial in improving understanding of what is effective in combating flytipping. This is expected to create positive benefits in preventing flytipping and subsequently impacts on human health, however, there is still uncertainty on the level of significance of the effects.

Sharing information on flytipping between Local Authorities, Police and National Parks should improve responses to flytipping incidents and may potentially help to prevent flytipping, which would have some positive impacts for human health.

As discussed in the review of proposed Enforcement actions for Biodiversity (see Table 4-4), increased financial penalties should provide some deterrent to flytipping, although the level of significance for human health is uncertain.

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[96] https://www.zerowastescotland.org.uk/litter-flytipping/impacts

Further details on the use civil penalties and their effectiveness are required before the effects on human health can be determined, so this is considered to be an uncertain impact.

Data and Research – Actions	Overall Score
	+/?
	Action Score
Create a data sharing agreement and work with Local Authorities, other duty bodies, National Parks, private landowners and land managers, businesses and the third sector to improve consistency of data collected in Scotland.	**+/?**
Explore and seek to support the use of appropriate technology in data collection.	**+/?**
Work with stakeholders to improve consistency of data collection in Scotland.	**+/?**
Explore incorporating data into a national database.	**+/?**
Review the Dumb Dumpers system and ensure that a fit for purpose mechanism for citizen reporting of flytipping exists in Scotland.	**+/?**
Explore the development of a live picture of flytipping across Scotland.	**0/?**

Commentary:

Whilst there is established research into the correlation between areas of high deprivation and poor mental health, there is limited research into the direct impact of flytipping on human health. Improved collection of data from duty bodies, including public health bodies, in a national database may allow for a holistic understanding of the impacts of flytipping on human health. Exploration of technology to streamline and facilitate the reporting of data may improve the quality of regional data though it is not certain how this

would be implemented or applied to improving human health. Improving consistency of data, will improve monitoring accuracy and may allow for more localised monitoring of its impact on human health.

Due to uncertainty regarding the complexity of reporting 'live' data it is considered that this would have little to offer in terms of benefits to human health.

5.4 Mitigation and Enhancement

The following measures are suggested to enhance the proposals in the new National Litter and Flytipping strategy, with respect to human health:

- Carry out research to improve the understanding of the effects of litter and flytipping on the physical health risks from exposure to materials in litter and flytipping, along with the mental health and well-being associated with blight from these wastes.

- Public health bodies should be included in data sharing agreements in order to study impacts from litter and flytipping on human health.

Please also refer to Section 4.4 Mitigation and Enhancement for the Biodiversity topic for a list of recommendations supporting the wider aims to prevent or improve management of litter and flytipped materials, which are considered to be common to each environmental topic.

6. Water

The marine and freshwater environments around Scotland are used for a variety of industrial and recreational activities including salmon and sea trout fisheries, recreational sea angling, sailing, cruising, bathing and recreational tourism. Coastal recreation opportunities make an important contribution to human health as well as coastal economies.

Marine, fishing and shipping litter and beach litter form a serious potential source of pollution and contamination of water. Litter and flytipping can also have a detrimental

effect on water infrastructure by blocking sewers and stormwater overflows and causing flooding.

This section provides the contextual information to inform the assessment (in terms of the review of Plans, Programmes and Strategies (PPS) and the baseline information) as well as an assessment of the effects of the proposals for the prevention of litter and flytipping, regarding water impacts.

6.1 Relationship with other Plans, Programmes, Strategies and Environmental Objectives

The PPS that are relevant to water topic that have been reviewed to inform the assessment of the proposals for the prevention of litter and flytipping are shown in Figure 6-1 and summarised thereafter.

Figure 6-1 Plans, Policies and Strategies related to Water
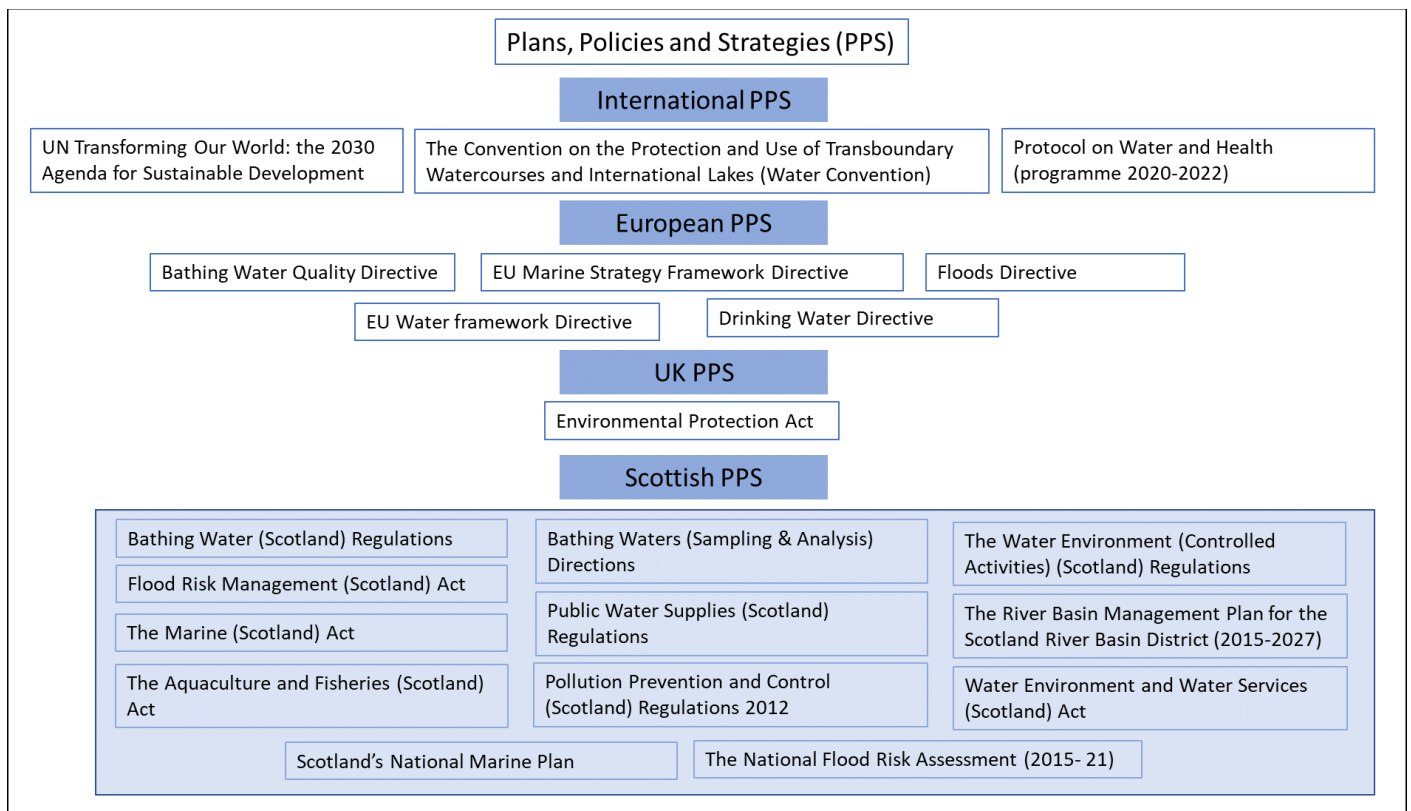
6.1.1 International level

United Nations (2015): Transforming our World - the 2030 Agenda for Sustainable Development sets out 17 global goals agreed by the United Nations. These goals are embedded within the agenda for 15 years and include commitments to protect the planet through sustainable consumption and sustainable management of resources. The National Litter and Flytipping Strategy supports the 17 global goals in seeking to embed sustainability and resource minimisation across all sectors of society. Some of the key sustainable development goals relevant to Water are, Goal 6: Ensure availability and sustainable management of water and sanitation for all; Goal 13: Take urgent action to combat climate change and its impacts; and Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development.

The Protocol on Water and Health (programme 2020-2022), jointly serviced by UNECE and WHO-Europe, is a unique legally binding instrument aiming to protect human health by better water management and by reducing water-related diseases. The Protocol provides a practical framework to translate into practice the human rights to water and sanitation and to implement Goal 6.

The Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) was adopted in Helsinki in 1992 and entered into force in 1996. The Convention is a unique legally binding instrument promoting the sustainable management of shared water resources, the implementation of the Sustainable Development Goals, the prevention of conflicts, and the promotion of peace and regional integration.

6.1.2 European level

The EU Water Framework Directive (2000/60/EC) safeguards the use of surface water, transitional waters, coastal waters and groundwater. It supports the status of aquatic ecosystems and associated environments and addresses issues such as groundwater pollution and river basin management planning. The Water Framework Directive includes a requirement for member states to carry water assessments on both

chemical and ecological status, alongside additional requirements to consider the status of biodiversity as an indicator in determining overall water quality.

Floods Directive (2007/60/EC) focus on avoiding or limiting the impacts of flood risk and establishes a framework for the reduction of the adverse consequences of flood for human health, the environment, cultural heritage and economic activity. Blockages to infrastructure from litter and flytipping are potential contributory factors to flooding incidents.

EU Marine Strategy Framework Directive (2008/56/EC) (MSFD) which sets out a comprehensive approach to protect and preserve Europe's marine environment, prevent its deterioration or, where practicable, restore marine ecosystems in areas where they have been adversely affected, as well as prevent and reduce inputs in the marine environment, with a view to phasing out pollution. It also set controls for water quality against Indicator 8 (Concentrations of contaminants are at levels not giving rise to pollution effects) and 9 (Contaminants in fish and other seafood for human consumption) do not exceed levels established by Community legislation or other relevant standards can be reviewed as an indicator of water quality.

The Bathing Water Quality Directive (2006/7/EC) sets out a comprehensive approach to the monitoring and classification of bathing water quality, the management of bathing water quality, and the provision of information to the public on bathing water quality.

The Drinking Water Directive (98/83/EC) at the European level which put in place measures to prevent and control any adverse health effects arising from the contamination of water resources.

6.1.3   UK level

UK Government (1990): The Environmental Protection Act (EPA) establishes legal responsibilities for pollution control for land, air and water.

6.1.4 Scottish level

Water Environment and Water Services (Scotland) Act, 2003: Protects the water environment including groundwater, surface water and wetlands, for, or in connection with the implementation of the Water Framework Directive and guides the establishment of River Basin Management Plans (RBMPs). The new National Litter and Flytipping Strategy is aligned to these goals as it aims to prevent litter and flytipping materials entering the water environment.

Bathing Waters (Scotland) Regulations 2008 (as amended) and the **Bathing Waters (Sampling & Analysis) (Scotland) Directions 2008** transposing the bathing Water Quality Directive. The new National Litter and Flytipping Strategy aims to reduce littering of the marine and coastal specifically concentrating on reducing the number of waste items entering water drainage systems and discharging into coastal bathing waters.

Flood Risk Management (Scotland) Act 2009 which mandates the creation of Flood Risk Management Strategies and Local Flood Risk Management Plans. By preventing waste material entering the drainage and water infrastructure the new National Litter and Flytipping Strategy may support improved flood management in Scotland.

The Marine (Scotland) Act 2010 provides a framework to help balance competing demands on Scotland's seas. It includes a duty to protect and enhance the marine environment and includes measures to help boost economic investment and growth in areas such as marine renewables. Following this, **Scotland's National Marine Plan 2015**[97] was produced, which provides a framework for managing all developments, activities and interests in or affecting Scotland's marine area (territorial and offshore waters). The National Marine Plan sets out high-level objectives, general policies and sectoral policies. These includes general policies to prevent adverse impacts on coastal processes and flooding, to reduce marine litter, and to maintain marine water quality.

Pollution Prevention and Control (Scotland) Regulations 2012 which aims to specifically control pollution relating to industry discharges, including control of waste

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[97] Scottish Government. Scotland's National Marine Plan (2015)

materials. The new National Litter and Flytipping Strategy can help ensure waste materials are disposed of appropriately.

The Aquaculture and Fisheries (Scotland) Act 2013 sets out regulations to ensure that farmed and wild fisheries – and their interactions with each other – continue to be managed effectively. The **Salmon and Freshwater Fisheries (Consolidation) Act 2003** consolidates legislation relating to salmon and freshwater fisheries in Scotland. The Act sets out regulation with regard to the methods of fishing for salmon and freshwater fish. The new National Litter and Flytipping Strategy will aim to prevent litter and flytipping contaminating fishing water or degrading the environment around water access.

The Public Water Supplies (Scotland) Regulations 2014 regulations transpose the Drinking Water Directive.

The National Flood Risk Assessment (2015- 21) published by SEPA. The risk assessment identifies the Potentially Vulnerable Areas and the risk associated with flooding in these areas. Relevant actions will be identified in the regional plans. Flood Risk Management Strategies set out actions to manage flood risk and the impact of flooding in high risk areas, within specific flood risk management districts.

The River Basin Management Plan for the Scotland River Basin District (2015 – 2027)[98] outlines the actions required to protect Scottish waters in good condition and to improve the quality of others.

The Water Environment (Controlled Activities) (Scotland) Regulations, 2018 outlines different levels of authorisations to allow for proportionate regulation of the water environment. Scotland's waters are monitored by the Scottish Environment Protection Agency (SEPA) to measure performance and compliance with targets for water quality status under the Water Framework Directive. Scottish Water is a publicly owned company and Ministers are required to set its objectives for investment and

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[98] SEPA - The river basin management plan for the Scotland river basin district: 2015–2027.

principles for charging consumers. The Scottish Government is in the process of defining objectives and principles of charging for the next regulatory period of 2021 to 2027[99].

6.2 Baseline Characteristics

6.2.1 Water Quality

Approximately 80% of all global marine pollution is caused by human activities on land in the form of solid waste leakage including plastic from inadequate waste management; sewage disposal into water bodies such as rivers and coastal waters; urban storm-water run-off; sediment mobilisation; inadequately treated waters from industries; discharges of phosphorus and nitrogen used in agriculture; and dumping of heavy metals and persistent organic pollutants[100]. Sea-based marine pollution includes abandoned, lost or otherwise discarded fishing gear (ALDFG), pollution from aquaculture, oil spills, and pollution from sea-based activities such as shipping and tourism[101].

Scotland has 86 designated bathing waters which have been given special protection because they are popular bathing locations[102]. Of these areas, 59 are assessed as excellent or good status, 16 are assessed as being at target objective and 11 are assessed as at poor status, although it is not confirmed whether a poor status is specifically due to litter and flytipping or other sources of pollution, such as sewage.

In Scotland, a total of 1,533 items of litter were recorded from 1,635 sea-floor trawls between 2012 and 2018 inclusive[103]. Litter was observed in 44% of trawls, which usually contained one (53%) or two (24%) items, with a maximum of 18. The majority of litter items (74%) were categorised as plastic. A spatial map was produced of averaged modelled sea-floor litter densities in the seas between 2016 and 2018 inclusive, which

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[99] Scottish Government - Water services - charging principles: 2021 to 2027 and Scottish Water: directions 2020 (2020)

[100] UNEP - Marine Litter and Plastic Pollution (undated)

[101] UNEP - Marine Litter and Plastic Pollution (undated)
[102] Scottish Environment Protection Agency - Bathing Waters (2018)

[103] Scottish Government - Seafloor litter (2020)

shows that the highest densities occur in the North Sea, whilst the lowest densities occur off-shore to the West of Scotland (Figure 6-2).

Figure 6-2 Modelled sea-floor litter densities averaged over 2016 to 2018 inclusive
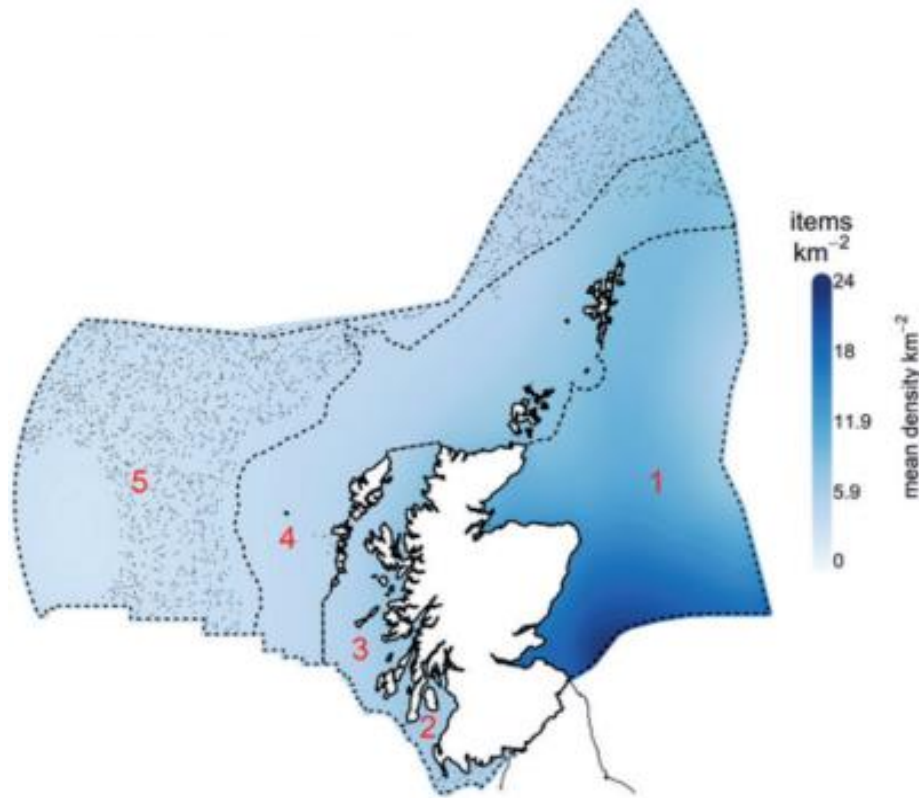
The spatial map shows modelled sea-floor litter densities averaged over 2016 to 2018 inclusive, with biogeographic regions denoted by dotted internal boundaries, and areas distant from survey trawls by stippling[104]

Microplastics (plastic particles less than 5mm in dimension), are also of particular concern. Microplastics, are present in the surface waters of all the Scottish sea areas surveyed, with fragmented plastics accounting for almost 50% of the microplastics recovered from the sea surface from 2013/14 - 2019/20 in Scottish waters[105].

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[104] Scottish Government - Seafloor litter (2020)
[105] Scottish Government - Microplastics in surface water (2020)

Annual beach surveys provide an indication of the level of litter present in the marine environment, which is eventually deposited on land. The Marine Conservation Society (MCS) Great British Beach Clean identified that in Scotland beach litter rose by 6% in 2017 compared with 2016 in terms of the number of litter items identified[106]. As reported in Section 4.2 for Biodiversity baseline characteristics, the most recent figures from the MCS survey of beaches in Scotland averaged 559 items of litter/100m in 2018[58], 492 items of litter/100m in 2019[56], and 298 items of litter/100m in 2020[5856] (although noting that beach litter survey data for 2020 may reflect the impact of restrictions for COVID-19).

In 2017 a total of 57,961 litter items were collected from 111 beaches in the UK as a whole, averaging 490 pieces of litter from every 100 metres cleaned, compared to 194 pieces of litter in 2013, an increase of approximately 250% in four years. The top five most common litter items on UK beaches in 2020 (average per 100m of beach surveyed)[107], were as follows:

- Plastic and polystyrene pieces (0-50cm): 167.2
- Plastic and polystyrene caps and lids: 19.7
- Wet wipes: 17.7
- Cigarette stubs: 16.2
- Plastic string: 15.8

The integrity of flood defences can also be potentially undermined due to litter and flytipping. Drains and weirs need to be cleared and protected to efficiently divert waters away from vulnerable flood zones[108]. The high cost of cleaning and potential damage as a result of defence failures, heightens the overall impact litter in the wate environment has on society.

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[106] Marine Conservation Society - Great British Beach Clean Report 2015 (2017)

[107] Marine Conservation Society, (2020). Great British Beach Clean 2020 results (2020)

[108] Scottish Government - Marine Litter Issues, Impacts and Actions (2011)

6.2.2 Likely Evolution of the Baseline without the NLFS

In the absence of the new National Litter and Flytipping strategy, littering and flytipping is expected to continue increasing as the economy returns to pre-pandemic levels. The presence of litter and flytipped material in the water environment and related adverse effects is likely to continue without the introduction of proposals in the strategy.

6.3 Consideration of likely significant effects

6.3.1 Methodology

The new National Litter and Flytipping strategy has the potential to have a range of effects on the Scottish water environment by preventing or limiting waste materials entering and affecting this environment. The assessment considers the anticipated effects on the water environment through the implementation of the proposed actions to prevent litter and flytipping, developed across the four strategy themes: behaviour change; infrastructure and services; enforcement; and data and research.

Although the adverse impacts of litter and flytipping on the water environment may be similar it is recognised that litter and flytipping are distinct issues with different drivers, so the assessment provides separate appraisals of the actions proposed for the Litter strategy (Table 6-1) and the Flytipping strategy (Table 6-2). The SEA criteria for assessing the effects on water are listed at the start of each table. The effects against these criteria are considered against a baseline which is effectively a continuation of the existing National Litter Strategy.

6.3.2 Results

The tables below provide summary assessments of the likely significant environmental effects of implementing proposed actions to prevent litter and flytipping across the four strategy themes, with regard to water. Table 6-1 presents the results of the assessment of actions for Litter and Table 6-2 present the findings assessing the actions for the Flytipping.

The key to each assessment score is shown below:

Score Key:	++	+	0	-	--	?
	Significant positive effect	Minor positive effect	No overall effect	Minor negative effect	Significant negative effect	Score uncertain

NB: Where a box is coloured but also contains a "?" this indicates uncertainty over whether the effect could be a minor or significant effect although a professional judgement is expressed in the colour used. A conclusion of uncertainty arises where there is insufficient evidence for expert judgement to conclude an effect.

Table 6-1   Assessment of Effects of Litter Actions on SEA Criteria for Water

Litter Strategy	
Water	
SEA Criteria: • To safeguard water quality, including bathing waters.	
Behaviour Change – Actions	**Overall Score**
	+/?
	Action Score
Conduct research to understand the full range of influences on littering behaviours across various contexts and audience groups.	**+/?**
Develop a sustained, evidence based, national anti-littering campaign and deliver this consistently and collaboratively across Scotland.	**+**

Commentary:

The actions for behaviour change on littering are expected to provide increased awareness of the reasons for littering and how this effects water quality (including the marine environment). This is likely to have some positive effects in safeguarding water quality, although the effectiveness of proposed actions is uncertain

A national campaign to litter prevention and behaviour change is expected to improve beach litter prevention and water quality. A collaborative approach with programmes such as the proposed updates to the Marine Litter Strategy[14] for Scotland will help to support the reduction of litter entering the marine environment.

Services and Infrastructure – Actions	Overall Score
	+
	Action Score
Explore the use of flexible and innovative interventions to support litter prevention and removal.	**+/?**
Establish an action focused group to encourage collaboration and share best practice between local authorities, national parks and other duty bodies to optimise services	**+**
Create a national litter hub to provide information and advice to community groups.	**+**
Increase the use of citizen science to support data on levels and composition of litter.	**+**
Carry out a review of the development, implementation and progress of the Code of Practice for Litter and Refuse (2018).	**?**
Commentary:	

Exploring innovation on litter prevention may already be incorporated into existing water legislation and regulations, but the use of more flexible cleansing and litter and waste services and participation in innovation and sharing know how could have a positive impact in safeguarding water quality.

Actions increasing collaboration between organisations are expected to safeguard water quality including bathing water quality, especially with regard to information sharing. The creation of a national litter information hub is also expected to help water quality by helping to limit the extent to which litter remains in the environment where it could pollute water courses.

The use of citizen science could benefit water quality, for example, by capturing information from campaigns by the Marine Conservation Society[109], or for the River Clyde where the length of the river was litter picked and reported on (Keep Scotland Beautiful Upstream battle campaigns)[110]. Working in partnership with such organisations is expected to assist the Litter strategy and benefit the quality of the water environment.

It is not clear whether a review of the Code of Practice for Litter and Refuse (COPLAR) will result in any changes beyond those currently established for preventing and reducing the impacts of litter in the environment, so this is considered to have an uncertain effect for the water environment.

Enforcement – Actions	Overall Score
	+/?
	Action Score
Conduct an evidence review of barriers to enforcement of litter offences.	++/?
Explore raising current fixed penalty notice amounts for a litter offence.	+/?

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[109] Marine Conservation Society- Save Scottish Seas (2020)

[110] Keep Scotland Beautiful - UpstreamBattle® (2021)

Develop guidance on enforcement best practices and seek agreement for this to be voluntarily adopted by Local Authorities and National Parks.	**++/?**
Review current powers for enforcing littering offences.	**+/?**
Explore potential alternative penalties to monetary fixed penalties for a litter offence.	**?**
Explore using civil penalties in relation to littering offences.	**?**
Create fixed penalties for the registered keeper of the vehicle for littering from vehicles.	**+/?**

Commentary:

Currently, there is no designated statutory body in the UK responsible for clearing aquatic litter, namely in rivers and estuaries, with an exception being in the event of flooding[111]. Riparian owners and land owners are sometimes responsible for the maintenance of rivers and clearing of litter in rivers and sometimes Local Authorities have powers to act[112]. As discussed previously in the assessment of Enforcement actions in relation to Biodiversity (see Table 4-3), there is evidence indicating that stringent enforcement measures lead to fewer incidences of littering. In light of the lack of designated statutory body responsible for clearing aquatic litter, there is reason to suggest that the actions leading to improved enforcement of anti-litter laws would prevent litter entering the water environment and be beneficial in safeguarding water quality. The extent to which enforcement measures are voluntary adopted does result in some uncertainty regarding potential implementation. It is thus important that existing powers are thoroughly reviewed, with close collaboration with other participants.

Based on the reasons referred to in the earlier section on Biodiversity (Table 4-3), it is considered that raising fixed penalties for littering above existing levels and introducing

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[111] The Countryside Charity - Litter Law England and Wales (2020)

[112] SEPA. Watercourses in the Community - A guide to sustainable watercourse management in the urban environment (2000)

legislation to strengthen enforcement of litter from vehicles by issuing a fine to the registered keeper of the vehicle, may be beneficial in deterring littering, which would have a positive impact on safeguarding water quality, although the level of significance is uncertain.

It is considered that there is insufficient information to determine whether civil penalties and alternatives to financial penalties would be effective at preventing littering, so these are assessed to be uncertain impacts for safeguarding water quality.

Data and Research – Actions	Overall Score
	+/?
	Action Score
Review the available litter data and approach to data collection across Scotland and reach an agreement between stakeholders on a common approach to collecting data.	++/?
Identify commonly littered items and litter hotspots and work with Local Authorities and other duty bodies to develop targeted interventions to reduce litter.	+/?

Commentary:

Sea floor trawling and Marine Conservation Society Beach clean-up data both provide indicative sampled data on marine litter, but it is difficult to quantify the volume of litter entering water bodies due to a lack of terrestrial litter arising data. The last study to accurately estimate terrestrial Scottish litter arisings was conducted in 2013. Improved consistency in data collection between duty bodies including marine conservation charities would allow for more accurate monitoring of the impact of litter on water bodies.

A review of available litter data and approach to data collection would provide valuable insight into effectiveness of litter prevention measures with respect to the water environment (noting that this has close links to the optimisation of services identified in

the Infrastructure and Services strategy theme). This is considered to be a significant positive impact for safeguarding water quality.

The identification of litter composition and hotspots may help to tackle persistent littering issues, particularly where this is linked to a targeted response for intervention (which is noted to have close links to the Infrastructure and Services strategy theme). The expected reduction of litter in the environment is considered to be a positive effect for the water environment.

For both of these actions some uncertainty on the significance of the effects is recorded, noting that the measures are dependent on agreement and practical implementation with the relevant stakeholders.

Table 6-2 Assessment of Effects of Flytipping Actions on SEA Criteria for Water

Flytipping Strategy	
Water	
SEA Criteria: • To safeguard water quality, including bathing waters.	
Behaviour Change – Actions	**Overall Score**
	+/?
	Action Score
Conduct research to understand the full range of influences on flytipping behaviour across various context and audience groups and use this to design effective responses.	**+/?**

Develop a sustained, evidence based, national anti-flytipping campaign and deliver this consistently and collaboratively across Scotland.	**+**
Develop social media campaigns and guidance targeted at waste carriers and other businesses[113].	**+/?**

Commentary:

Research into understanding influences on flytipping behaviour should help to support the development of measures that can prevent flytipping and so reduce subsequent impacts on the water environment. There is uncertainty though whether the proposed research would enhance the existing understanding of flytippng behaviour (e.g. Zero Waste Scotland, Evidence Review of Flytipping Behaviour, 2017). The research may also consider incorporating extensive international research on the fate of litter in watercourses and the marine environment.

Actions engaging a national anti-flytipping campaign can be expected to improve water quality including bathing water, which may benefit from a targeted approach of specific water courses or beach areas impacted by excessive littering.

The development of social media campaigns and guidance should be beneficial in raising awareness of the adverse effects of flytipping, although the level of positive effect is uncertain as waste carriers and businesses should already be aware of their responsibilities and the potential impacts of flytipping on the water environment.

	Overall Score
Services and Infrastructure – Actions	**+**
	Action Score

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[113] This action would build on work that is already being carried out by SEPA to target individuals looking to dispose of household waste and businesses offering waste collections.

Support and encourage information and resource sharing between Local Authorities, waste sector, SEPA and other organisations through the flytipping forum.	**+**
Explore the role of technology in assisting private landowners and land managers deter flytipping on their land.	**+/?**
Produce updated guidance for private landowners on dealing with flytipping.	**+**
Explore alternative financial support mechanisms available to private landowners.	**+**
Explore how to support and encourage more reuse and repair of products that are commonly flytipped.	**++/?**
Explore a flexible approach to waste disposal (such as mobile HWRCs and targeted amnesties), and targeted interventions, with a view to trial these.	**+**
Carry out research to create a single information point on the disposal of commonly flytipped materials.	**+**

Commentary:

Encouraging information and resource sharing is expected to improve the use of services and infrastructure for managing waste material from flytipping. The action is considered to have some positive impact on the water environment, by reducing the potential for flytipped material to enter water courses or degrade into water soluble components causing pollution.

Exploring the role of technology for landowners to deter flytipping could be beneficial in reducing impact of the material on water quality. However, the effectiveness and practicalities of implementing technological deterrents are still to be determined, so the significance of the impacts are uncertain. The provision of further guidance to landowners (including other organisations which have an estate to manage) on managing flytipping, should help to either deter flytipping or improve the management of

flytipped material, which is deemed to have some positive impacts for the water environment. Landowners have responsibilities for the maintenance of water courses, so exploring alternative financial support mechanisms for private landowners in terms of the availability of services and infrastructure for dealing with flytipped material may encourage a quicker and optimal approach for managing the waste, with subsequent benefits for the water environment.

Support in encouraging more reuse and repair of products is considered to have potential for significant positive effects, as this would prevent items being flytipped and so remove adverse effects from waste items and pollution on water quality. Further monitoring would be required though to confirm the effectiveness of the action.

Exploring a more flexible approach to waste disposal and interventions to prevent flytipping, as well as creation of a single information point, are expected to help improve the management of flytipped material through the coordination of relevant services and visibility of information on flytipping. The actions may help prevent flytipping, which should help to reduce impacts on the water environment.

Enforcement – Actions	Overall Score
	+/?
	Action Score
Conduct an evidence review of barriers to enforcement.	+/?
Develop guidance on enforcement best practices, including on private land and seek for this to be voluntarily adopted by statutory bodies.	+/?
Initially raise current fixed penalties issued by Police, Loch Lomond and Trossachs National Park for flytipping to the maximum (£500) and explore possibility of raising the maximum further at a later date.	+/?

Explore raising current fixed penalties that can be issue by SEPA for flytipping offences to the maximum (£1000) and explore possibility of raising the maximum further at a later date.	**+/?**
Review existing legislative powers for enforcing flytipping offences.	**+/?**
Explore the ability to remove, suspend or deny Waste Carrier's Registration to individuals/companies fined for flytipping.	**+/?**
Support information sharing on flytipping incidents and offenders between Local Authorities, Police and National Parks.	**+**
Create powers to enable seizure of vehicles by SEPA used in flytipping.	**+/?**
Explore the possibility and benefits of using civil penalties to enforce flytipping offences.	**?**
Commentary: There is limited evidence available to confirm the effectiveness of more stringent enforcement measures at preventing flytipping (see Table 4-3 for Biodiversity). It is understood though that the low probability of being caught for flytipping offences is a significant factor contributing to incidents of flytipping[114], therefore, the actions proposed in the National Litter and Flytipping strategy for a review of enforcement measures (including barriers to enforcement, existing powers, guidance on best practice, removal of Waste Carrier Registrations, and seizure of vehicles), should improve understanding of what is effective in combating flytipping. These actions are not considered to be neutral, as a reduction in flytipping would be beneficial for the water environment, but there is uncertainty on the level of significance for positive effects. Sharing information on flytipping between Local Authorities, Police and National Parks should improve the opportunities for managing flytipped material, which would have some positive impacts for safeguarding water quality.	

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[114] Zero Waste Scotland - Evidence Review of Flytipping Behaviour (2017)

As discussed previously there is conflicting evidence regarding the effectiveness of fines in preventing waste crime (see Table 4-4 for Biodiversity). On balance, it is considered that increased financial penalties should provide some deterrent to flytipping and therefore benefits for the water environment, although the level of significance is uncertain.

Further details on the use civil penalties and their effectiveness are required before the effects on safeguarding water quality can be determined, so this is considered to be an uncertain impact.

	Overall Score
Data and Research – Actions	**+/?**
	Action Score
Create a data sharing agreement and work with Local Authorities, other duty bodies, National Parks, private landowners and land managers, businesses and the third sector to improve consistency of data collected in Scotland.	**+**
Explore and seek to support the use of appropriate technology in data collection.	**+/?**
Work with stakeholders to improve consistency of data collection in Scotland.	**++**
Explore incorporating data into a national database.	**+/?**
Review the Dumb Dumpers system and ensure that a fit for purpose mechanism for citizen reporting of flytipping exists in Scotland.	**+/?**
Explore the development of a live picture of flytipping across Scotland.	**0/?**
Commentary:	

Sea floor trawling and Marine Conservation Society Beach clean-up data both provide indicative data on marine litter arisings but it is difficult to quantify the volume of fly-tipped waste entering the sea due to limited data on terrestrial flytipped material. Improved consistency in data collection between SEPA, Police, Local Authorities, marine conservation charities and other statutory bodies would allow for more accurate monitoring of its impact on water bodies.

Exploration of technology to streamline and facilitate the reporting of data may improve reporting, although it is not certain how this would be implemented or received. Improved technologies to measure marine litter may enhance data collection and monitoring.

As discussed previously (see Table 4-4 Biodiversity), differences in reporting techniques between authorities means data is often incomplete and complicates interpretation of data. Therefore, a more consistent approach would aid monitoring and identify areas of concern, which is expected would deliver significant benefits in assessing the overall status of flytipping in Scotland, with subsequent beneficial effects for the water environment.

There should be positive effects from incorporating data on flytipping in a national database, that would improve opportunities for managing flytipped material, which reduces the prevalence of flytipped material entering the water environment. National flytipping databases (FlyCapture and WasteDataFlow (WDF)) are currently in use, however, they have not been adopted universally by authorities and is therefore not comprehensive, so there is uncertainty regarding the significance of the benefits for this action. Similarly, a review of the Dumb Dumpers platform for citizen reporting of flytipping incidents should support more effective management of flytipped material, although the level of significance for the water environment is uncertain.

Reporting of 'live' data may prove complex to implement and is considered to offer little in terms of monitoring the impact of the new National Litter and Flytipping strategy on the water environment.

6.4 Mitigation and Enhancement

The following measures are suggested to enhance the proposals in the new National Litter and Flytipping strategy, with respect to water:

- Information on water testing quality and use of GIS mapping of litter and flytipping hotspots may be used to improve the understanding of the relationship between levels of litter and flytipping and effects on the water environment.

- Storm water drainage systems are becoming critical systems for managing water in urban areas and safeguarding water quality, so this infrastructure should be included in the consideration of proposals relating to infrastructure and services (i.e. ensuring regular maintenance of the network systems to avoid blockages from litter and flytipping).

- Collaboration between duty bodies and other stakeholders including marine conservation charities would support consistency to approaches and improved monitoring of the effects of litter and flytipping.

Please also refer to Section 4.4 Mitigation and Enhancement for the Biodiversity topic for a list of recommendations supporting the wider aims to prevent or improve management of litter and flytipped materials, which are considered to be common to each environmental topic.

7. Climatic factors

For the purposes of this assessment, climatic factors are concerned with increasing the likelihood of climate change effects through greenhouse gas emissions, and the ability to adapt to the effects of climate change such as the occurrence of more extreme weather events. The Carbon Impacts of the Circular Economy (2015)[115] states that over two thirds of Scotland's' carbon footprint is directly related to material consumption and waste.

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[115] Zero Waste Scotland (2015) The Carbon Impacts of the Circular Economy Technical Report

The contribution of a National Litter and Flytipping Strategy to Scotland's carbon targets are clear; reducing materials being wasted will reduce the loss of valuable materials and resources, and thus reduce consumption levels of virgin materials and the carbon emissions associated with the extraction, processing, transport, use and disposal of the resultant products. The new National Litter and Flytipping Strategy will also impact on reducing emissions from the waste operations in Scotland, specifically transport emission linked to collecting litter and flytipped materials.

This section provides the contextual information to inform the assessment (in terms of the review of Plans, Programmes and Strategies (PPS) and the baseline information) as well as an assessment of the effects of the proposals for the prevention of litter and flytipping, regarding climatic factors.

7.1 Relationship with other Plans, Programmes, Strategies and Environmental Objectives

The PPS that are relevant to the climatic factors topic and against which the proposals for the prevention of litter and flytipping have been reviewed are shown in Figure 7-1 and summarised thereafter.

Figure 7-1 Plans, Policies and Strategies related to Climate Factors

Plans, Policies and Strategies (PPS)

International PPS

| United Nations Framework Convention on Climate Change | UNFCC Kyoto Protocol | UNFCC Paris Agreement |

European PPS

| EU Action Plan for the Circular Economy | EU Single Use Plastics Directive | EU Emissions Trading System |

UK PPS

| Climate Change Act | UK Emissions Trading Scheme (UK ETS) |

Scottish PPS

The Scottish Government Programme for Scotland	Climate Change Plan: The Third Report on Proposals and Policies 2018-2032	Climate Change (Emissions Reduction Targets) (Scotland) Act
The Climate Change (Scotland) Act	Cleaner Air for Scotland: The Road to a Healthier Future	Deposit and Return Scheme for Scotland Regulations 2020 (DRS Regulations)
Scottish Energy Strategy	Scottish National Planning Framework 3	

7.1.1 International Level

The United Nations Framework Convention on Climate Change (UNFCCC) sets an overall framework for international action to tackle the challenges posed by climate change. The Convention sets an ultimate objective of stabilising greenhouse gas concentrations "*at a level that would prevent dangerous anthropogenic (*human *induced) interference with the climate scheme.*" The Convention requires the development and regular update of greenhouse gas emissions inventories from industrialised countries, with developing countries also being encouraged to carry out inventories. The countries who have ratified the Treaty, known as the Parties to the Convention, agree to take climate change into account in such matters as agriculture, industry, energy, natural resources and where activities involve coastal regions. The Parties also agree to develop national programmes to slow climate change. The two main agreements

resulting from the UNFCCC to date are the **Kyoto Protocol (1997)** and the **Paris Agreement (2015)**.

The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change (UNFCCC). It was adopted on 11 December 1997 to establish an international mechanism to reduce emissions of greenhouse gas emissions and in consequence set binding emissions reduction targets for 37 industrialised countries and the European Community. These targets equated to an average of 5% reductions relative to 1990 levels over the five-year period 2008-12. The key distinction between this and the UNFCCC is that the Convention encourages nations to stabilise greenhouse gases while the Kyoto Protocol committed them to doing so through greenhouse gas reductions. It included three market-based mechanisms to meet these targets: emissions trading; the clean development mechanism (CDM); and Joint Implementation (JI).

The Paris Agreement was adopted by those parties attending COP-21 in December 2015. It was signed by 195 UNFCCC members and at the time of writing has been ratified by 170 of these. Its aim is to keep global temperature rise this century well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5°C. Additionally, the agreement aims to strengthen the ability of countries to deal with the impacts of climate change. It discusses the importance of limiting emissions from waste management. The main climate change mitigation delivery mechanism is the submission of five year Nationally Determined Contributions (NDCs) by all signatories with a steadily increasing ambition in the long term.

7.1.2 European Level

The EU Emissions Trading Scheme (EU ETS) is a Europe wide scheme that was introduced in 2005. EU ETS puts a price on carbon that businesses use and creates a market for carbon. It allows countries that have emission units to spare (emissions permitted to them but not "used") to sell this excess capacity to countries which are likely to exceed their own targets. A single EU-wide cap on emission allowances applied from 2013 and will be cut annually, reducing the number of allowances available

to businesses to 21% below the 2005 level in 2020. The free allocation of allowances will be progressively replaced by auctioning, and the sectors and gases covered by the scheme will be expanded.

European Union (2018): The EU Action Plan for the Circular Economy details an EU Action Plan for the Circular Economy. The Action Plan includes a suite of programmes seeking to embed improved practices across the life cycle of products; from cradle to grave. The wider benefits of adopting a circular economy contribute to helping tackle climate change and lower current GHG emissions levels. The **revised legislative proposals on waste** set clear targets for waste reductions. Key elements of the revised waste proposal include:

- A common EU target for recycling 65% of municipal waste by 2030;

- A common EU target for recycling 75% of packaging waste by 2030;

- A binding landfill target to reduce landfill to maximum of 10% of municipal waste by 2030;

- A ban on landfilling of separately collected waste; and

- Promotion of economic instruments to discourage landfilling.

The plan sets out the context in which the new National Litter and Flytipping Strategy may have an influence and an impact in reducing the levels of lost material resource.

European Union (2019): Single Use Plastics Directive. The Directive highlights the significant negative environmental, health and economic impact of certain plastic products with a particular focus on single-use plastic items. the Directive builds upon the European Strategy for Plastics in the Circular Economy through a specific legal framework which aims to increase the level of ambition demonstrated through national measures to prevent and reduce litter with specific reference to single-use plastics. The Directive highlights the link between single-use plastic items and litter in terrestrial and aquatic ecosystems and microplastic pollution, and draws attention to the significant

negative environmental, health and economic impact of littered products and associated deleterious materials. Restricting the prevalence of plastics in litter and flytipped materials in Scotland could improve the use of resources and reduce emissions associated with transportation for clean-up of litter and flytipping.

7.1.3 UK level

The Climate Change Act (2008) is the basis for the UK's approach to Climate Change. Through the Climate Change Act, the UK government has set a target to significantly reduce UK greenhouse gas emissions by 2050. The Act also established the Committee on Climate Change (CCC) to ensure that emissions targets are evidence-based and independently assessed. In addition, the Act requires the Government to assess the risks and opportunities from climate change for the UK, and to adapt to them. The CCC's Adaptation Committee advises on these climate change risks and assesses progress towards tackling them.

The UK Emissions Trading Scheme (UK ETS) replaced the UK's participation in the EU ETS on 1 January 2021. The four governments of the UK have established the scheme to increase the climate ambition of the UK's carbon pricing policy, while protecting the competitiveness of UK businesses. The UK was instrumental in developing the EU ETS and the introduction of a UK scheme provides continuity of emissions trading for UK businesses. Emissions trading schemes work on the 'cap and trade' principle, where a cap is set on the total amount of certain greenhouse gases that can be emitted by sectors covered by the scheme; the cap is reduced over time, so that total emissions must fall. This limits the total amount of carbon that can be emitted and, as it decreases over time is intended to make a significant contribution to how the UK meets its Net Zero 2050 target and other legally binding carbon reduction commitments.

7.1.4 Scottish level

The Climate Change (Scotland) Act 2009 sets the statutory framework for GHG emissions reductions in Scotland, with targets for reductions by 80% in 2050, with an interim 2020 target of 42%. These targets are more ambitious than those for the UK as

a whole, and the EU. **The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019** amends the Climate Change (Scotland) Act 2009 and sets targets for the reduction of greenhouse gases emissions towards a legally binding net-zero carbon target by 2045. This Act represents Scotland's contribution to the worldwide effort to deliver on the Paris Agreement that was reached at the 21st Conference of the Parties of the United Nations Framework Convention on Climate Change.

Scottish Government (2014): The Scottish National Planning Framework (NPF) 3 provides the spatial expression of the Scottish Government's Economic Strategy, and the plans for development and investment in infrastructure. The NPF identifies national developments and other strategically important development opportunities in Scotland. The framework recognises that the design of places can minimise waste whilst instilling responsible behaviours in providing waste infrastructure for public use. Planning will play a key role in delivering on the commitments for Scotland to be a low carbon place and the priorities identified in the NPF set a clear direction of travel which is consistent with their climate change legislation.

Scottish Government (2018): The Climate Change Plan: The Third Report in Proposals and Policies 2018-2032 is the third Report on Proposals and Policies (RPP) to be produced by Scottish Government. It sets out details of the approach to cutting emissions up to 2032, including 100 new policies and proposals across all sectors, as well as the ambition of over 40 existing policies scaled up. It states targets to recycle 70% of all waste by 2025, reduce waste sent to landfill to 5% by 2025, and establish a more circular economy, where goods and materials are kept in use for longer and where the value of resources is preserved and maintained for as long as possible. **Securing a green recovery on a path to net zero: climate change plan 2018–2032 – update (2020):** provides an update to the 2018 Climate Change Plan, including a new ambitious target to end Scotland's contribution to climate change by 2045. Scottish Government has committed to reduce emissions by 75% by 2030 (compared with 1990) and to net zero by 2045. The Plan sets out an approach to delivering a green recovery following COVID-19 and sets out a pathway to deliver world leading climate change targets. In line with the 2018 plan, the focus is on the period up to 2032.

The Deposit and Return Scheme for Scotland Regulations 2020 (DRS Regulations). The driver for the DRS regulations is to promote and secure an increase in recycling of materials through a reduction in use of virgin materials (specifically fossil fuels used for plastic container production), forming part of the Scottish Government's response to the global climate emergency. The DRS addresses common single-use packaging used for drinks containers. During the consultation on the proposed DRS Scheme there was widespread agreement amongst both organisational and individual respondents that a well-run and appropriately targeted DRS could provide opportunities in relation to improving the environment, changing people's attitudes to recycling and littering[116].

Scottish Government: Protecting Scotland, Renewing Scotland: The Scottish Government Programme for Scotland 2020-2021 states the Government's commitment to tackle climate change and to prepare Scotland for the new, low carbon world and reach the statutory commitment to be a net zero society by 2045. This Programme sets out the next phase of the Green New Deal announced in 2019.

Cleaner Air for Scotland: The Road to a Healthier Future (2015) sets out the Scottish Government and its partner organisations aim to achieve further reduction in air pollution in Scotland. As Scotland reduces greenhouse gas emissions and increases the provision of renewable energy, this will provide co-benefits for air quality. Commitments to decarbonise the Scottish economy, including the waste management sector will help reduce air pollution, but choices on how this will be achieved will influence the scale of additional improvements for air quality.

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[116] Scottish Government - Policy Note: The Deposit And Return Scheme For Scotland Regulations 2020 (2020)

The Scottish Energy Strategy (2017) sets out the Scottish Government's vision for the future energy scheme in Scotland. The Strategy describes how the Scottish Government will strengthen the development of local energy, protect and empower consumers, and support Scotland's climate change ambitions while tackling poor

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Local Authority Climate Change or Sustainability Strategies

Many Scottish Local Authorities have developed a range of local, tailored climate change or sustainability strategies which set out the Authority's ambitions to reduce the impact of climate. Many incorporate more effective resource management including; reducing waste going to landfill, increasing recycling and increasing public awareness of the contribution that waste makes to climate change.

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energy provision. In order to achieve Scottish Government climate goals, progress is needed to decarbonise electricity production and heat across all sectors, as well as transport.

7.2 Baseline Characteristics

7.2.1 Current Carbon Emissions Relevant to the NLFS

The significant climate change impacts of material consumption and waste, along with the critical mitigating impact of resource efficient, circular economy policies have been firmly established in academic literature. Zero Waste Scotland's report The Carbon Impacts of the Circular Economy (2015)[117] estimates that over two thirds of Scotland's carbon footprint are directly related to material consumption and, to a lesser extent, waste.

The latest Scottish Greenhouse Gas statistics available for the period 1990-2019[118], shows that overall greenhouse gas emissions for Scotland have reduced to 47.8 $MtCO_2e$ in 2019, a 43.8% reduction from 1990 levels. The greenhouse gas emissions from waste management accounted for only 3% of Scotland's total emissions in 2019, following a sharp reduction since 1990 (when they were 7.5% of Scottish emissions). In 2019, emissions from waste in Scotland decreased to 1.5 $MtCO_2e$, a reduction of 4.3

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[117] Zero Waste Scotland - The Carbon Impacts of the Circular Economy (2015)

[118] Scottish Government - Scottish Greenhouse Gas statistics: 1990-2019 (2021).

MtCO$_2$e (73.5%) compared to 1990 levels, although it is noted in the statistical reporting that emissions from waste management have been relatively static over recent years. This decrease is reported to be largely due to the progressive introduction of methane capture and oxidation systems within landfill management.

Based on the estimate of tonnages of littered and flytipped material available for 2013, indicative carbon emissions from landfilling of these wastes is 4,340 tonnes of CO$_2$e for litter (Table 7-1) and 10,776 tonnes of CO$_2$e for flytipping (Table 7-2), which in total amounts to 1% of the 2019 emissions reported for waste management.

Table 7-1   Estimated carbon emissions from landfilling or recycling of litter

Litter Category	Tonnes[119]	Carbon Factor Landfilling[120] (kgCO$_2$e/tonne)	Estimated Emissions: Landfilling[a] (kgCO$_2$e)	Carbon Factor Recycling[121] (kgCO$_2$e/tonne)	Estimated Emissions: Recycling[b] (kgCO$_2$e)
Food/kitchen waste	2,250	989	2,224,535	-18	-40,680
Other combustible items	1,650	8	13,992	0	0
Cardboard	1,350	499	674,096	-547	-737,852
Newspapers & magazines	1,350	499	674,096	-547	-737,852
Packaging glass	1,350	4	5,808	-755	-1,019,200
Plastic bottles	1,350	4	5,803	-537	-725,434
Other materials	1,200	107	128,400	-1,212	-1,454,861
Other paper	1,200	499	599,196	-547	-655,869
Plastic film	1,050	4	4,513	-537	-564,226
Metal cans	600	4	2,581	-2,540	-1,524,048
Other plastic packaging	600	4	2,579	-537	-322,415
Other metal	450	4	1,936	-2,540	-1,143,036
Waste Electricals	600	4	2,578	-181	-108,315

[119] Zero Waste Scotland - Scotland's Litter Problem: Quantifying the scale and cost of litter and flytipping (2013)

[120] Zero Waste Scotland - Carbon Factors Overview 2018, ZWS Carbon Metric Factors 2011-2018 V01.00.xlsx. (2018)

[121] Zero Waste Scotland - Carbon Factors Overview 2018, ZWS Carbon Metric Factors 2011-2018 V01.00.xlsx. (2018)

Litter Category	Tonnes[119]	Carbon Factor Landfilling[120] (kgCO$_2$e/tonne)	Estimated Emissions: Landfilling[a] (kgCO$_2$e)	Carbon Factor Recycling[121] (kgCO$_2$e/tonne)	Estimated Emissions: Recycling[b] (kgCO$_2$e)
Total	15,000		4,340,114		-9,033,788

[a] Assumes all of material in each category is landfilled
[b] Assumes all of material in each category can be recycled

Table 7-2   Estimated carbon emissions from landfilling or recycling of flytipped materials

Flytipping Category	Tonnes[122]	Carbon Factor Landfilling[123] (kgCO$_2$e/tonne)	Estimated Emissions: Landfilling[a] (kgCO$_2$e)	Carbon Factor Recycling[124] (kgCO$_2$e/tonne)	Estimated Emissions: Recycling[b] (kgCO$_2$e)
General household waste	4,000	452	1,807,390	-653	-2,613,879
Building waste	3,000	3	7,632	2	6,630
Sofa/Armchairs etc	3,000	571	1,711,954	-5,828	-17,484,103
Wooden Furniture	3,000	861	2,583,024	-288	-863,926
Carpets/Rugs	3,000	571	1,711,954	-5,828	-17,484,103
White Goods	3,000	4	12,000	-181	-541,575
Matresses	3,000	571	1,711,954	-5,828	-17,484,103
Clothes	2,000	571	1,141,303	-5,828	-11,656,068
Small WEEE	2,000	4	8,000	-181	-361,050
Other (not specified)	756	107	80,892	-1,212	-916,562

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[122] Zero Waste Scotland – based on flytipping tonnages for 2013 reported in National Litter and Flytipping SEA Scoping Report (2021)

[123] Zero Waste Scotland - Carbon Factors Overview 2018, ZWS Carbon Metric Factors 2011-2018 V01.00.xlsx. (2018)

[124] Zero Waste Scotland - Carbon Factors Overview 2018, ZWS Carbon Metric Factors 2011-2018 V01.00.xlsx. (2018)

Flytipping Category	Tonnes[122]	Carbon Factor Landfilling[123] (kgCO$_2$e/tonne)	Estimated Emissions: Landfilling[a] (kgCO$_2$e)	Carbon Factor Recycling[124] (kgCO$_2$e/tonne)	Estimated Emissions: Recycling[b] (kgCO$_2$e)
Total	26,756		10,776,104		-68,482,175

[a] Assumes all of material in each category is landfilled
[b] Assumes all of material in each category can be recycled

The tables also present an estimate of the potential reduction in emissions that may be gained from recycling the equivalent quantities of littered and flytipped materials, which is discussed further in section 7.2.2 below.

7.2.2 Likely Evolution of the Baseline without the NLFS

Climate Change

The UK Climate Change Risk Assessment[125] (CCRA) predicts more frequent flooding arising from more frequent and intense rainfall and an increase in drought incidents during drier summers in the UK. Flooding and coastal change risks pose the highest risk to the UK. Associated risks include risks to habitats and species, risks to soils and risks to agriculture and wildlife.

While the extent of the effects of a changing climate is expected to vary by location, there is significant evidence to support the belief that significant changes in precipitation, snowfall, seasonality, cloud cover, humidity, wind speeds, soil moisture, rising sea levels and extreme weather may occur[126]. Scotland is expected to experience more extreme weather events such as more extended hot periods, increases in maximum temperatures nationwide, and fewer days of snow and frost. Longer periods of dry weather in the summer are expected and the wettest days of the year are likely to be considerably wetter than those at present[127].

Clear links between a changing climate and impacts on the natural environmental and natural resources have been identified and documented. For example, potential effects

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[125] UK Government - UK Climate Change Risk Assessment 2017 (CCRA) (2017)

[126] IPCC - Fifth Assessment Report: Climate Change (2014)

[127] Zero Waste Scotland - Carbon Factors Overview 2018, ZWS Carbon Metric Factors 2011-2018 V01.00.xlsx. (2018)

on biodiversity, flora and fauna, water, air and soil quality are often cited. Alongside this, there is the potential for indirect or secondary effects on other environmental receptors and on communities, businesses and industry. For example, the potential for impacts on water quality from increased flood potential, and the potential for increased pressures on biodiversity through predicted increases in temperature.

According to UKCP18[128], in a high emissions scenario Scotland in the 2070s can expect to become:

- 40% drier to 8% wetter in the summer;

- 3% drier to 12% wetter in the winter;

- 0.6 °C warmer to 4.8 °C warmer in the summer;

- 0.6 °C warmer to 4.5 °C warmer in the winter.

Whilst in a low emissions scenario, UKCP18 projects the following changes to Scotland's climate:

- 30% drier to 6% wetter in the summer;

- 4% drier to 9% wetter in the winter;

- -0.1 °C cooler to 2.8°C warmer in the summer;

- -0.3°C cooler to 2.7°C warmer in the winter.

Carbon

The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 New Climate Change Bill sets interim reduction targets[129] for greenhouse gases of:

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[128] Met Office - UKCP18 projects greater chance of hotter, drier summers and warmer, wetter winters (2018)

[129] Scottish Government - The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019.

- 2020 is at least 56% lower than the baseline;

- 2030 is at least 75% lower than the baseline;

- 2040 is at least 90% lower than the baseline; and

- achieving net zero by 2045.

Scotland aims to recycle 70% of all waste by 2025, and by 2035, aims to deliver substantial emission reductions through a circular economy approach in the business and industry sectors[130]. Under a business as usual scenario litter rates will remain unchanged, but litter incidences will likely rise due to the region's growing population. This will result in the loss of valuable resources that could otherwise have been recycled resulting in loss of emission saving opportunities. Indeed, it is estimated that over 80% of the litter stream consists of potentially recyclable material and 50% of this material can be easily recyclable[131]. Based on the indicative emissions from landfilling of littered and flytipped material (Tables 7-1 and 7-2), at the higher 80% recycling availability rate an estimated 62,000 tonnes of CO_2 equivalent could be avoided, or around 38,000 tonnes at the lower 50% availability rate (assuming the quantities and composition of material considered are largely similar, emission factors do not change, and that in total some 77,516 tonnes of CO2e could be avoided if all litter and flytipped material recycled).

If not recycled, 100% of currently littered items will go to incineration from 2021 onwards based on the planned 2021 ban on all biodegradable municipal solid waste (Bio-MS) to landfill and the 2025 target of a maximum of only 5% of waste to landfill. As a result, it is projected that waste sector emissions will fall 52% over the lifetime of the 2018 Climate

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[130] The Scottish Government - Climate Change Plan: The Third Report on Proposals and Policies 2018 – 2013 (2018)

[131] Zero Waste Scotland - Scotland's Litter Problem: Quantifying the scale and cost of litter and flytipping (2013)

Change Plan[132] as emissions from energy from waste plants are attributed instead to the energy sector.

7.3 Consideration of likely significant effects

7.3.1 Methodology

The new National Litter and Flytipping strategy has the potential to have a range of effects on the climate by preventing or limiting waste materials entering and affecting the environment. The assessment considers the anticipated effects on the climate through the implementation of the proposed actions to prevent litter and flytipping, developed across the four strategy themes: behaviour change; infrastructure and services; enforcement; and data and research.

Although the adverse impacts of litter and flytipping on the climate may be similar it is recognised that litter and flytipping are distinct issues with different drivers, so the assessment provides separate appraisals of the actions proposed for the Litter strategy (Table 7-3) and the Flytipping strategy (Table 7-4). The SEA criteria for assessing the effects on climatic factors are listed at the start of each table. The effects against these criteria are considered against a baseline which is effectively a continuation of the existing National Litter Strategy.

7.3.2 Results

The tables below provide summary assessments of the likely significant environmental effects of implementing proposed actions to prevent litter and flytipping across the four strategy themes, with regard to climatic factors. Table 7-3 presents the results of the assessment of actions for Litter and Table 7-4 present the findings assessing the actions for the Flytipping.

The key to each assessment score is shown below:

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[132] Scottish Government - Climate Change Plan: The Third Report on Proposals and Policies 2018 – 2013 (2018)

Score Key:	++	+	0	-	--	?
	Significant positive effect	Minor positive effect	No overall effect	Minor negative effect	Significant negative effect	Score uncertain

NB: Where a box is coloured but also contains a "?" this indicates uncertainty over whether the effect could be a minor or significant effect although a professional judgement is expressed in the colour used. A conclusion of uncertainty arises where there is insufficient evidence for expert judgement to conclude an effect.

Table 7-3   Assessment of Effects of Litter Actions on SEA Criteria for Climatic Factors

Litter Strategy	
Climatic Factors	
SEA Criteria:	
• To prevent any increase in net carbon impacts and to contribute to Scotland's journey to meet the 2045 net zero commitment.	
Behaviour Change – Actions	**Overall Score**
	+/?
	Action Score
Conduct research to understand the full range of influences on littering behaviours across various contexts and audience groups.	**+/?**
Develop a sustained, evidence based, national anti-littering campaign and deliver this consistently and collaboratively across Scotland.	**+/?**

Commentary:

Actions relating to additional research into influences on littering behaviour and a national campaign are expected to provide an increased awareness of the reasons and adverse effects of littering, which may indirectly help to communicate the impact of dealing with litter waste on carbon emissions. This may have some positive effects in terms of achieving Scotland's net zero commitment, although the significance of the link is not certain.

Services and Infrastructure – Actions	Overall Score
	+
	Action Score
Explore the use of flexible and innovative interventions to support litter prevention and removal.	**0/?**
Establish an action focused group to encourage collaboration and share best practice between local authorities, national parks and other duty bodies to optimise services	**+**
Create a national litter hub to provide information and advice to community groups.	**+**
Increase the use of citizen science to support data on levels and composition of litter.	**+**
Carry out a review of the development, implementation and progress of the Code of Practice for Litter and Refuse (2018).	**?**

Commentary:

Exploring innovation and flexibility in the use of litter and waste services may reduce carbon emissions through more effective management of littered material but also has the potential to increase emissions through the adoption of additional waste vehicle

collection routes and manufacture of equipment. On balance this is considered to be a neutral impact in terms of Scotland's zero carbon commitment, with some level of uncertainty, which would benefit from further assessment of the carbon emissions and savings associated with potential changes to infrastructure and services.

Actions targeting collaboration and information sharing are anticipated to reduce carbon impacts and to contribute to Scotland's net zero commitment because they will allow efficient use of data and information by local authorities and other organisation without repeating efforts at a national scale.

Actions creating a national litter hub and the use of citizen science are expected to provide a positive effect on the Climatic Factors SEA criteria, as these should enhance management of litter waste, including re-use options and improve the accuracy and reliability of data used to measure carbon emissions.

It not clear whether a review of the Code of Practice for Litter and Refuse (COPLAR) will result in any changes beyond those currently established for preventing and reducing the impacts of litter in the environment, so this is considered to have an uncertain effect for climatic factors at this stage.

	Overall Score
Enforcement – Actions	+/?
	Action Score
Conduct an evidence review of barriers to enforcement of litter offences.	+/?
Explore raising current fixed penalty notice amounts for a litter offence.	+/?
Develop guidance on enforcement best practices and seek agreement for this to be voluntarily adopted by Local Authorities and National Parks.	+/?
Review current powers for enforcing littering offences.	+/?

Explore potential alternative penalties to monetary fixed penalties for a litter offence.	?
Explore using civil penalties in relation to littering offences.	?
Create fixed penalties for the registered keeper of the vehicle for littering from vehicles.	+/?

Commentary

Improved enforcement of anti-littering legislation is expected to reduce incidences of littering and recycling rates for previously littered items, which should have some positive effects in reducing carbon emissions, although there is uncertainty regarding the extent to which measures would be adopted.

As discussed in the assessment of Enforcement actions in relation to Biodiversity (see Table 4-3), the raising of fixed penalties or introducing legislation to strengthen enforcement of litter from vehicles by issuing a fine to the registered keeper of the vehicle, should help to deter littering and the associated carbon emissions, although the level of significance is uncertain.

It is considered that there is insufficient information to determine whether civil penalties and alternatives to financial penalties would be effective at preventing littering and reducing carbon emissions.

	Overall Score
Data and Research – Actions	+/?
	Action Score
Review the available litter data and approach to data collection across Scotland and reach an agreement between stakeholders on a common approach to collecting data.	+/?

Identify commonly littered items and litter hotspots and work with Local Authorities and other duty bodies to develop targeted interventions to reduce litter.	?

Commentary:

The last study to accurately estimate Scottish litter arisings was conducted in 2013. A review of available data and the approach to data collection should help to establish current levels of littering, which would provide a valuable baseline against which wider carbon metrics can be based and allow for more accurate evaluation of the carbon impact of littering, although the level of significance is uncertain.

The identification of littered items and hotspots is considered to have an uncertain impact on climatic factors, as the action could help to reduce carbon emissions through avoiding loss of resources but the response to tackle litter hotspots may involve additional collection and vehicle transportation, which may negate the carbon reduction benefit (noting that this is closely linked to the Infrastructure and Services strategy theme).

Table 7-4 Assessment of Effects of Flytipping Actions on SEA Criteria for Climatic Factors

Flytipping Strategy	
Climatic Factors	
SEA Criteria:	
• To prevent any increase in net carbon impacts and to contribute to Scotland's journey to meet the 2045 net zero commitment.	
	Overall Score
Behaviour Change – Actions	**+/?**

	Action Score
Conduct research to understand the full range of influences on flytipping behaviour across various context and audience groups and use this to design effective responses.	0/?
Develop a sustained, evidence based, national anti-flytipping campaign and deliver this consistently and collaboratively across Scotland.	+
Develop social media campaigns and guidance targeted at waste carriers and other businesses.	?

Commentary:

Research into understanding influences on flytipping behaviour should help to support the development of measures that can prevent flytipping, but it is less clear how effective the responses would be in preventing an increase in carbon emissions, so this is assed to be an uncertain neutral impact at this stage.

The development of a national anti-flytipping campaign is anticipated to reduce incidents of flytipping, which would be a subsequent benefit to Scotland's net zero commitment by reducing waste material loss and transport emissions. Factors such as a lack of perceived waste recycling or management facilities might be addressed in a public campaign.

The development of social media campaigns and guidance may help to raise awareness of the adverse effects of flytipping and the associated adverse impacts on climate change, although the level of positive effect is uncertain as waste carriers and businesses should already be aware of their responsibilities and the potential impacts of flytipping in the environment.

	Overall Score
Services and Infrastructure – Actions	+

	Action Score
Support and encourage information and resource sharing between Local Authorities, waste sector, SEPA and other organisations through the flytipping forum.	++
Explore the role of technology in assisting private landowners and land managers deter flytipping on their land.	+/?
Produce updated guidance for private landowners on dealing with flytipping.	+
Explore alternative financial support mechanisms available to private landowners.	+
Explore how to support and encourage more reuse and repair of products that are commonly flytipped.	++/?
Explore a flexible approach to waste disposal (such as mobile HWRCs and targeted amnesties), and targeted interventions, with a view to trial these.	+
Carry out research to create a single information point on the disposal of commonly flytipped materials.	+

Commentary:

Actions encouraging information and resource sharing between organisations to create a joined up approach to flytipping across Scotland is anticipated to have a significant benefit in reducing carbon emissions, particularly where it reduces duplication of services or allows for potential crossover of vehicles collecting flytipped material, thus avoiding transport emissions.

Exploring the role of technology for landowners to deter flytipping could be beneficial in reducing carbon emissions from the use of raw materials and transport collections.

However, the effectiveness and practicalities of implementing technological deterrents are still to be determined, so the significance of the impacts are uncertain.

The provision of further guidance to landowners on managing flytipping, should help to either deter flytipping or improve the management of flytipped material, which is deemed to have some positive impacts on climatic factors. Exploring alternative financial support mechanisms for private landowners in terms of services and infrastructure for dealing with flytipped material may encourage the use of management options that recycle and extend the life of material resources, which is considered to have some potential for a positive impact on reducing carbon emissions.

Support in encouraging more reuse and repair of products is considered to have potential for significant positive effects for the SEA Climatic Factor criteria, as this would prevent items being flytipped and so reduce the requirement for transportation of flytipped materials and reduce the extraction of raw materials. Further monitoring would be required though to confirm the effectiveness of the action.

The actions to explore a more flexible approach to waste disposal and interventions to prevent flytipping, as well as creation of a single information point, are expected to help improve the management of flytipped material through the coordination of relevant services and visibility of information on flytipping. The actions could prevent flytipping, which may help to reduce carbon emissions from waste management.

	Overall Score
Enforcement – Actions	**+/?**
	Action Score
Conduct an evidence review of barriers to enforcement.	**+/?**
Develop guidance on enforcement best practices, including on private land and seek for this to be voluntarily adopted by statutory bodies.	**+/?**

Initially raise current fixed penalties issued by Police, Loch Lomond and Trossachs National Park for flytipping to the maximum (£500) and explore possibility of raising the maximum further at a later date.	**+/?**
Explore raising current fixed penalties that can be issue by SEPA for flytipping offences to the maximum (£1000) and explore possibility of raising the maximum further at a later date.	**+/?**
Review existing legislative powers for enforcing flytipping offences.	**+/?**
Explore the ability to remove, suspend or deny Waste Carrier's Registration to individuals/companies fined for flytipping.	**+/?**
Support information sharing on flytipping incidents and offenders between Local Authorities, Police and National Parks.	**+/?**
Create powers to enable seizure of vehicles by SEPA used in flytipping.	**+/?**
Explore the possibility and benefits of using civil penalties to enforce flytipping offences.	**?**

Commentary:

There is limited evidence available to confirm the effectiveness of more stringent enforcement measures at preventing flytipping (see Table 4-3 for Biodiversity). The actions proposed for a review of enforcement measures (including barriers to enforcement, existing powers, guidance on best practice, removal of Waste Carrier Registrations, and seizure of vehicles), should improve understanding of what is effective in combating flytipping, although the level of significance with regard to reducing carbon emissions is uncertain.

Sharing information on flytipping between Local Authorities, Police and National Parks should improve the opportunities for managing flytipped material and help to prevent flytipping incidents, which may reduce associated transport emissions. This is assessed

as a positive effect but with uncertainty regarding significance with regard to Scotland's net zero commitment.

As discussed previously, it is considered that an increase in fines for flytipping offences should provide some form of deterrent and subsequent positive effects for reducing carbon emissions, although the level of significance is uncertain at this stage (see Table 4-4 for Biodiversity).

The possibility of using of civil penalties to enforce flytipping offences may help to deter flytipping, however, further details are required before the effect can be determined.

	Overall Score
Data and Research – Actions	**+**
	Action Score
Create a data sharing agreement and work with Local Authorities, other duty bodies, National Parks, private landowners and land managers, businesses and the third sector to improve consistency of data collected in Scotland.	**+**
Explore and seek to support the use of appropriate technology in data collection.	**+/?**
Work with stakeholders to improve consistency of data collection in Scotland.	**+**
Explore incorporating data into a national database.	**+/?**
Review the Dumb Dumpers system and ensure that a fit for purpose mechanism for citizen reporting of flytipping exists in Scotland.	**+/?**
Explore the development of a live picture of flytipping across Scotland.	**0/?**
Commentary:	

The last study to accurately estimate Scottish fly-tipping arisings was conducted in 2013. Improved data sharing and consistency in data collection between duty bodies would improve the quality of collected data and allow for more reliable assessment of carbon emissions associated with flytipping.

Exploration of technology to streamline and facilitate the reporting of data may improve reporting rates by local authorities and landowners, including measures or carbon metrics, though it is not certain how this would be implemented or received by users.

There is a wider benefit to implementing an improved national database and improved citizen reporting, which could be applied to monitoring climatic impacts, although the level of significance is uncertain.

'Live' reporting of data may prove complex to implement and provide limited benefits in terms of monitoring the effects of the National Litter and Flytipping Strategy on climatic factors. However, if the complexities can be overcome there is potential for the reporting to incorporate 'real-time' carbon data, which may improve the relevance to supporting Scotland's net zero commitment.

7.4 Mitigation and Enhancement

The following measures are suggested to enhance the proposals in the new National Litter and Flytipping strategy, with respect to climatic factors:

- The development of best practice guidelines and sharing of resources should offer solutions on how to limit or avoid carbon emissions associated with services and infrastructure. For example, the award of tenders for services to clear flytipping incidents should consider the locality of services providers and management facilities, taking into account carbon emissions in the operation of service contracts.

- Infrastructure used for the management of litter and flytipped material should prioritise low carbon design, including first and foremost a 're-use not replace'

approach; where possible any required infrastructure should seek to utilise existing facilities as opposed constructing new facilities.

- Review and promote the options for recycling of commonly flytipped materials to support waste handlers in the onward recovery of recyclable material once items are collected to avoid emissions associated with landfill or incineration.

- More frequent studies into littering and flytipping arisings would improve accuracy of climatic factor monitoring rather than just establishing a baseline.

- Improvements in technology to measure carbon and other climatic indicators could improve data collection and monitoring quality, particularly if this can be linked to a robust system for live reporting on flytipping incidents.

Please also refer to Section 4.4 Mitigation and Enhancement for the Biodiversity topic for a list of recommendations supporting the wider aims to prevent or improve management of litter and flytipped materials, which are considered to be common to each environmental topic.

8. Material assets

Whilst the SEA legislation does not provide any definition of the term "material assets", the SEPA guidance states that material assets include built assets and natural assets. The scope of "built assets and natural assets" is therefore defined, within this Environmental Report, as encompassing the following:

- Natural assets – raw source of compositional materials of targeted single use plastic items and any raw materials used to support waste infrastructure;

- Built assets – land take and soil use/loss for new infrastructure;

- Built assets – any new infrastructure required for the adoption of the alternative option.

This section provides the contextual information to inform the assessment (in terms of the review of Plans, Programmes and Strategies (PPS) and the baseline information) as well as an assessment of the effects of the SUP Directive on material assets.

8.1 Relationship with other Plans, Programmes, Strategies and Environmental Objectives

The PPS relevant to the material asset topic and the proposals for the prevention of litter and flytipping are shown in Figure 8-1 and summarised thereafter.

Figure 8-1 Plans, Policies and Strategies related to Material Assets

8.1.1 International level

United Nations (2015): Transforming our World - the 2030 Agenda for Sustainable Development sets out 17 global goals agreed by the United Nations. These goals are embedded within the agenda for 15 years and include commitments to protect the

planet through sustainable consumption and sustainable management of resources. The new National Litter and Flytipping Strategy will support Scotland's efforts toward the global goals in seeking to embed sustainability and resource minimisation across all sectors of society. One of the key sustainable development goals relevant to Material Assets is Goal 12: Ensure sustainable consumption and production patterns.

8.1.2 European level

European Union (2008): The EU Waste Framework Directive introduced a definition for waste. The Directive introduced key principles to ensure that waste is managed without endangering human or environmental health. The directive also introduced the Waste Hierarchy, the "polluter pays principle" and the "extended producer responsibility". It included two new recycling and recovery targets to be achieved by 2020:

- 50% for re-use and recycling of household wastes and

- 70% for re-use, recycling and other recovery of construction and demolition waste.

The Directive requires that Member States adopt waste management plans and waste prevention programmes. The Framework Directive necessitates that member states radically enhance waste management and recycling practices.

European Union (2018): The EU Action Plan for the Circular Economy details an EU Action Plan for the Circular Economy. The Action Plan includes a suite of programmes seeking to embed improved practices across the life cycle of products; from cradle to grave. The revised legislative proposals on waste set clear targets for waste reductions. The Action Plan requires member states to radically enhance waste management and recycling practices; to design out waste and to design products that can be recycled (if not repaired/remanufactured) at end of life.

European Union (2019): Directive on single-use plastics. The Directive highlights the significant negative environmental, health and economic impact of certain plastic

products with a particular focus on single-use plastic items. the Directive builds upon the European Strategy for Plastics in the Circular Economy through a specific legal framework which aims to increase the level of ambition demonstrated through national measures to prevent and reduce litter with specific reference to single-use plastics. In the context of the SEA topic on material assets, the Directive seeks to instil a greater respect for preservation of resources, and in developing a more circular approach to material use, that sees the need for fewer virgin materials through greater resource efficiency. It helps provide a framework for the new National Litter and Flytipping Strategy to target certain wastes and enhance enforcement. The Scottish government is currently setting out its plans to introduce restrictions on problematic single-use plastic item. Draft regulations for a single-use plastics ban are now published (Draft Environmental Protection (Single-use Plastic Products and Oxo-degradable Plastic Products) (Scotland) Regulations 2021: discussion paper[133]).   It is intended that some items will no longer be available from 2022.

8.1.3 UK level

UK Government (1990): The Environmental Protection Act seeks to improve resource use and environmental conditions through the control of waste collections and management across the UK. The Act designates the regime for licensing of waste operations and provides the first definition of "controlled wastes" (*known as Hazardous Wastes in Scotland).* The Act introduces the Duty of Care for producers, carriers, importers and exporters. The Act also introduced criminal offences regarding litter in a bid to reduce littering across the UK. The Act requires the UK to tightly control the movement and handling of wastes.

8.1.4 Scottish level

Scottish Government (2011): The first land use strategy for Scotland, **Getting the best from our land - A land use strategy for Scotland (2011)** had the objectives of:

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[133] Scottish Government - Draft Environmental Protection (Single-use Plastic Products and Oxo-degradable Plastic Products) (Scotland) Regulations 2021: discussion paper (2021)

land-based businesses working with nature; responsible stewardship of Scotland's natural resources; and urban and rural communities better connected to the land. The vision, objectives and principles of the strategy were retained and built upon by the second land use strategy; **Getting the Best From Our Land: A Land Use Strategy For Scotland 2016-2021** published in 2016. The strategy supports sustainable use of natural assets including the preservation of the quality of the natural environment that the new National Litter and Flytipping Strategy can help reinforce and protect.

Scottish Government (2013): Safeguarding Scotland's Resources set out the ambition to minimise the resources needed to sustain the market demand for products in Scotland. The document sets out a range of measures to promote efficient use of materials and to reduce waste. A total of 13 actions are proposed to develop baseline evidence for circular economy opportunities, to influence behaviours, enhance the design of products and packaging, and to support businesses to prevent, manage and benchmark wastes. The Programme's actions will supplement the behaviour change across society in supporting efficient and responsible management of resources.

Scottish Government (2013): Scotland's Zero Waste Plan set out the Scottish Government's spearhead strategy to make the most of resources and to reduce, reuse and recycle more materials in Scotland. Measures to achieve the vision include using separate collections of specific waste types, increasing reuse and recycling opportunities and introducing new recycling targets of 70% of all waste recycled by 2025 and a maximum of 5% of all waste to landfill by 2025. The Zero Waste Plan is the flagship policy for Scotland's waste ambitions. The new National Litter and Flytipping Strategy will provide significant support to achieving the recycling targets by increasing the capture of materials previously discarded as litter or flytipping.

Scottish Government (2014): The Scottish National Planning Framework and **Scottish Planning Policy** are two documents which promote waste as a resource. The framework and the planning policy recognise that the design of places can minimise waste whilst instilling responsible behaviours in providing waste infrastructure for public use. Of particular note the Scottish Planning Policy (para 176) supports "*the emergence*

of a diverse range of new technologies and investment opportunities to secure economic value from secondary resources, including reuse, refurbishment, remanufacturing and reprocessing" whilst noting that the planning scheme should "*help deliver infrastructure at appropriate locations, prioritising development in line with the waste hierarchy: waste prevention, reuse, recycling, energy recovery and waste disposal*". are two documents which promote waste as a resource. The framework and the planning policy recognise the need to appreciate the value of waste, and the role it plays in a more circular economy. Of particular note, the Scottish Planning Policy (para 175) recognises that "waste is a resource and an opportunity, rather than a burden. Scotland has a Zero Waste Policy, which means wasting as little as possible and recognising that every item and material we use, either natural or manufactured, is a resource which has value for our economy.'.

Scottish Government (2014): A Marine Litter Strategy for Scotland identified five proposed strategic directions to reach a Zero Waste Scotland, supported by responsible behaviours. The strategy seeks to address litter within the marine environment between 2013 and 2020. The objectives of the strategy are to enhance current legislation to promote effective clean-up of contaminated areas, whilst supporting local and national stakeholders to understand, and support, litter free urban areas. The strategy seeks to reduce the litter entering the marine environment, by educating visitors to reduce littering and promote recycling of wastes with Zero Waste Scotland (both onshore and offshore – such as fish nets), incentivising better harbourside recycling infrastructure and behaviour changes, improving monitoring protocols and recording mechanisms, in conjunction with local stakeholders. The strategy also complements the introduction of market restrictions on single-use plastic items as a preventative measure which will help realise the vision of a "*clean, healthy, safe, productive and biologically diverse marine and coastal environment that meets the long term needs of people and nature*"[134]. This strategy complements the new National Litter and Flytipping Strategy in pushing for greater recycling through awareness and improved infrastructure; a new National Litter

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[134] Scottish government - A Marine Litter Strategy for Scotland (2014)

and Flytipping Strategy would therefore support the drive to reduce littering in a marine environment.

Scottish Government (2014): Toward a Litter free Scotland - The National Litter Strategy (2014) sets clear actions which have an impact upon material assets, when seeking to improve the environment through targeted approaches to litter and flytipping. The strategy seeks to educate the public to adopt alternative behaviours to waste management, through access to improved recycling opportunities, improved product design, awareness campaigns and targeted exploration to tackle litter on beaches. The strategy also proposes exploring enforcement opportunities and identifying pilot solutions to litter. The new National Litter and Flytipping Strategy will strengthen the progress made and include measures to resolve any gaps identified in the **Litter Strategy- five years on: Review**[135] published in March 2021. The review highlights that significant progress has been made and identifies key successes. However, it also recognises that litter and flytipping still pose a significant challenge that requires further concerted action; and identifies opportunities for potential future action. The new National Litter and Flytipping Strategy has the opportunity to improve opportunities to maintain materials at their greatest resource potential.

Scottish Government (2016) Making Things Last – A Circular Economy Strategy is Scotland's first circular economy (CE) strategy. The strategy endeavours to set out early priorities to embed Circular Economy principles across key Scottish sectors including manufacturing. It seeks to embed CE principles into the manufacturing process, to design packaging materials for reuse, recycling and recovery in partnership with packaging industries, whilst embedding a mindset across the public that materials are finite and that current consumptions patterns and reliance on "single-use" items are unsustainable. It repeats the targets to recycle 70% of all waste and to send no more than 5% of all waste to landfill by 2025. It also reiterates the need to promote a shift away from the prevailing take-make-dispose consumption pattern. The document states the government's ambition to capture materials and enhance reuse and recycling.

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[135] The Scottish Government - Litter strategy - five years on: review (2021)

Scottish Enterprise (2016): A Manufacturing Future for Scotland details a series of interventions to be adopted which will help nurture further growth across the manufacturing sector. The strategy seeks to support companies to reap the benefits of the circular economy through the opportunities on product design, manufacturing processes and supply chains. The strategy seeks to eradicate waste through innovation in product design and remanufacturing. The new National Litter and Flytipping Strategy can support the strategy by incentivising recycling and reuse for manufacturers to utilise the waste within their manufacturing processes.

Scottish Government (2018): Climate Change Plan - The Third Report on Proposals and Policies 2018-2032 provides a progress update on the Governments Climate Change Plan. The update states the Governments plans to reduce emissions from waste through adoption of CE approaches. The Report reiterates ambitions to recycle 70% of all wastes by 2025 and to reduce all wastes sent to landfill by 5% by 2025. This will be delivered through support for businesses, local authorities and community action.

Scottish Government: Protecting Scotland, Renewing Scotland: The Scottish Government Programme for Scotland 2020-2021 states the Government's commitment to tackle climate change and to prepare Scotland for the new, low carbon world and reach the statutory commitment to be a net zero society by 2045. This Programme sets out the next phase of our Green New Deal announced in 2019. The programme seeks to increase recycling rates and stimulate greater resource efficiency and respect for material assets by developing a route map to reduce waste and meet 2025 recycling targets as well as boosting the circularity of the Scottish economy. The programme will dedicate £100m over the next five years to a Green Jobs Fund. The programme commits to reduce demand for single-use items and includes the development of an advisory group exploring fiscal options to reduce waste and boost the circular economy. **A Fairer, Greener Scotland: Programme for Government 2021-22** planned to invest an additional £500 million to support the new, good and green jobs of the future, including upskilling and reskilling people.

The Deposit and Return Scheme for Scotland Regulations 2020 (DRS Regulations). The driver for the DRS regulations is to promote and secure an increase in recycling of materials, forming part of the Scottish Government's response to the global climate emergency, by ensuring the targeted materials are collected in larger quantities and separately to other materials. The DRS addresses common single-use packaging used for drinks containers, which will encourage people to return that packaging to specified return points, which will be collected separately in bulk to facilitate economies of scales, meaning they can be more readily recycled in a closed-loop. During the consultation on the proposed DRS Scheme there was widespread agreement amongst both organisational and individual respondents that a well-run and appropriately targeted DRS could provide opportunities in relation to improving the environment, changing people's attitudes to recycling and littering, and building the circular economy[136].

The Environmental Regulation (Enforcement Measures) (Scotland) Amendment Order 2020 confers additional powers on the Scottish Environment Protection Agency ("SEPA") to enforce the requirements of the Deposit and Return Scheme for Scotland Regulations 2020. It amends the Environmental Regulation (Enforcement Measures) (Scotland) Order 2015 so that, where offences are committed under the Regulations,

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Local Authority Waste Strategies

Scottish Local Authorities have developed a range of local, tailored waste strategies which sets out the Authority's ambitions for waste services. The strategies justify any upcoming changes to services to meet legislative, budgetary or local requirements. Each strategy seeks to increase recycling tonnages and quality.

SEPA may also exercise its powers under the 2015 Order to impose a fixed or variable monetary penalty, or to accept an enforcement undertaking.

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[136] Scottish Government - Policy Note: The Deposit And Return Scheme For Scotland Regulations 2020 (2020)

8.2 Baseline Characteristics

8.2.1 Current Resource Use and Waste Management of Materials Relevant to the NLFS

This section gives a summary of the current waste generation quantities of materials relevant to litter and flytipping and their management and disposal.

Littering

There is limited publicly available information on the quantity of 'on-the-ground' litter waste. In the most-recent study, cited frequently in literature, the amount of on-the-ground litter is estimated to be around 15,000 tonnes in 2013[137]. The same report estimated that at least £53 million of public money is spent on dealing with litter and flytipping each year (of which 79% is spent on littering). This was a bespoke assessment; a similar analysis is beyond the scope of this assessment. Therefore, qualitative data from respondent questionnaires and site surveys, have been used as an indication of littering quantities identified in the rest of this section.

In 2013, 31% of sites audited by Keep Scotland Beautiful (KSB) were found to be completely free of litter. This decreased sharply to 16% in 2020[138]. Cigarette-related litter remains the most frequently littered item[139]. According to KSB LEAMS data, almost 2 in 3 of the 10,869 assessed sites exhibited smoking related litter[140].

By 2020, the number of significantly or severely littered sites had more than doubled in Scotland's most deprived communities since 2014 – disproportionally affecting most

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[137] Zero Waste Scotland - Scotland's Litter Problem: Quantifying the scale and cost of litter and flytipping (2013)

[138] Keep Scotland Beautiful - Time for a new approach to tackling litter (2020)

[139] Keep Scotland Beautiful - Time for a new approach to tackling litter (2020)

[140] Keep Scotland Beautiful - Local Environmental Audit and Management System (LEAMS) (2020).

deprived areas (49%) over least deprived areas (19%)[141]. In the same timeframe, there was a 28% reduction in the number of fines issued for litter[142].

29% of respondents to a KSB survey believe that the amount of litter has got worse over lockdown[143]. This was supported by KSB LEAMS Data which found that more than 2 PPE items were littered every 1 km[144]. Personal Protective Equipment (PPE) was also found on 30% of beach cleans and 69% of inland litter picks[145].

As reported previously in the Baseline Characteristics for Water (Section 6.2), the top 5 most common litter items on UK beaches (2020 average per 100m of beach surveyed)[146] were as follows:

- Plastic and polystyrene pieces (0-50cm): 167.2
- Plastic and polystyrene caps and lids: 19.7
- Wet wipes: 17.7
- Cigarette stubs: 16.2
- Plastic string: 15.8

The Marine Conservation Society determined a 55% drop in plastic bags found on UK beaches since the 5p charge introduced[147]. 28% of material is categorised as being littered by the public, while 48% remains unsourced, primarily because it has broken down into fragments too small to identify[148].

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[141] Keep Scotland Beautiful - Time for a new approach to tackling litter (2020)

[142] Keep Scotland Beautiful - Time for a new approach to tackling litter (2020)

[143] Keep Scotland Beautiful - Time for a new approach to tackling litter (2020)

[144] Keep Scotland Beautiful - Local Environmental Audit and Management System (LEAMS) (2020).

[145] Marine Conservation Society - Great British Beach Clean 2020 results (2020)

[146] Marine Conservation Society - Great British Beach Clean 2020 results (2020)

[147] Marine Conservation Society - ANNUAL IMPACT REPORT & ACCOUNTS 2019–20 (2020)

[148] Scottish Government - A Deposit Return Scheme for Scotland Full Business Case Stage 1 (2019)

Flytipping

According to the 2013 ZWS report, 21% of the £53 million of public money spent on dealing with litter and flytipping each year is spent on flytipping. This figure is frequently used within literature and the ZWS website but more recent data is unavailable. A KSB survey indicated that 39% of respondents believe that the amount of flytipping has got worse over the lockdown imposed in response to the COVID-19 pandemic[149].

The ZWS 2013 litter report estimated that at least 26,756 tonnes of waste was illegally flytipped in Scotland each year and dealt with by local authorities, with an estimated 61,227 incidents occurring in 2013[150]. In 2017, it was reported that there was a declining trend. However, a conclusion could not be drawn due to the recent transition of reporting systems[151]; FlyMapper - a free tool for local authorities and land owners to voluntarily report and monitor flytipping - is administered by ZWS, replacing the Flycapture database in 2017. However, it has not been fully adopted by all local authorities therefore cannot deliver a complete picture of flytipping in Scotland. Furthermore, mandatory local authority reporting using Waste Data Flow is inconsistent and incomplete. SEPA have compiled and shared the data shown in Figure 8-2, using data drawn from numerous reporting platforms, although noting there are limitations in using the values provided to interpret a trend in levels of flytipping (see notes for Figure 8-2).

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[149] Keep Scotland Beautiful - Time for a new approach to tackling litter (2020)

[150] Zero Waste Scotland - Scotland's Litter Problem: Quantifying the scale and cost of litter and flytipping (2013)

[151] Zero Waste Scotland - Evidence Review of Flytipping Behaviour (2017)

Figure 8-2   Number of recorded flytipping incidents between 2014 and 2020* provided by SEPA[152]
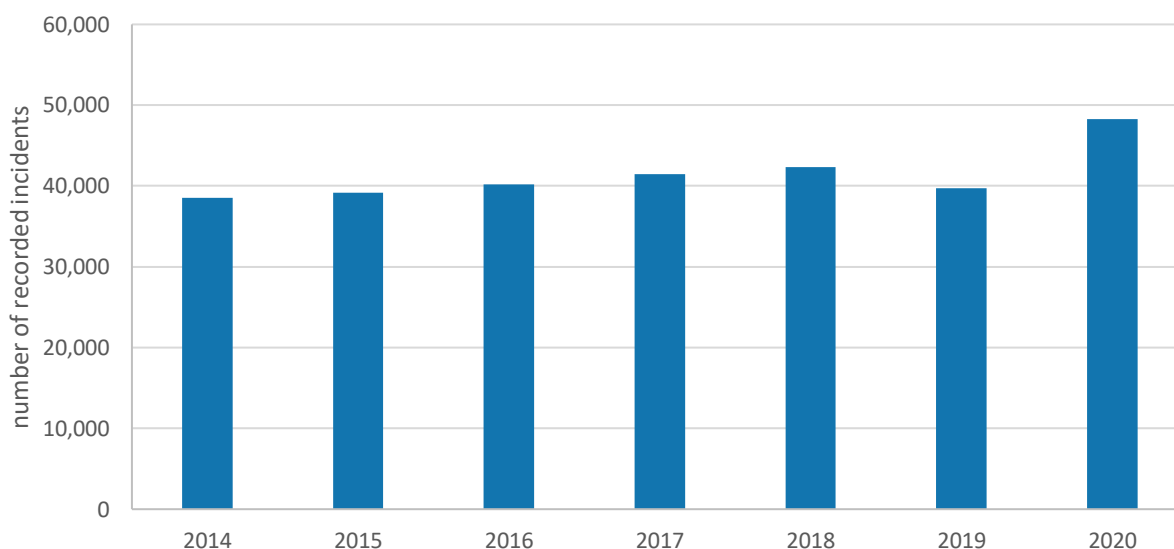
*Notes on data presented in Figure 8-2:

- Data provided for 2014-2019 is a combination of available datasets relating to Local Authority and SEPA reported fly tipping incidents. There may be duplication/overlap between the two data sources but no attempt has been made to reconcile the data.
- Data provided for 2020 is Local Authority reported fly tipping incidents only, as SEPA reported fly tipping events are not currently available due to the cyber-attack.
- The data is mainly unverified, and different Authorities will have different definitions of what is classed as a fly tipping incident.
- Data for all Local Authorities for all years is not available.
- This is the best estimate on data available and may not be a complete dataset for Scotland.

The composition of fly-tipped material is shown in Figure 8-3 showing how composition compares in 2013, 2017 and 2020 (note: the composition data is based on various sources, including the Flymapper platform, which are not directly comparable with the

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[152] Data up to 2019 comprised of information downloaded directly from WasteDataFlow (https://www.wastedataflow.org/) combined with environmental events/flytipping data reported to SEPA. Data for 2020 is solely made up of information from WasteDataFlow

SEPA reporting of incidents in Figure 8-2; classification between 2013 data differs from the later years and some waste classes have been merged for consistency).

Figure 8-3   Composition of fly-tipped waste in 2013, 2017 and 2020

2013[153]   **2017**[154]   **2020**[155]

- Black Bag (houshold/commercial)   ■ Hazardous   ■ Construction
- Electrical   ■ Furniture   ■ Green
- Mattress   ■ Other waste   ■ Tyres & vehicle parts
- White goods
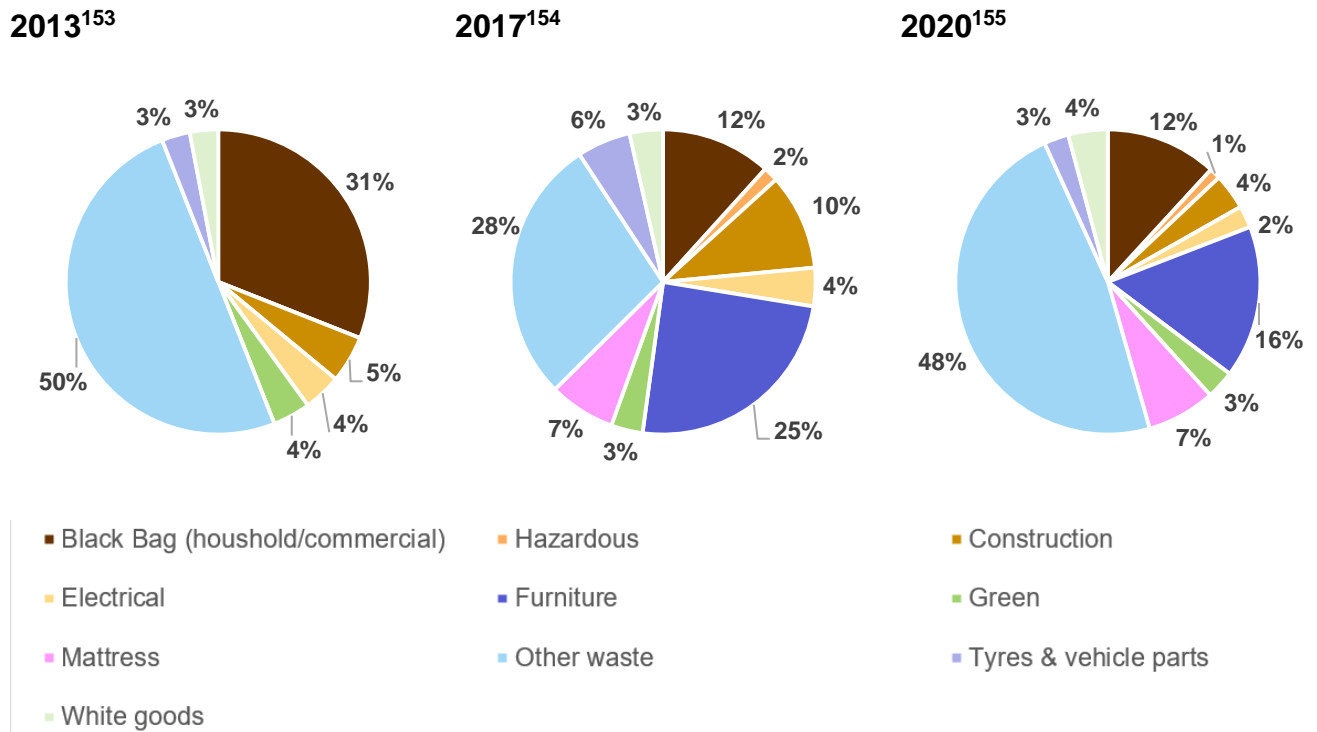
It is difficult to draw a conclusion on how waste types have changed since 2013 as the data uses a legacy classification format, which introduces uncertainty in determining which waste types are included in each classification. However, between 2017 and 2020, the proportion of most waste types has remained largely static. Nevertheless, construction waste, furniture and vehicle parts, made up a smaller proportion of flytipped waste in 2020 than in 2017. This has been displaced by a considerable increase in unclassified 'other waste' (note: the data may also be reported differently between authorities).

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[153] Zero Waste Scotland - Evidence Review of Flytipping Behaviour (2017)

[154] Data provided by FlyMapper

[155] Data provided by FlyMapper

Current infrastructure

An indication of existing considerations for infrastructure supporting the management of litter and flytipping are provided in the following actions from the 2014 National Litter Strategy:

- **Opportunities for recycling** - increasing facilities in public places (such as Recycle on the Go) and increasing the range of commonly recycled materials. It includes recycling bins and take back/rewards schemes.
- **Guidance** - providing effective advice and best practice to the people whose jobs include particular responsibility to tackle litter and flytipping.
- **Funding and support** - targeting resources on activity which delivers litter-free environments.

A 2021 review of the existing 2014 National Litter Strategy[156] has highlighted the infrastructure currently in place to address litter and flytipping as a result of the strategy:

Table 8-1   Infrastructure currently in place to address litter and flytipping as a result of the existing 2014 National Litter Strategy

	Activities carried out under the existing strategy
Communication	Zero Waste Scotland created the Litter Knowledge Network which pulls together tools, materials and good practice examples.
	A Recycling on the Go communication toolkit was developed by Zero Waste Scotland
	Zero Waste Scotland created a free toolkit to assist partners in developing interventions to help prevent flytipping
	Zero Waste Scotland updated the Dumb Dumpers initiative in 2016

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[156] Scottish Government - Litter strategy - five years on: review (2021)

	Activities carried out under the existing strategy
Community action	Zero Waste Scotland's Litter Prevention Action Plans provides support to communities, local authorities and businesses who wish to prevent local litter problems.
	Funding of the three Zero Waste Towns projects, allowed local action to take place, including: • Zero Waste Leith's work to achieve 'cleaner, greener streets' • Zero Waste Edinburgh's project to repurpose unwanted materials from student residences
	The Sustainable Events Guide was updated by Zero Waste Scotland in 2015 and a new events guide/checklist was produced by Zero Waste Scotland in 2016/17 specific to managing and preventing litter and waste at events.
Product design	Zero Waste Scotland and the National Bed Federation are collaborating with the aim of increasing the reuse and recycling of mattress components, meaning that they will be less likely to be flytipped in the future
Service design	The introduction of the new Litter Monitoring System means that both litter and Flytipping data for all registered bodies are stored on the same site. This means that geographical and historical data is easier to access and patterns and hotspots are easier to detect.
Guidance review	The Household Recycling Code of Practice helped ensure waste collection services are designed in a way so as to avoid accidental spillage or 'wind-blown' waste from collection containers or vehicles and to help ensure there is a synergy between all the operational functions responsible for waste, cleansing and flytipping.

	Activities carried out under the existing strategy
Funding & support	Through Zero Waste Scotland, the Scottish Government provided around £1.5m of funding between 2014 and 2015 to local authorities, community groups and organisations to tackle litter. This funding included: • Recycling on the Go 2014/15 • Community Action Fund 2014/15 • Litter Prevention Fund 2015/16 and 2016/17 • Communications fund 2016/17 • Individual projects (Glasgow enforcement) 2017/18
	Through Zero Waste Scotland, Scottish Government committed £150k, £75k in each of 2015-16 and 2016-17, to the Clean Up Scotland campaign delivered by Keep Scotland Beautiful. This is in addition to £500,000 provided since 2013.
	In 2018, Scottish Government held the first Marine Summit in Oban and pledged £500,000 to help tackle plastic pollution.
Research & Monitoring	Through Zero Waste Scotland, Scottish Government has published a number of pieces of research, including: • Public perceptions & concerns (2015) • Good practice to reduce waste crime (2015) • Recycle & Reward pilots report (2015) • Short survey of public attitudes and behaviours in relation to litter and flytipping (2016) • Evidence review of Flytipping behaviour (2017)
Enforcement	New fixed penalty powers granted to SEPA in 2015 tackle low-level noncompliance with waste legislation, including flytipping.

Scotland's Update to the Climate Change Plan 2018 – 2032 announced a £70 million fund to improve local authority recycling collection infrastructure and legislation to restrict sales of single-use plastics, which is expected to reduce littered plastics. The Low carbon fund will also support improved waste data and tracking[157].

A new Litter Monitoring System and methodology which was aligned with CoPLAR 2018. Transition to the new method is still underway and will allow spatial data to be collected on the amount and types of litter found.

Clearing litter from streets and public areas in Scotland is the responsibility of local authorities and statutory undertakers such as Network Rail, Scottish Canals and schools, colleges and universities, as set out by the Environmental Protection Act 1990. Transport Scotland is responsible for clearing litter from motorways and special roads, while local authorities are responsible for keeping local roads and most trunk roads clear. Local authorities and other duty holders are free to determine how best to fulfil their duties, providing they have regard to the Code of Practice on Litter and Refuse (COPLAR) 2018 [158]. Local authorities are responsible for clearing litter which includes installation of public litter bin, although it is noted that over 4,000 Recycle on The Go bins have been installed from Zero Waste Scotland funding[159].Once, collected by authorities, waste is disposed of as a regular waste stream. This may vary by authority.

Enforcement

The majority of litter in Scotland is discarded by members of the public, with business and commercial waste each accounting for less than 5% of total litter presence. A

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[157] Scottish Government - Update to the Climate Change Plan 2018 - 2032: Securing a Green Recovery on a Path to Net Zero (2020)

[158] Scottish Government - Managing waste (undated)

[159] Zero Waste Scotland - Recycle on the Go (undated)

Public Attitudes Towards Litter Survey work carried out by Zero Waste Scotland[160] found that:

- 10% of respondents had intentionally dropped litter in the 12 months prior to the survey being carried out;

- 26% of respondents had accidentally dropped litter and left it there in the 12 months prior to the survey being carried out;

- 86% of respondents had seen someone else drop litter (i.e. either intentionally or accidentally).

There are fixed penalties of £80 for littering and £200 for flytipping. Alleged offenders are required by law to provide their name and address to enforcement officers (from 1 June 2014)[161]. Penalties can be issued by the police, by local authorities, and – since 1 April 2015 – by public bodies such as the Loch Lomond and the Trossachs National Park[162].

If the case goes to court, a person who is caught littering will have to pay a fine of up to £2,500. Someone convicted of flytipping could be fined up to £40,000 and/or imprisoned for up to 12 months[163]. In addition, SEPA and Revenue Scotland can recover landfill tax from illegally deposited wastes.

Improved use of CCTV to identify offences and new fixed penalty powers were granted to SEPA to tackle low-level noncompliance with waste legislation, including flytipping[164]. Nevertheless, the number of enforcements against both littering and flytipping has

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[160] Zero Waste Scotland - Litter (2016)

[161] Scottish Government - Managing waste (undated)

[162] Scottish Government - Managing waste (undated)

[163] Scottish Government - Managing waste (undated)

[164] Scottish Government - Litter strategy - five years on: review (2021)

reduced substantially in recent years[165]; with the value of fines falling by £0.97 million between 2015 and 2018[166]. In Glasgow, a major generator of fines in Scotland, 46% of fines were not paid, and no unpaid fines were referred to the Crown Office and Procurator Fiscal Service, in the 3 years up to March 2018[167].

8.2.2 Likely Evolution of the Baseline without the NLFS

Without the proposed measures in the new National Litter and Flytipping strategy, it is expected that the levels of littering and flytipping are expected to continue. Perceived littering has increased since 2013, by site inspection data, whereas the number of reported flytipping incidents is in slight decline. However, this data is far from comprehensive. Furthermore, in a Keep Scotland Beautiful study[168], interviewees suggest that litter and flytipping has got continually worse since 2013. Meanwhile, the number of successful prosecutions for both littering and flytipping have plummeted in the same timeframe suggesting that the current strategy is ineffective. Without revision, this trend may continue to the point that prosecutions are no longer viable; offering little deterrent to offenders.

8.3 Consideration of likely significant effects

8.3.1 Methodology

The new National Litter and Flytipping strategy has the potential to have a range of effects on material assets by preventing or limiting waste materials entering and affecting the environment. The assessment considers the potential impacts on material assets in Scotland through the implementation of the proposed actions to prevent litter

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[165] Scottish Government - Fly-tipping, reports and prosecutions recorded by year and local authority: FOI release (2019)

[166] Scottish Public Health Network - An Overview of Local Authority Powers Relating to Public Health (2019)

[167] Scottish Public Health Network - An Overview of Local Authority Powers Relating to Public Health (2019)

[168] Keep Scotland Beautiful - Time for a new approach to tackling litter (2020)

and flytipping, developed across the four strategy themes: behaviour change; infrastructure and services; enforcement; and data and research.

Although the adverse impacts of litter and flytipping on material assets may be similar it is recognised that litter and flytipping are distinct issues with different drivers, so the assessment provides separate appraisals of the actions proposed for the Litter strategy (Table 8-2) and the Flytipping strategy (Table 8-3). The SEA criteria for assessing the effects on material assets are listed at the start of each table. The effects against these criteria are considered against a baseline which is effectively a continuation of the existing National Litter Strategy.

8.3.2 Results

The tables below provide summary assessments of the likely significant environmental effects of implementing proposed actions to prevent litter and flytipping across the four strategy themes, with regard to material assets. Table 8-2 presents the results of the assessment of actions for Litter and Table 8-3 present the findings assessing the actions for the Flytipping.

The key to each assessment score is shown below:

	++	+	0	-	--	?

Score Key:	Significant positive effect	Minor positive effect	No overall effect	Minor negative effect	Significant negative effect	Score uncertain

NB: Where a box is coloured but also contains a "?" this indicates uncertainty over whether the effect could be a minor or significant effect although a professional judgement is expressed in the colour used. A conclusion of uncertainty arises where there is insufficient evidence for expert judgement to conclude an effect.

Table 8-2   Assessment of Effects of Litter Actions on SEA Criteria for Material Assets

Litter Strategy	
Material Assets	
SEA Criteria: • To maintain the environmental quality which supports economic activities. • To prevent increased pressure on material assets such as landfill sites.	
	Overall Score
Behaviour Change – Actions	**+/?**
	Action Score
Conduct research to understand the full range of influences on littering behaviours across various contexts and audience groups.	**+/?**
Develop a sustained, evidence based, national anti-littering campaign and deliver this consistently and collaboratively across Scotland.	**++/?**
Commentary:	

Actions conducting more research on the range of influences on littering behaviour are expected to provide an increased awareness of the reasons for littering, which may have a positive impact in terms of highlighting the value of littered material and reduce quantities of litter waste going to landfill. although the effectiveness of proposed actions is uncertain

The development of a national campaign and collaborative approach to litter prevention and behaviour change across Scotland has the potential to have a significant positive impact on maintaining environmental quality and reduce pressure on materials assets. However, until there is improved information on the quantity of litter and potential material resources there is uncertainty regarding the significance of the impact on material assets.

Services and Infrastructure – Actions	Overall Score
	+
	Action Score
Explore the use of flexible and innovative interventions to support litter prevention and removal.	++
Establish an action focused group to encourage collaboration and share best practice between local authorities, national parks and other duty bodies to optimise services	++
Create a national litter hub to provide information and advice to community groups.	+
Increase the use of citizen science to support data on levels and composition of litter.	+

Carry out a review of the development, implementation and progress of the Code of Practice for Litter and Refuse (2018).	?

Commentary:

Actions exploring innovation and flexible use of litter and waste services and infrastructure are considered to have a significant positive effect, particularly in relation to the management of material assets and reducing pressure on landfills. Increased collaboration between organisations and information sharing is also assessed as having a significant positive effect, as collaboration on material management may generate new business opportunities for use of the resources or better waste management practices.

The creation of a national hub will help to improve safe waste disposal and contribute to better management of material assets. The use of citizen science is also anticipated to have a positive effect, principally because the information provided would be useful in optimising the use of material assets and availability of litter material, which could potentially incorporate anecdotal local asset material management that could be replicated nationally.

It is not clear whether a review of the Code of Practice for Litter and Refuse (COPLAR) will result in any changes beyond those currently established for preventing and reducing the impacts of litter in the environment, so this is considered to be an uncertain effect for material assets at this stage.

	Overall Score
Enforcement – Actions	**+/?**
	Action Score
Conduct an evidence review of barriers to enforcement of litter offences.	**++/?**
Explore raising current fixed penalty notice amounts for a litter offence.	**+/?**

Develop guidance on enforcement best practices and seek agreement for this to be voluntarily adopted by Local Authorities and National Parks.	++/?
Review current powers for enforcing littering offences.	+/?
Explore potential alternative penalties to monetary fixed penalties for a litter offence.	?
Explore using civil penalties in relation to littering offences.	?
Create fixed penalties for the registered keeper of the vehicle for littering from vehicles.	+/?

Commentary:

Litter incidences have increased since 2013[169], despite introduction of higher fines for littering in 2014, with the number of successful prosecutions for littering declining over the period. This suggests there may be poor implementation of existing legislation on offenders, thus a review of barriers to enforcement and better guidance on enforcement should improve enforcement measures to prevent littering, and a review of existing powers may also support this. These is considered to have positive benefits in terms of improving the availability of materials for reuse and recycling and reducing disposal of litter waste in landfills, noting though that voluntary adoption introduces some uncertainty on the extent to which any enforcement measures would be implemented.

As discussed in the assessment of Enforcement actions in relation to Biodiversity (see Table 4-3), the further raising of fixed penalties or introducing legislation to strengthen enforcement of litter from vehicles by issuing a fine to the registered keeper of the vehicle, may help to deter littering but the level of positive effects for material assets is uncertain.

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[169] Keep Scotland Beautiful - Time for a new approach to tackling litter (2020)

There is insufficient information to determine whether civil penalties and alternatives to financial penalties would be effective at preventing littering, so these actions have been assessed to be uncertain impacts for material assets.

	Overall Score
Data and Research – Actions	**++/?**
	Action Score
Review the available litter data and approach to data collection across Scotland and reach an agreement between stakeholders on a common approach to collecting data.	**++/?**
Identify commonly littered items and litter hotspots and work with Local Authorities and other duty bodies to develop targeted interventions to reduce litter.	**++/?**

Commentary:

There is currently no comprehensive or consistent central database for local authorities to report litter arisings. Therefore, a review of available litter data and approach to data collection would provide valuable information against which progress can be monitored and provide insight into the effects of the new National Litter and Flytipping Strategy (noting that this has close links to the optimisation of services identified in the Infrastructure and Services strategy theme). This is considered to be a significant positive impact in terms of identifying the value and quality of resources in littered material, which should also help to avoid disposal of waste in landfill sites.

The identification of litter composition and hotspots are considered to be beneficial in terms of the SEA Material Assets criteria, as these actions should improve opportunities to capture the resource value of litter and enhance the management of litter waste, reducing pressure on waste disposal sites.

For both of these actions some uncertainty on the significance of the effects is recorded, noting that the measures are dependent on agreement and practical implementation with the relevant stakeholders.

Table 8-3   Assessment of Effects of Flytipping Actions on SEA Criteria for Material Assets

Flytipping Strategy	
Material Assets	
SEA Criteria: •To maintain the environmental quality which supports economic activities. •To prevent increased pressure on material assets such as landfill sites.	
	Overall Score
Behaviour Change – Actions	**+/?**
	Action Score
Conduct research to understand the full range of influences on flytipping behaviour across various context and audience groups and use this to design effective responses.	**+/?**
Develop a sustained, evidence based, national anti-flytipping campaign and deliver this consistently and collaboratively across Scotland.	**+**

Develop social media campaigns and guidance targeted at waste carriers and other businesses[170].	**+/?**

Commentary:

Research into flytipping behaviour has the potential to provide beneficial effects by understanding the drivers for illegal dumping of waste and identifying responses that highlight the potential value of flytipped material and reduce quantities going to landfill sites. This should be supported by information and data gathering on the type of material and quantity flytipped.

The development of a national anti-flytipping campaign should help to improve the amount of material available for reuse rather than disposal. This action is therefore anticipated to have a positive effect on material assets.

The development of social media campaigns and guidance may help to raise awareness of the adverse effects of flytipping, which is considered to be a positive effect for material assets, although the effectiveness of the measures in changing the behaviour of waste carriers and businesses remains uncertain.

Services and Infrastructure – Actions	**Overall Score**
	+
	Action Score
Support and encourage information and resource sharing between Local Authorities, waste sector, SEPA and other organisations through the flytipping forum.	**++**

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[170] This action would build on work that is already being carried out by SEPA to target individuals looking to dispose of household waste and businesses offering waste collections.

Explore the role of technology in assisting private landowners and land managers deter flytipping on their land.	**+/?**
Produce updated guidance for private landowners on dealing with flytipping.	**+**
Explore alternative financial support mechanisms available to private landowners.	**+**
Explore how to support and encourage more reuse and repair of products that are commonly flytipped.	**++/?**
Explore a flexible approach to waste disposal (such as mobile HWRCs and targeted amnesties), and targeted interventions, with a view to trial these.	**+**
Carry out research to create a single information point on the disposal of commonly flytipped materials.	**+**

Commentary:

Flytipped material is generally lost from management routes for recycling or reuse, so actions that encourage information and resource sharing between organisations are considered to have a significant positive impact on material assets, through improving the value of materials recovered and avoiding the need to dispose of the material at landfill sites.

Exploring the role of technology for landowners to deter flytipping could be beneficial in avoiding loss of material resources and reducing the need for landfill disposal. However, the effectiveness and practicalities of implementing technological deterrents are still to be determined, so the significance of the impacts are uncertain.

The provision of further guidance to landowners on managing flytipping, should help to either deter flytipping or improve the reuse and recycling of flytipped material, and also reduce disposal at landfill sites. Exploring alternative financial support mechanisms in terms of services and infrastructure for dealing with flytipped material may also improve management options for flytipped materials and reduce pressure on landfill sites

approach for managing the waste, which is assessed to be a positive effect for material assets.

Support in encouraging more reuse and repair of products is considered to have significant positive effects on material assets, as this would extend the value of material resources and reduce pressure on landfill sites. Further monitoring would be required though to confirm the effectiveness of the action.

The actions exploring a more flexible approach to waste disposal and interventions to prevent flytipping, as well as creation of a single information point, are expected to help improve the management of flytipped material through the coordination of relevant services and visibility of information on flytipping. The actions may help prevent flytipping and improve management options, with benefits for material assets.

	Overall Score
Enforcement – Actions	**+/?**
	Action Score
Conduct an evidence review of barriers to enforcement.	**+/?**
Develop guidance on enforcement best practices, including on private land and seek for this to be voluntarily adopted by statutory bodies.	**+/?**
Initially raise current fixed penalties issued by Police, Loch Lomond and Trossachs National Park for flytipping to the maximum (£500) and explore possibility of raising the maximum further at a later date.	**+/?**
Explore raising current fixed penalties that can be issue by SEPA for flytipping offences to the maximum (£1000) and explore possibility of raising the maximum further at a later date.	**+/?**
Review existing legislative powers for enforcing flytipping offences.	**+/?**

Explore the ability to remove, suspend or deny Waste Carrier's Registration to individuals/companies fined for flytipping.	**+/?**
Support information sharing on flytipping incidents and offenders between Local Authorities, Police and National Parks.	**+**
Create powers to enable seizure of vehicles by SEPA used in flytipping.	**+/?**
Explore the possibility and benefits of using civil penalties to enforce flytipping offences.	**?**

Commentary:

There is limited evidence available to confirm the effectiveness of more stringent enforcement measures at preventing flytipping (see Table 4-3 for Biodiversity). The actions proposed for a review of enforcement measures (including barriers to enforcement, existing powers, guidance on best practice, removal of Waste Carrier Registrations, and seizure of vehicles), should improve understanding of what is effective in combating flytipping. These actions may improve the availability of resources in flytipped material and reduce waste deposited in landfills, however the level of effectiveness at preventing flytipping is uncertain at this stage.

Sharing information on flytipping between Local Authorities, Police and National Parks should improve the opportunities for recovering resources in flytipped material, which would also reduce pressure on landfill sites and have some positive impacts for material assets.

It is considered that an increase in fines for flytipping offences should provide some form of deterrent and subsequent positive effects for material assets, although as discussed previously in the Biodiversity topic (see Table 4-3), the effectiveness of using higher financial penalties to reduce flytipping is not certain.

Further details on the use civil penalties and their effectiveness are required before the effects on material assets can be determined.

Data and Research – Actions	Overall Score
	+/?
	Action Score
Create a data sharing agreement and work with Local Authorities, other duty bodies, National Parks, private landowners and land managers, businesses and the third sector to improve consistency of data collected in Scotland.	+
Explore and seek to support the use of appropriate technology in data collection.	+/?
Work with stakeholders to improve consistency of data collection in Scotland.	++
Explore incorporating data into a national database.	+/?
Review the Dumb Dumpers system and ensure that a fit for purpose mechanism for citizen reporting of flytipping exists in Scotland.	+/?
Explore the development of a live picture of flytipping across Scotland.	0/?

Commentary:

Improved data sharing between SEPA, Police, Local Authorities and other statutory bodies would allow for better data collection and interpretation to monitor the impact of fly-tipping on material assets.

Exploration of technology to streamline and facilitate the reporting of data may improve reporting rates by local authorities and landowners though it is not certain how this would be implemented or received by users.

Differences in reporting techniques between authorities means data is often incomplete and complicates interpretation of data. Therefore, a more consistent approach is expected would deliver significant benefits in assessing the overall status of flytipping in

Scotland, with positive effects expected in terms of resource recovery and reducing landfill disposal.

National fly-tipping databases (FlyCapture and WasteDataFlow (WDF)) are currently in use. However, they have not been adopted universally by authorities and the information available is therefore not comprehensive, so there is uncertainty regarding the significance of the benefits for this action. A review of the Dumb Dumpers platform for citizen reporting of flytipping incidents may help to improve information available on flytipped material and options for onward management, although the level of significance is uncertain.

More frequent and localised data would aid monitoring and identify areas of concern. However, 'live' reporting of data may prove complex to implement and provide limited benefits in terms of monitoring the impact of the National Litter and Flytipping Strategy on material assets.

8.4 Mitigation and Enhancement

The following measures are suggested to enhance the proposals in the new National Litter and Flytipping strategy, with respect to material assets:

- As with the suggestion for climatic factors, a review and promotion of the options for recycling of commonly flytipped materials should be considered, as this would support maintaining the value of resources and reduce the pressure on landfill sites.

- More frequent studies into littering and flytipping arisings would improve accuracy of the resources available in these materials.

- If a robust system for live reporting on flytipping incidents is introduced then 'real time' monitoring could consider capturing key metrics on the quantities and composition of materials, which help in measuring the effectiveness of the strategy proposals.

Please also refer to Section 4.4 Mitigation and Enhancement for the Biodiversity topic for a list of recommendations supporting the wider aims to prevent or improve management of litter and flytipped materials, which are considered to be common to each environmental topic.

9. Landscape and visual impacts

This section outlines the assessment of the proposals for the prevention of litter and flytipping against the scoped in topic of landscape and visual impacts. Whilst the SEA legislation does not provide any definition of the term "landscape" or "visual impacts", NatureScot[171] quote the definition of the European Landscape Convention in defining landscape as "*an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors*".

This section provides the contextual information to inform the assessment (in terms of the review of Plans, Programmes and Strategies (PPS) and the baseline information) as well as an assessment of the effects of the National Litter and Flytipping Strategy on landscape and visual impacts.
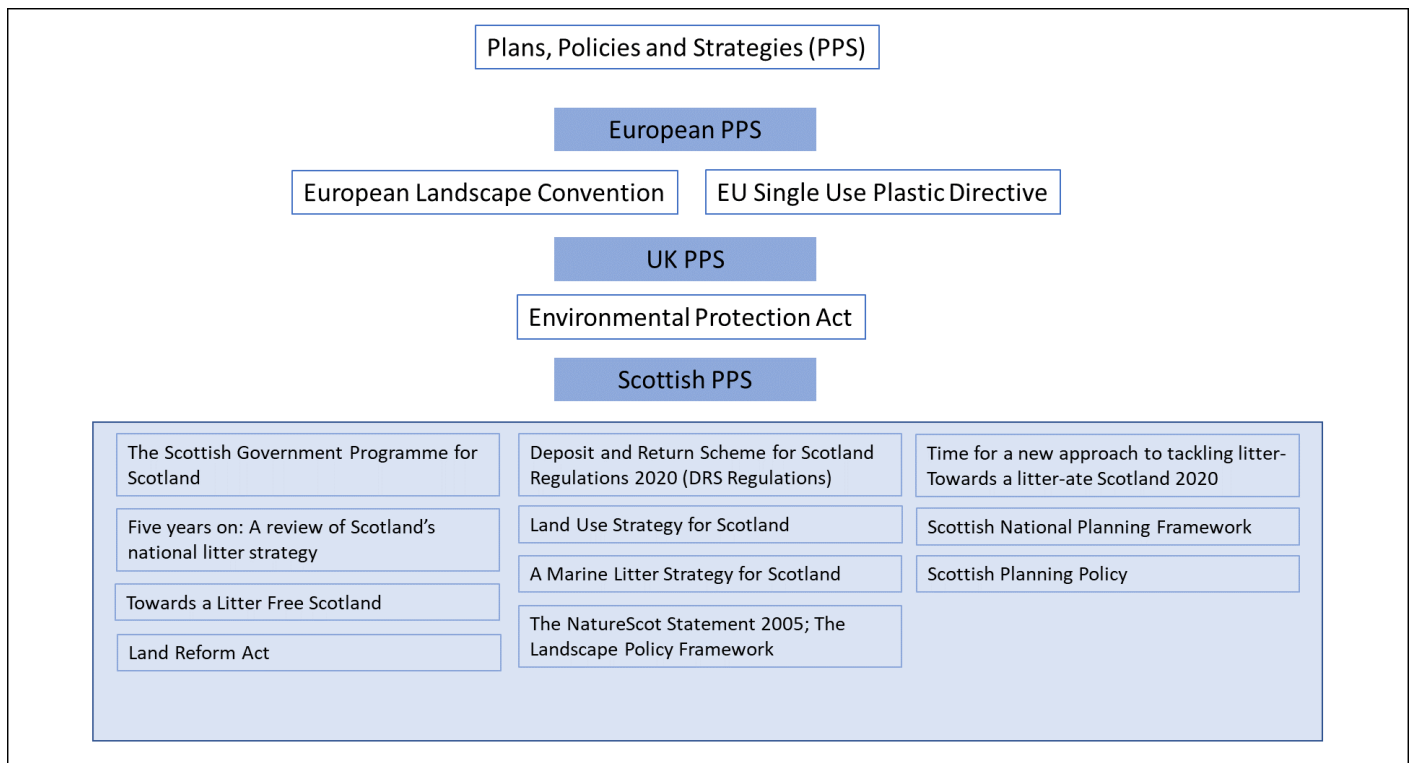
9.1 Relationship with other Plans, Programmes, Strategies and Environmental Objectives

The PPS that are relevant to the landscape and visual impact topic that have been reviewed to inform the assessment exercise are shown in Figure 9-1 and summarised thereafter.

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[171] The Scottish Environment Protection Agency (2011) The Scottish Strategic Environmental Assessment Review.

Figure 9-1 Plans, Policies and Strategies related to Landscape and Visual Impacts

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                    ┌─────────────────────────────────────┐
                    │  Plans, Policies and Strategies (PPS)│
                    └─────────────────────────────────────┘

                         ┌──────────────────────┐
                         │     European PPS      │
                         └──────────────────────┘

        ┌─────────────────────────────┐   ┌──────────────────────────────┐
        │ European Landscape Convention│   │ EU Single Use Plastic Directive│
        └─────────────────────────────┘   └──────────────────────────────┘

                         ┌──────────────────────┐
                         │        UK PPS         │
                         └──────────────────────┘

                    ┌─────────────────────────────┐
                    │ Environmental Protection Act │
                    └─────────────────────────────┘

                         ┌──────────────────────┐
                         │      Scottish PPS     │
                         └──────────────────────┘
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The Scottish Government Programme for Scotland	Deposit and Return Scheme for Scotland Regulations 2020 (DRS Regulations)	Time for a new approach to tackling litter-Towards a litter-ate Scotland 2020
Five years on: A review of Scotland's national litter strategy	Land Use Strategy for Scotland	Scottish National Planning Framework
Towards a Litter Free Scotland	A Marine Litter Strategy for Scotland	Scottish Planning Policy
Land Reform Act	The NatureScot Statement 2005; The Landscape Policy Framework	

9.1.1 European level

The European Landscape Convention (2006) (ELC) seeks to promote the protection and management of urban and rural spaces. The ELC promotes the principles of developing and protecting landscapes through implementation of Landscape Quality Objectives requiring authorities to support public aspirations for their surroundings as opposed to solely expert opinion. The principles of the ELC are consistent with the aims of reducing littering and flytipping for the preservation of the Scottish landscape which suffers significant and continued detriment through the prevalence of litter. The ELC was adopted by the UK in 2006.

European Union (2019): Single Use Plastic Directive. The Directive on the reduction of the impact of certain plastic products on the environment highlights significant negative environmental, health and economic impacts stemming from the continued use of certain plastic products. Embedding a more circular approach to

resources would support a reduction in waste and litter, which in turn will improve the aesthetic of the Scottish landscape.

9.1.2 UK level

UK Government (1990): The Environmental Protection Act seeks to improve resource use and environmental conditions through the control of waste collections and management across the UK. By prescribing that littering is an offence, the Act seeks to deter occurrences of littering, thus reducing visual impacts of litter on the landscape.

9.1.3 Scottish level

The Land Reform (Scotland) Act 2003 introduced a new right of responsible access covering Scottish onshore, inland water, and coastal environments**. The Land Reform (Scotland) Act 2016,** making minor amendments to the previous Act regarding access to land. The new National Litter and Flytipping Strategy complements these responsible access regulations by seeking to keep the Scottish landscape free of litter and waste materials.

The NatureScot Statement (2005): The Landscape Policy Framework (Policy Statement No. 05/01) sets out NatureScot approach on conserving and managing Scottish landscapes. The document emphasises the importance of landscapes across Scotland to both individual well-being and the economic success of an area. The document reiterates the remit of NatureScot to preserve the aesthetics and natural qualities whilst protecting wildlife and natural schemes. Reducing litter and flytipping will improve the visual impacts of the Scottish natural landscape.

Scottish Government (2011): The first land use strategy for Scotland, **Getting the best from our land - A land use strategy for Scotland (2011))** had the objectives of: land-based businesses working with nature; responsible stewardship of Scotland's natural resources; and urban and rural communities better connected to the land. The vision, objectives and principles of the strategy were retained and built upon by the second land use strategy; **Getting the Best From Our Land: A Land Use Strategy For Scotland 2016-2021 (published in 2016)**. The strategy supports sustainable use

of natural assets including the preservation of the quality of the natural environment that the new National Litter and Flytipping Strategy can help reinforce and protect.

Scottish Government (2014): A Marine Litter Strategy for Scotland identified five proposed strategic directions to reach a Zero Waste Scotland, supported by responsible behaviours. The strategy seeks to reduce the litter entering the marine environment, and one which has particularly detrimental characteristics in terms of visual impacts on the landscape and marine habitats in Scotland. A new National Litter and Flytipping Strategy would support the drive to reduce littering in a marine environment.

Scottish Government (2014): The Scottish National Planning Framework and Scottish Planning Policy promotes the protection of Scottish lands from productive soils, to water resources and the natural landscapes, and this includes protection from littering on the Scottish terrestrial and marine habitat.

Scottish Government (2014): Toward a Litter free Scotland - The National Litter Strategy sets clear actions which have an impact upon landscape and visual aesthetic, when seeking to improve the environment through targeted approaches to litter and flytipping. The strategy seeks to educate the public to adopt alternative behaviours to waste management, through access to improved recycling opportunities, improved product design, awareness campaigns and targeted exploration to tackle litter on beaches. The strategy also proposes exploring enforcement opportunities and identifying pilot solutions to litter. The new National Litter and Flytipping Strategy will strengthen the progress made and include measures to resolve any gaps identified in the **Litter Strategy- five years on: Review**[172] published in March 2021. The review highlights that significant progress has been made and identifies key successes. However, it also recognises that litter and flytipping still pose a significant challenge that requires further concerted action; and identifies opportunities for potential future action. It specifically identifies the increase of litter in urban settings impacting negatively on visual and landscape aesthetics.

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[172] Scottish Government - Litter strategy - five years on: review (2021)

Time for a new approach to tackling litter (2020). Charity Keep Scotland Beautiful (KSB)has worked in partnership with stakeholders across Scotland to track key indicators of local environmental quality, including litter, dog fouling, graffiti, vandalism and flytipping. KSB have noted that places across Scotland are suffering from a 'lockdown impact' (i.e. an increase in the severity of Scotland's litter problem as well as a heightened awareness of the prevalence of poor environmental quality more broadly) and that the marginal improvements in recent years could be cancelled out and exacerbate wider issues associated with the decline in local environmental quality, particularly in most deprived communities[173].

The Deposit and Return Scheme for Scotland Regulations 2020 (DRS Regulations). The driver for the DRS regulations is to promote and secure an increase in recycling of materials, forming part of the Scottish Government's response to the global climate emergency, by ensuring the targeted materials are collected in larger quantities and separately to other materials. It is anticipated the DRS will reduce littering and thus improve landscape and visual impacts. Indeed, the DRS addresses common single-use packaging used for drinks containers (one of the most commonly littered items), by encouraging people to return that packaging to specified return points. During the consultation on the proposed DRS Scheme there was widespread agreement amongst both organisational and individual respondents that a well-run and appropriately targeted DRS could provide opportunities in relation to improving the environment, changing people's attitudes to recycling and littering, and building the circular economy.

A Fairer, Greener Scotland: Programme for Government 2021-22 highlights existing plans to combat waste and reduce litter that will ensure a more environmentally friendly and cleaner Scotland, including the introduction of the UK's first national Deposit Return Scheme that will increase the amount of drinks container material removed from the environment, and plans to introduce a ban on the single-use plastic items most commonly littered.

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[173] Keep Scotland Beautiful - Time for a new approach to tackling litter (2020)

9.2 Baseline Characteristics

This section of the Environmental Report identifies and characterises current environmental baseline conditions for landscape and visual impacts. This baseline highlights the diverse nature of Scotland's landscapes. It also identifies the terrestrial litter levels, and the impact litter has on communities and local environments.

9.2.1 Landscape (including townscapes and built heritage)

As part of its Natural Heritage Futures initiative, Scottish Natural Heritage identified a series of Natural Heritage Zones and used these areas to describe a vision for sustainable use of local natural heritage. A total of 21 zones were identified, each with its own, unique landscape as a result of the interaction of geology, landforms, wildlife and land use.

There are 40 National Scenic Areas (NSAs) in Scotland, covering more than one million hectares (12.7% of Scotland). As well as identifying Scotland's finest scenery, the purpose of the NSA designation is to ensure the land is protected from inappropriate development with the Planning etc. The (Scotland) Act 2006 gave NSAs a statutory basis. This is achieved through the local authority planning scheme. Other areas designated for their landscape include two National Parks and three Regional Parks together with a number of Special (local) Landscape Areas.

There are six World Heritage Sites in Scotland: The Forth Bridge, St. Kilda; Old and New Towns of Edinburgh; the Frontiers of the Roman Empire; Heart of Neolithic Orkney; and New Lanark.

The Scottish Government's third National Planning Framework, published in June 2014, recognises wild land as a "nationally important asset", indicating that Scotland's wildest landscapes merit strong protection. 'Wildness' in this context depends on four physical attributes, namely: the perceived naturalness of the land cover; the ruggedness of the terrain which is therefore difficult to cross; remoteness from public roads or ferries; and the visible lack of buildings, roads, pylons and other modern artefacts. Scottish Natural Heritage (now NatureScot) published a new map of wild land areas in June 2014.

In addition to highly valued natural landscapes, the growth of Scotland's industrial cities over the past 200 years has created valued and varied townscapes and cityscapes complemented by built heritage. Scotland has over 400 small towns that are a distinctive feature of the settlement pattern; they are the focus for many community activities and contain a significant proportion of Scotland's historic buildings and more than half of the total number of conservation areas. Scotland's small towns are also an important element in Scotland's appeal to visitors and potential inward investors.

A regular visual survey of litter and flytipping in the landscape is provided by annual Keep Scotland Beautiful litter surveys. In the regional litter audits completed for the report by Keep Scotland Beautiful (2020), standards have been found to have dropped to their lowest ever recorded levels with only 16% of sites being recorded as litter free in 2020 compared to 31% in 2013, dog fouling is now reported to be found on 3% more streets than in 2013, and 39% of the public believe that the amount of flytipping has got worse over the lockdown period[174]. Overall, there has been a:

- 48% reduction in the number of litter free sites;
- 111% increase in significantly littered sites;
- 28% decrease in the number of fines issued for litter;
- 18% decrease in fines issued for dog fouling;
- 33% increase in detritus on streets.

The report also found issues of significant littering at sites, (consistent or accumulating items that cause a visible negative perception of local environmental quality), which have more than doubled, from 3.7% in 2013 to 7.8% in 2020. Cigarette related litter continues to be the most commonly littered item, affecting around four out of five high public use areas audited, (retail and residential). Food and drink packaging make up a significant proportion of other litter items that affect street cleanliness in three quarters of high public use retail/residential areas audited.

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[174] Keep Scotland Beautiful - Time for a new approach to tackling litter (2020)

9.2.2 Likely Evolution of the Baseline without the NLFS

As identified in the Baseline Characteristics for Material Assets (Section 8.2) perceived littering has increased since 2013, by site inspection data, whereas the number of reported flytipping incidents is in slight decline. However, this data is far from comprehensive. Furthermore, in a Keep Scotland Beautiful study[175], interviewees suggest that litter and flytipping has got continually worse since 2013.

As discussed in earlier sections, without the proposed measures in the National Litter and Flytipping strategy, it is expected that the levels of littering and flytipping are expected to continue, which a subsequent continuation of adverse effects on landscape and visual impacts.

9.3 Consideration of likely significant effects

9.3.1 Methodology

The new National Litter and Flytipping strategy has the potential to have a range of effects on Scottish landscapes and seascapes by preventing or limiting waste materials entering and affecting the environment. The assessment considers the anticipated effects of visual impacts through the implementation of the proposed actions to prevent litter and flytipping, developed across the four strategy themes: behaviour change; infrastructure and services; enforcement; and data and research.

Although the adverse impacts of litter and flytipping on landscapes and seascapes in Scotland may be similar it is recognised that litter and flytipping are distinct issues with different drivers and potentially different scales of visual impact, so the assessment provides separate appraisals of the actions proposed for the Litter strategy (Table 9-1) and the Flytipping strategy (Table 9-2). The SEA criteria for assessing the effects on landscape and visual impacts are listed at the start of each table. The effects against these criteria are considered against a baseline which is effectively a continuation of the existing National Litter Strategy.

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[175] https://www.keepscotlandbeautiful.org/media/1566897/leq-2020-report-final-041220.pdf

9.3.2 Results

The tables below provide summary assessments of the likely significant environmental effects of implementing proposed actions to prevent litter and flytipping across the four strategy themes, with regard to landscape and visual impacts. Table 9-1 presents the results of the assessment of actions for Litter and Table 9-2 present the findings assessing the actions for the Flytipping.

The key to each assessment score is shown below:

Score Key:	++	+	0	-	--	?
	Significant positive effect	Minor positive effect	No overall effect	Minor negative effect	Significant negative effect	Score uncertain
NB: Where a box is coloured but also contains a "?" this indicates uncertainty over whether the effect could be a minor or significant effect although a professional judgement is expressed in the colour used. A conclusion of uncertainty arises where there is insufficient evidence for expert judgement to conclude an effect.						

Table 9-1   Assessment of Effects of Litter Actions on SEA Criteria for Landscape and Visual Impacts

Litter Strategy	
Landscape and Visual Impacts	
SEA Criteria: • To protect and, where appropriate, enhance the landscape/seascape.	
	Overall Score
Behaviour Change – Actions	**+/?**

	Action Score
Conduct research to understand the full range of influences on littering behaviours across various contexts and audience groups.	+/?
Develop a sustained, evidence based, national anti-littering campaign and deliver this consistently and collaboratively across Scotland.	+

Commentary:

Research on the range of influences on littering behaviour are expected to provide an increased awareness of the reasons for littering, which may have a positive impact in terms of reducing the visual impact of litter in the environment. although the effectiveness of proposed action in preventing litter is uncertain at this stage.

The development of a national campaign and collaborative approach to litter prevention and behaviour change across Scotland can engage many different organisations to cooperate on a campaign and to share ideas. This has been assessed as having a positive effect on landscape and visual impacts, particularly if the actions can be tailored to different landscape types (i.e. natural parks, seascapes, townscapes etc).

	Overall Score
Services and Infrastructure – Actions	+
	Action Score
Explore the use of flexible and innovative interventions to support litter prevention and removal.	+
Establish an action focused group to encourage collaboration and share best practice between local authorities, national parks and other duty bodies to optimise services	+

Create a national litter hub to provide information and advice to community groups.	**+**
Increase the use of citizen science to support data on levels and composition of litter.	**+**
Carry out a review of the development, implementation and progress of the Code of Practice for Litter and Refuse (2018).	**?**

Commentary:

Exploring innovation and use of more flexible cleansing and litter and waste services, such as the design of on the go recycling bins, or infrastructure in place in national parks is assessed as having a positive impact on the landscape. Innovation looking to integrate these services or use of new technology to identify litter (e.g. drones GPS tagging/mapping litter) may improve the landscape and reduce the adverse visual impact of litter.

Increasing collaboration and information sharing is anticipated to have a positive impact effect on the landscape as it will allow for best practice sharing on how to tackle and prevent litter on the Scottish landscape.

Actions creating a national litter hub should enable local communities and all personnel involved in protecting the landscape from litter to have one single point of information for matters related to litter. A coordinated approach to communication is anticipated to have a positive effect on the landscape and visual impacts.

Citizen litter picker groups take pride in protecting their landscape. Using citizen science to collect data and information is anticipated to have a positive effect on landscape and visual impacts as it will ensure information gathered on the ground is communicated and accessible to relevant organisations.

It is not clear whether a review of the Code of Practice for Litter and Refuse (COPLAR) will result in any changes beyond those currently established for preventing and

reducing the impacts of litter in the environment, so this is considered to be an uncertain effect for landscape and visual impacts.

Enforcement – Actions	Overall Score
	+/?
	Action Score
Conduct an evidence review of barriers to enforcement of litter offences.	**++/?**
Explore raising current fixed penalty notice amounts for a litter offence.	**+/?**
Develop guidance on enforcement best practices and seek agreement for this to be voluntarily adopted by Local Authorities and National Parks.	**++/?**
Review current powers for enforcing littering offences.	**+/?**
Explore potential alternative penalties to monetary fixed penalties for a litter offence.	**?**
Explore using civil penalties in relation to littering offences.	**?**
Create fixed penalties for the registered keeper of the vehicle for littering from vehicles.	**+/?**

Commentary:

Evidence suggests that stringent enforcement measures will lead to less incidences of littering (see Table 4-3 for Biodiversity), so it is anticipated that actions exploring barriers to enforcement and the development of best practice for enforcement bodies, will help to reduce incidents of littering and therefore the visual impacts of litter, which is assessed as having the potential for significant positive effects for landscape, albeit recognising a degree of uncertainty associated with the voluntary adoption of the measures.

Reviewing existing powers for enforcement is also considered to have the potential to

deliver positive benefits for landscape and visual impacts, where it leads to more effective controls on littering.

As discussed in the assessment of Enforcement actions in relation to Biodiversity (see Table 4-3), the further raising of fixed penalties or introducing legislation to strengthen enforcement of litter from vehicles by issuing a fine to the registered keeper of the vehicle should help to deter littering, so this is considered to be a positive effect on landscape and visual impacts but with some uncertainty regarding effectiveness due to issues around implementation.

It is considered that further detail is required regarding civil penalties and alternatives to financial penalties and the level of effectiveness before the significance of effects for landscape can be determined, so these are assessed to be uncertain impacts at this stage.

Data and Research – Actions	Overall Score
	+/?
	Action Score
Review the available litter data and approach to data collection across Scotland and reach an agreement between stakeholders on a common approach to collecting data.	+/?
Identify commonly littered items and litter hotspots and work with Local Authorities and other duty bodies to develop targeted interventions to reduce litter.	++/?
Commentary: Keep Scotland Beuatiful LEAMS data and Marine Conservation Society Beach clean-up data both provide data on visual litter arisings but a detailed study reporting quantifiable litter arisings was last conducted in 2013. A review of available litter data and approach to data collection would provide additional useful information to monitor progress on the	

effectiveness of litter prevention measures, which is considered to be beneficial to landscape and visual impacts.

Litter hotspots have significant negative impacts on the visual appearance of a landscape, therefore the identification of litter composition and litter hotspots contributing to a targeted response to tackle littering is assessed as having a significant positive impact to protect the landscape/seascape (noting that this has close links to the Infrastructure and Services strategy theme).

For both of these actions some uncertainty on the significance of the effects is recorded, noting that the measures are dependent on agreement and practical implementation with the relevant stakeholders.

Table 9-2   Assessment of Effects of Flytipping Actions on SEA Criteria for Landscape and Visual Impacts

Flytipping Strategy	
Landscape and Visual Impacts	
SEA Criteria: • To protect and, where appropriate, enhance the landscape/seascape.	
	Overall Score
Behaviour Change – Actions	**+/?**
	Action Score
Conduct research to understand the full range of influences on flytipping behaviour across various context and audience groups and use this to design effective responses.	**+/?**

Develop a sustained, evidence based, national anti-flytipping campaign and deliver this consistently and collaboratively across Scotland.	**+**
Develop social media campaigns and guidance targeted at waste carriers and other businesses.[176]	**+/?**

Commentary:

Research into understanding influences on flytipping behaviour should help to support the development of measures that can prevent flytipping and so reduce subsequent impacts on the landscape. There is uncertainty though whether the proposed research would enhance the existing understanding of flytipping behaviour (e.g. Zero Waste Scotland, Evidence Review of Flytipping Behaviour, 2017).

The development of an anti-flytipping campaign across Scotland should help to reduce incidences of flytipping. There are case studies that demonstrate the success of well targeted campaigns[177], so reducing the numbers of flytipping in the environment through a national campaign should have a positive effect on landscape and visual impacts.

The development of social media campaigns and guidance may help to raise awareness of the adverse visual impacts of flytipping, although waste carriers and businesses should already be aware of their responsibilities and the potential impacts of flytipping on the landscape, so there is considered to be some uncertainty regarding the level of behavioural change that would deliver positive effects.

	Overall Score
Services and Infrastructure – Actions	**+**
	Action Score

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[176] This action would build on work that is already being carried out by SEPA to target individuals looking to dispose of household waste and businesses offering waste collections.

[177] National Fly-tipping Prevention Group - Fly-tipping responsibilities guide (undated) and Harborough District Council - Successful fly-tipping campaign up for national award (2020)

Support and encourage information and resource sharing between Local Authorities, waste sector, SEPA and other organisations through the flytipping forum.	+
Explore the role of technology in assisting private landowners and land managers deter flytipping on their land.	+/?
Produce updated guidance for private landowners on dealing with flytipping.	+
Explore alternative financial support mechanisms available to private landowners.	+
Explore how to support and encourage more reuse and repair of products that are commonly flytipped.	++/?
Explore a flexible approach to waste disposal (such as mobile HWRCs and targeted amnesties), and targeted interventions, with a view to trial these.	+
Carry out research to create a single information point on the disposal of commonly flytipped materials.	+

Commentary:

Fytipping in the context of landscape and visual impacts is a challenge for local authorities and other organisations across Scotland. Increasing collaboration and information sharing is anticipated to have a positive effect on the landscape, as it will allow for best practice sharing on how to effectively manage flytipped material but may not prevent material being flytipped.

Private landowners in Scotland own around 57% of rural land[178], so actions exploring the use of technology to combat flytipping is expected to deliver a positive effect on landscape and visual impacts. However, the effectiveness and practicalities of

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[178] BBC News - Who owns Scotland? The changing face of Scotland's landowners (2019)

implementing technological deterrents are still to be determined, so the significance of the impacts are uncertain.

The provision of further guidance to landowners on managing flytipping, may encourage landowners to be more proactive in addressing incidences of flytipping and the duration that waste is present in the landscape, although the action may not be effective at preventing flytipping. This is assessed to have a minor positive impact on landscape and visual impacts. Exploring alternative financial support mechanisms for private landowners in terms of services and infrastructure for dealing with flytipped material may encourage a quicker response to removing the waste, which limits the potential for adverse visual impacts.

Support in encouraging more reuse and repair of products is considered to have potential for significant positive effects, as this would prevent items being flytipped and so reduce the presence of flytipped material in the landscape. Further monitoring would be required though to confirm the effectiveness of the action.

Exploring a more flexible approach to waste disposal and interventions to prevent flytipping, as well as creation of a single information point, are expected to help improve the management of flytipped material through the coordination of relevant services and visibility of information on flytipping. The actions may help prevent flytipping, so this is considered to be a positive impact for landscape and visual impacts.

	Overall Score
Enforcement – Actions	**+/?**
	Action Score
Conduct an evidence review of barriers to enforcement.	**+/?**
Develop guidance on enforcement best practices, including on private land and seek for this to be voluntarily adopted by statutory bodies.	**+/?**

Initially raise current fixed penalties issued by Police, Loch Lomond and Trossachs National Park for flytipping to the maximum (£500) and explore possibility of raising the maximum further at a later date.	**+/?**
Explore raising current fixed penalties that can be issue by SEPA for flytipping offences to the maximum (£1000) and explore possibility of raising the maximum further at a later date.	**+/?**
Review existing legislative powers for enforcing flytipping offences.	**+/?**
Explore the ability to remove, suspend or deny Waste Carrier's Registration to individuals/companies fined for flytipping.	**+/?**
Support information sharing on flytipping incidents and offenders between Local Authorities, Police and National Parks.	**+**
Create powers to enable seizure of vehicles by SEPA used in flytipping.	**+/?**
Explore the possibility and benefits of using civil penalties to enforce flytipping offences.	**?**
Commentary: There is limited evidence available to confirm the effectiveness of more stringent enforcement measures at preventing flytipping (see Table 4-3 for Biodiversity). It is understood though that the low probability of being caught for flytipping offences is a significant factor contributing to incidents of flytipping[179], therefore, the actions proposed for a review of enforcement measures (including barriers to enforcement, existing powers, guidance on best practice, removal of Waste Carrier Registrations, and seizure of vehicles), should improve understanding of what is effective in combating flytipping. These actions are not considered to be neutral, as a reduction in flytipping would have positive effects for landscape and visual impacts, however there is uncertainty on the effectiveness of the actions in preventing flytipping.	

[179] Zero Waste Scotland - Evidence Review of Flytipping Behaviour (2017)

Sharing information on flytipping between Local Authorities, Police and National Parks may help to prevent flytipping incidents, which would be a positive effect for landscape and visual impacts.

As discussed previously there is research that questions the effectiveness of fines in preventing flytipping (see Table 4-4 for Biodiversity). It is considered that raising the maximum fixed penalty for flytipping offences should provide some level of deterrent to flytipping, with positive effects for landscape and visual impacts but the effectiveness of implementation is uncertain.

Further details on the use civil penalties and their effectiveness are required before the effects can be determined, so this is considered to be an uncertain impact for landscape and visual impacts.

Data and Research – Actions	Overall Score
	+/?
	Action Score
Create a data sharing agreement and work with Local Authorities, other duty bodies, National Parks, private landowners and land managers, businesses and the third sector to improve consistency of data collected in Scotland.	+
Explore and seek to support the use of appropriate technology in data collection.	+/?
Work with stakeholders to improve consistency of data collection in Scotland.	+
Explore incorporating data into a national database.	+/?
Review the Dumb Dumpers system and ensure that a fit for purpose mechanism for citizen reporting of flytipping exists in Scotland.	+/?

Explore the development of a live picture of flytipping across Scotland.	**+/?**

Commentary:

Improved data sharing between SEPA, Police, Local Authorities and other statutory bodies would allow for better collection and interpretation of data and monitor its impact on the visual impacts of flytipping.

Exploration of technology to streamline and facilitate the reporting of data may improve reporting by local authorities and landowners though it is not certain how this would be implemented or received.

Differences in reporting techniques between authorities means data is often incomplete and complicates interpretation of data. Therefore, a more consistent approach is expected would have some positive effects with regard to combating flytipping in the landscape/seascape.

National fly-tipping databases (FlyCapture and WasteDataFlow) are currently in use. However, they have not been adopted universally by authorities and is therefore not comprehensive. However, differences in reporting techniques between authorities means data is often incomplete and complicates interpretation of data. Improving the use of the Dumb Dumpers reporting platform may not prevent flytipping incidents but could improve responses for removal and onward management, which may have positive effects for landscape and visual impacts.

More frequent and localised data would aid monitoring and identify areas of concern. 'Live' reporting of data could improve the visual impact of flytipping by encouraging more rapid clean-up response by local authorities. However, it may prove complex to implement and limited in terms of positive effects for landscape and visual impacts.

9.4 Mitigation and Enhancement

The following measures are suggested to enhance the proposals in the new National Litter and Flytipping strategy, with respect to landscape and visual impacts:

- Campaigns aimed at behavioural change should ensure the inputs from all relevant stakeholders, including those involved in preserving the landscape (e.g. park rangers and street cleaners), and enforcement authorities as they may sometimes be side-lined.

- The method for the collection of information from citizen science should be clearly established and straightforward to encourage participation.

- As with the suggested measure for biodiversity, ensure that services and infrastructure are optimised for particularly sensitive landscapes, e.g. through the provision and design of recycling facilities or enabling a rapid response to clear-up of flytipping incidents.

Please also refer to Section 4.4 Mitigation and Enhancement for the Biodiversity topic for a list of recommendations supporting the wider aims to prevent or improve management of litter and flytipped materials, which are considered to be common to each environmental topic.

10. Cumulative Effects

Schedule 3 (6) (e) of the Environmental Assessment (Scotland) Act 2005 requires that the "secondary, cumulative and synergistic effects" of the new National Litter and Flytipping Strategy are assessed. To provide an overall assessment of the aims and objectives for preventing litter and flytipping with the SEA topics, an assessment was carried out to determine the potential impacts of the aims and objectives in terms of effects on the environment (Section 10.1). Further to this, assessment of the cumulative effects of the four litter and flytipping strategy themes are included, both alone (Section 10.2) and in-combination with other plans and programmes (Section 10.3).

In terms of the overall assessment of the cumulative effects, it should be noted that accurately assessing the impact of measures proposed in the new National Litter and Flytipping strategy is challenging due to limitations on data available on levels of littering

and flytipping in Scotland (in common with other countries[180]) and recognition of the high level nature of the measures proposed in the strategy.

The key to each assessment score is shown below:

Score Key:	++	+	0	-	--	?
	Significant positive effect	Minor positive effect	No overall effect	Minor negative effect	Significant negative effect	Score uncertain
NB: Where a box is coloured but also contains a "?" this indicates uncertainty over whether the effect could be a minor or significant effect although a professional judgement is expressed in the colour used. A conclusion of uncertainty arises where there is insufficient evidence for expert judgement to conclude an effect.						

10.1 Compatibility assessment of aims and objectives for the NLFS

This section presents the findings of the appraisal of effects of the aims and objectives that have directed the development of actions proposed in the new National Litter and Flytipping Strategy. These are assessed separately for Litter and for Flytipping.

10.1.1 Compatibility Assessment for the Litter Strategy Aims and Objectives

The aims and objectives proposed in the strategy specific to litter prevention are presented in Table 10-1, along with a summary appraisal of the expected effects of these aims and objectives with respect to the SEA topics.

The assessment concludes that the stated aims and objectives for litter prevention under each of the strategy themes are compatible with an approach that would deliver positive environmental effects in each of the SEA topics. This reflects the premise that litter is defined as waste in the wrong place, i.e. the wider environment, and therefore objectives targeting the prevention of litter would be positive for the environment. Prevention would result in reduced amounts of litter and risks of injury or harm to

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[180] https://kenniswijzerzwerfafval.nl/sites/default/files/KplusV%20-%20i.o.v.%20MWE%20-%20Inventory%20of%20costs%2C%20amounts%20and%20assessments.pdf

biodiversity and human health. More effective control of littered materials would break the link between litter and pollution in the water environment, increase the potential for carbon savings through greater recycling and extension of resource value, and reduce the pressure on landfill capacity. Prevention of littering would also reduce visual impacts, increasing the value of the amenity of public open space and enhancing human health through improved well-being. Given the high-level nature of the stated visions and aims, minor positive effects have been identified in each case, along with an uncertainty symbol to indicate the level of positive impact is unknown at this stage

Table 10-1   Compatibility assessment of the aims and objectives for the prevention of litter

Litter Strategy Theme	Biodiversity	Human Health	Water	Climatic Factors	Material Assets	Landscape and Visual
Behaviour Change – Aim & Objectives						
Aim: Improve the consistency and nature of our communications so people have greater awareness and understanding of their responsibility in preventing litter and motivate people to behave responsibly.	+/?	+/?	+/?	+/?	+/?	+/?
Objective: Understand litter perceptions and behaviour to allow targeted approaches to be developed.	+/?	+/?	+/?	+/?	+/?	+/?

Litter Strategy Theme	Biodiversity	Human Health	Water	Climatic Factors	Material Assets	Landscape and Visual
Objective: Develop and adopt a shared approach between Scottish Government, Local Authorities, public agencies and the third section, to litter prevention and behaviour change across Scotland.	+/?	+/?	+/?	+/?	+/?	+/?
Services and Infrastructure – Aim & Objectives						
Aim: Scotland's services and infrastructure are fit for purpose and prioritise action and innovation that proactively prevents litter and supports a circular economy.	+/?	+/?	+/?	+/?	+/?	+/?
Objective: Encourage a shared approach to services that will effectively support litter prevention.	+/?	+/?	+/?	+/?	+/?	+/?
Objective: Empower community groups to take action.	+/?	+/?	+/?	+/?	+/?	+/?

Litter Strategy Theme	Biodiversity	Human Health	Water	Climatic Factors	Material Assets	Landscape and Visual
Enforcement – Aim & Objectives						
Aim: There is a strong and consistent enforcement model across Scotland that is fit for purpose and acts as a proportional deterrent and effectively stops people from littering.	+/?	+/?	+/?	+/?	+/?	+/?
Objective: Develop an effective enforcement model.	+/?	+/?	+/?	+/?	+/?	+/?
Objective: Improve the consistency of enforcement practices.	+/?	+/?	+/?	+/?	+/?	+/?
Data and Research – Aim & Objective						
Aim: We understand the behaviours, attitudes and drivers behind littering and develop an evidence base of litter data that can facilitate design, implementation and monitoring of effective policy interventions.	+/?	+/?	+/?	+/?	+/?	+/?

Litter Strategy Theme	Biodiversity	Human Health	Water	Climatic Factors	Material Assets	Landscape and Visual
Objective: Improve our understanding of the sources, levels and composition of litter.	+/?	+/?	+/?	+/?	+/?	+/?

10.1.2 Compatibility Assessment for the Flytipping Strategy Aims and Objectives

The aims and objectives proposed in the strategy specific to the prevention of flytipping are presented in Table 10-2, which also includes a summary assessing the compatibility of the aims and objectives with the SEA topics.

The assessment concludes that the stated aims and objectives for the prevention of flytipping under each of the strategy themes are compatible with an approach that would deliver positive environmental effects in each of the SEA topics. Flytipping is the illegal dumping of waste, which the aims and objectives intend to control and prevent. Although flytipping may be driven by different causes and sources to littering, the impacts on the environment are similar. Therefore, the positive effects attributable to the aims and objectives for flytipping are broadly aligned with those identified for littering i.e. objectives to reduce flytipping incidents and the uncontrolled dumping of waste material will reduce the potential for harm to biodiversity, human health and the water environment; improve the visual appearance of public spaces and the wider landscape; and reduce impacts on the climate and pressure on material assets, through more effective management of material resources. Again, given the high-level nature of the stated aims and objectives for flytipping, minor positive effects have been identified in each case, along with an uncertainty symbol to indicate the level of positive impact is unknown at this stage.

Table 10-2   Compatibility assessment of the aims and objectives for the prevention of flytipping

Flytipping Strategy Theme	Biodiversity	Human Health	Water	Climatic Factors	Material Assets	Landscape and Visual
Behaviour Change – Aim & Objective						
Aim: Improve flytipping messaging to ensure individuals are confident in their understanding of their role in disposing of waste appropriately and those who deliberately flytip are motivated and enabled to change their behaviour.	+/?	+/?	+/?	+/?	+/?	+/?
Objective: Understand the flytipping behaviours to allow targeted approaches to be developed.	+/?	+/?	+/?	+/?	+/?	+/?
Objective: Develop and adopt a shared approach between Scottish Government, Local Authorities, public agencies and the third sector to flytipping behaviour change across Scotland.	+/?	+/?	+/?	+/?	+/?	+/?
Services and Infrastructure – Aim & Objectives						

Flytipping Strategy Theme	Biodiversity	Human Health	Water	Climatic Factors	Material Assets	Landscape and Visual
Aim: There is a resilient national framework which provides consistent and joined up services that are effective for both preventing flytipping where possible and tackling it effectively where it does occur.	+/?	+/?	+/?	+/?	+/?	+/?
Objective: Support development of consistent, innovative and effective waste services and infrastructure.	+/?	+/?	+/?	+/?	+/?	+/?
Objective: Provide support to private landowners and land managers that experience flytipping on their land.	+/?	+/?	+/?	+/?	+/?	+/?
Enforcement – Aim & Objectives						
Aim: A strong, consistent enforcement model that is fit for purpose and acts as an effective deterrent for flytipping behaviour.	+/?	+/?	+/?	+/?	+/?	+/?

Flytipping Strategy Theme	Biodiversity	Human Health	Water	Climatic Factors	Material Assets	Landscape and Visual
Objective: Develop an effective enforcement model.	+/?	+/?	+/?	+/?	+/?	+/?
Objective: Improve consistency of enforcement practices across Scotland.	+/?	+/?	+/?	+/?	+/?	+/?
Data and Research – Aim & Objective						
Aim: Understand the behaviours and drivers behind flytipping and collect data and establish a monitoring program which provides guidance for policy and evaluates actions undertaken.	+/?	+/?	+/?	+/?	+/?	+/?
Objective: Improve our understanding of the sources, levels and composition of flytipping.	+/?	+/?	+/?	+/?	+/?	+/?

10.2 Cumulative effects associated with the NLFS proposals

This section presents the cumulative effects for proposed in scope actions for the National Litter and Flytipping strategy. The cumulative effects identified are based on an overall judgment of the effects of proposed measures on the six SEA topics included in the

assessment, taking into account the range of effects on the assessment SEA criteria as presented in sections 4 to 9 (i.e. whether significant or minor, positive or negative).

10.2.1 Cumulative Effects for the Litter Strategy Actions

The cumulative effects of proposed measures against each of the four SEA strategy themes are summarised in Table 10-3 for Litter.

Table 10-3   Summary of cumulative effects from actions for the prevention of litter

Litter Strategy Theme	Biodiversity	Human Health	Water	Climatic Factors	Material Assets	Landscape and Visual
Behaviour Change	+/?	+/?	+/?	+/?	+/?	+/?
Services and Infrastructure	+	+	+	+	+	+
Enforcement	+/?	+/?	+/?	+/?	+/?	+/?
Data and Research	+/?	+/?	+/?	+/?	++/?	+/?

The analysis for the Litter strategy shows that the proposed measures will generate cumulative positive effects across each of the environmental topics.

No cumulative significant negative effects have been identified during the assessment.

Although positive effects are determined for each of the environmental topics, in general these are not considered to be significant, which in part is due to the high level nature of the proposed actions, along with some additional uncertainty regarding the quantitative effects of litter on the environment and unknowns regarding implementation by relevant stakeholders. A significant level of cumulative positive effects is determined for the proposals related to data and research for material assets, where there are considered to be benefits in recouping the resource value of materials in litter that would otherwise

be lost, as well as avoiding disposal of litter and therefore reducing pressure on landfill capacity.

10.2.2 Cumulative Effects for the Flytipping Strategy Actions

The cumulative effects of proposed measures against each of the four SEA strategy themes are summarised in Table 10-4 for Flytipping.

Table 10-4   Summary of cumulative effects from actions for the prevention of flytipping

Flytipping Strategy Theme	Biodiversity	Human Health	Water	Climatic Factors	Material Assets	Landscape and Visual
Behaviour Change	+/?	+/?	+/?	+/?	+/?	+/?
Services and Infrastructure	+	+/?	+	+	+	+
Enforcement	+/?	+/?	+/?	+/?	+/?	+/?
Data and Research	+/?	+/?	+/?	+/?	+/?	+/?

The analysis for the Flytipping strategy shows that the proposed measures will also generate cumulative positive effects across each of the environmental topics.

Again, no cumulative significant negative effects have been identified during the assessment.

In the case of the measures developed for combating flytipping, none of the cumulative positive effects for the environmental topics are found to be significant, although there is considerable uncertainty identified. In principle, the proposals for enforcement should

deliver positive effects for the environment but the uncertainty arises from insufficient evidence currently available to demonstrate causal links between enforcement measures and sustained reductions in flytipping. The uncertainty points to the need for further clarity, and monitoring, to assess the effectiveness of the proposed actions in changing existing levels of flytipping.

10.3 Cumulative effects of the NLFS with other plans and programmes

The proposals in the National Litter and Flytipping strategy would sit within and across a number of other pre-existing plans and programmes (Sections 4.1-9.1 above) that are relevant to the effective prevention of litter and flytipping and their wider effects. Although the combined effects of proposals in the strategy and other plans and programmes are difficult to fully assess, it is anticipated that this intervention will support and enhance the pre-existing aims, objectives and targets of the Plans and Programmes as follows:

- **UN Strategic Plan for Biodiversity 2011-2020** (including Aichi Biodiversity Targets) – includes strategic goals to reduce pressures on biodiversity and safeguard ecosystems, which are supported by the proposal to prevent litter and flytipped materials entering the environment.

- **UN Sustainable Development Goal 3** – seeks to ensure healthy lives and promote well-being for all at all ages, and **UN Sustainable Development Goal 11** – seeks to make cities and human settlements inclusive, safe, resilient and sustainable. The prevention and improved management of litter and flytipping would support both of these goals in improving the environment for human habitation.

- **UN Sustainable Development Goal 14** – the prevention and improved management of litter and flytipped materials is in line with efforts around UN Sustainable Development Goal 14 relating to conservation and sustainable use of oceanic and marine resources.

- **UN Sustainable Development Goal 15** – relates to conservation, restoration and sustainable use of terrestrial ecosystems, and halting and reversing land degradation and biodiversity loss. The prevention of litter and flytipped materials entering the environment, particularly plastic degradation products, would support the conservation of terrestrial ecosystems.

- EU Water Framework Directive (2000); Water Environment and Water Services (Scotland) Act, 2003; The River Basin Management Plan for the Scotland River Basin District (2015 – 2027) – each seek to protect the water environment including groundwater, surface water and wetlands. Proposals in the strategy aimed at preventing litter and flytipping entering the environment and reducing associated levels of pollution support the aims to protect the water environment and improve water quality.

- **The Environmental Protection Act (1990)** – seeks to improve resource use and environmental conditions through the control of pollution from waste management across the UK to protect air, water and land. This aligns closely with the aims of the strategy to reduce levels of litter and flytipping and associated pollution.

- **The Climate Change (Scotland) Act (2009)** and **The Marine Litter Strategy for Scotland (2014)** – both emphasise the need for a decrease in terrestrial and marine pollution and litter, and for greater consideration and respect for the Scottish environment, which is a key objective of the National Litter and Flytipping strategy.

- **The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019** – sets targets for the reduction of greenhouse gases emissions towards a legally binding net-zero carbon target by 2045. There is potential for proposals in the strategy for the optimisation of services and infrastructure to unduly increase carbon emissions associated with transport or waste management options, however, the aims of the strategy to prevent litter and flytipping are in line with

targets to reduce carbon emissions through extending the value of material resources.

- **Toward a Litter free Scotland – The National Litter Strategy (Scotland) (2014)** – introduced actions to reduce levels of litter and flytipping in Scotland and improve the management of these materials. The National Litter and Flytipping strategy is fully aligned with these objectives and following a review of the National Litter Strategy is seeking to develop further actions for more effective measures to prevent littering and develop a more targeted approach to reduce flytipping.

- **The Scottish Biodiversity Strategy (2004/2013)** – calls for the imperative need to continuously improve the health of ecosystems and natural habitats within Scotland, which would be supported by the aims of the strategy to prevent litter and flytipped materials entering the environment.

- **The Scottish Government Circular Economy Strategy (2016)** – the improved management of litter and flytipped materials supports this strategy in promoting the need for more responsible, sustainable resource use and greater respect for material assets,

It is predicted that the proposals in the new National Litter and Flytipping strategy would generally not result in conflict between the programmes highlighted above (and those identified in Sections 4.1-9.1) but would in most instances compliment the aims and aspirations of these programmes.

In addition, it is considered that the new National Litter and Flytipping strategy is closely aligned with the objectives of the **European Union, Single Use Plastics Directive 2019 (SUP Directive),** which draws attention to the significant negative environmental, health and economic impact of littered products, and **The Deposit and Return Scheme for Scotland Regulations 2020 (DRS Regulations)**, which promotes an increase in recycling of materials and a change in people's attitudes to recycling and littering. It is anticipated that proposals in the new National Litter and Flytipping strategy would work

in tandem with both the SUP Directive and DRS Regulations, particularly in relation to commonly littered plastics and packaging materials. which should enhance the cumulative positive effects for the environment.

11. Assessment Conclusions and Recommendations

This section outlines the headline findings of the strategic environmental assessment. It summarises the anticipated environmental effects of the proposals in the new National Litter and Flytipping strategy before recommending proposals for monitoring the impact of the proposed changes.

The next stage will involve the launch of a public consultation on proposals. This section concludes by providing information to the public on how to share their thoughts and views on the proposals in the new National Litter and Flytipping strategy.

11.1 What are the environmental effects of the proposed NLFS?

Subject to the practical implementation of what are recognised to be high level aims, objectives and actions for preventing litter and flytipping, the proposals in the new National Litter and Flytipping strategy have the potential to produce positive environmental effects across all impact categories assessed:

- biodiversity, flora and fauna;

- human health;

- water;

- climatic factors;

- material assets; and

- landscape and visual impacts.

It is anticipated that the strategy proposals will assist in preventing the presence of litter and flytipped material, thus helping to break the link between the adverse effects of these wastes on each of the environmental topics. Where incidents of litter and

flytipping do occur the proposals are also expected to limit the duration that uncontrolled waste is present in the environment and improve the onward management of these materials, which is considered to be particularly beneficial to material assets and may also support a reduction in carbon emissions.

The following potential measures are recommended to support and enhance the wider aims to prevent or improve management of litter and flytipped materials:

- Improved consistency in data collection between duty bodies should be encouraged and informed through guidance. Data reporting should be made clear and simple to users to maximise reporting rates.

- Improving shared access to information on enforcement and prosecutions for littering and flytipping may assist in deterring repeat offenders who might cross local boundaries. Enforcement levels could also be analysed against flytipping levels per local authorities/relevant organisations to find gaps or shortcomings.

- Whilst incorporating information on flytipping into a national database would be beneficial, efforts must be made to ensure that reporting is consistent and comprehensive. This has not been the case for Waste Data Flow where mandatory data reporting has been inconsistent and incomplete.

- Consider the use of technology to streamline and facilitate the reporting of data on litter and flytipping to determine how it can improve reporting by local authorities and landowners.

- Consider increasing the prominence of enforcement in nudging behavioural change, such as emphasising the consequences of failing to pay a fixed penalty notice and the level of potential fines associated with prosecution (i.e. up to £2,500 for littering and up to £40,000 for flytipping).

- Provide reminders on the availability of waste recycling facilities, including the option that using recycling facilities at home may provide better outcomes for waste material rather than littering.

11.2 Proposals for Monitoring

Section 19 of the Environmental Assessment (Scotland) Act 2005 requires the Responsible Authority to monitor significant environmental effects of the implementation of the Plan. The Responsible Authority will be the Scottish Government.

The SEA Screening and Scoping Report for the new National Litter and Flytipping strategy, identified the need, where possible, to make use of existing data sources and indicators to minimise requirements for additional data collection. The SEA Screening and Scoping Report also identified that the proposals have the potential to achieve the following aspects, which may support the measures to monitor the effectiveness of the strategy implementation:

- reduce the volume of waste created;

- increase the volume of materials entering recycling;

- divert materials from landfill;

- reduce the amount of waste entering Scotland's rivers, lochs and seas;

- improve local environments and neighbourhoods;

- encourage wider behaviour change around materials.

In order to ensure the intended benefits of the proposals in the new National Litter and Flytipping strategy are being realised, the following monitoring framework is proposed:

- Scotland's performance against the waste hierarchy is reported annually, and improvements in reducing landfill waste and increasing utilisation of waste are regularly monitored and reported. This could be used to evaluate the level of litter and flytipping that has been prevented or the quantity of these materials diverted from landfill in to recycling routes.

- Zero Waste Scotland periodically conducts waste studies to determine the composition of Scotland's waste. Zero Waste Scotland and the Scottish

Government are considering the timing and scope of these studies to support effective monitoring of the proposed measures and ensure the strategy aims are being achieved.

- Litter and beach clean-up data collected in Scotland by organisations like Keep Scotland Beautiful and the Marine Conservation Society can be used to monitor changes in observable litter following implementation of the proposals to prevent litter and flytipping.

- WasteDataFlow (WDF) and FlyMapper are national databases that include information on incidents and composition of flytipping. WDF is a mandatory reporting requirement for local authorities. Dumb Dumpers is an additional platform available for members of the public to report incidents of flytipping to Zero Waste Scotland[181]. These could be used to monitor any changes brought about by implementation of the proposals for flytipping. However, the Flymapper system has not been adopted universally by authorities and differences in reporting of incidents for both FlyMapper and WDF means that data can be incomplete, which complicates interpretation of the information. Proposals in the strategy to improve the consistency of reporting should provide the basis for ensuring that these databases can be used as suitable tools to monitor the effectiveness of other proposals in the strategy to prevent flytipping.

- Records of enforcement notices, including issuing of fixed penalty fines and prosecutions for littering and flytipping, may be used to monitor the effectiveness of the proposals for enforcement, which would improve the current understanding of what works at what doesn't and how to make best use of legislative powers.

The combination of above datasets, along with increased sharing of information and consistency of reporting, will help determine whether there has been an improvement in

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[181] https://www.zerowastescotland.org.uk/DumbDumpers

the prevention of litter and flytipping entering the environment, and facilitate the implementation and monitoring of effective policy interventions.

11.3 Next Steps

Public views are now sought on the proposals for the prevention of litter and flytipping in this Environmental Report. We would welcome your views on any aspect of this Environmental Report. We are particularly interested to receive your response to the following questions:

1. a) Do you agree that the Environmental Report sets out a reasonable description of the current baseline and the business as usual scenario for littering and for flytipping?

   b) Are there any additional sources that should be considered for the baseline analysis?

2. a) Do you agree that the Environmental Report has correctly identified the likely significant effects of the proposals to prevent and improve management of littering and flytipping in Scotland?

   b) If relevant, please indicate the basis for any alternative significant effects.

3. a) Do you agree with the recommendations for mitigation and enhancement of the environmental effects set out in the Environmental Report?

   b) Please indicate any alternative recommendations you would suggest, and why?

4. a) Do you agree with the proposed arrangements for monitoring the significant effects of the proposals in the National Litter and Flytipping strategy?

   b) Please indicate any further measures for monitoring you would propose.

The consultation runs until 31 March 2022. Comments on the proposals in new National Litter and Flytipping strategy and the Environmental Report can be submitted online on at https://consult.gov.scot/environment-forestry/national-litter-and-flytipping-strategy

Following the conclusion of the consultation period, the responses received will be analysed and reported. Key messages from respondents, including those of the various stakeholder groups, will be highlighted and the findings of the analysis will be taken into account in the adoption of the proposals in new National Litter and Flytipping strategy.

Upon implementation of any of the proposals to prevent littering and flytipping, a Post-Adoption Statement will be prepared. This Statement will reflect on the findings of the SEA assessment and the views expressed in the consultation, and outline how the issues raised have been considered in the finalisation of the National Litter and Flytipping Strategy.

Appendix A – Addressing Responses from Consultative Authorities

Ref	Consultation Response	Commentary / action taken	Relevant location in Environmental Report
Scottish Environment Protection Agency (SEPA)			
SEPA 1	SEPA recommends that the inclusion of reference to flytipping as well as litter under the scoping justifications for each environmental topic would help to demonstrate that potential effects for both aspects have been fully considered when determining the scope of the assessment.	The section on SEA topics scoping and justification has been updated to ensure references to both litter and flytipping are included in the commentary for each of the environmental topics.	Section 3.2 Scope of the assessment, Table 3-1
SEPA 2	SEPA considers that while it is content for the topic of soil to be scoped out it recommends that there is further clarification as to the reasoning for this, i.e. to include reference to terrestrial as well as marine effects.	In the Scoping Report the following justification was provided as the basis for scoping out soil as a topic for assessment: *"The presence of litter and flytipping is not considered to result in*	Section 3.2 Scope of the assessment, Table 3-1

Ref	Consultation Response	Commentary / action taken	Relevant location in Environmental Report
		significant morphological and/or physiological changes to seabed strata and/or bottom sediments." The decision to scope out soil as a topic for assessment is considered to be appropriate for this SEA, however, it is recognised that the above justification needs to include reference to the potential for effects of the proposals on the terrestrial (land-based) soil environment. The justification in the Environmental Report has been updated to provide further clarification of the reasons for scoping out Soil as a topic, with the	

Ref	Consultation Response	Commentary / action taken	Relevant location in Environmental Report
		following text added to Table 3-1 SEA topics scoping and justification: "*The presence of litter and flytipping may have adverse impacts on the physical and chemical structure of land-based soil systems, however, it is considered that the effects on soil are closely associated to the related effects on plants and animals, including soil ecosystems, and the net effects are captured in other environmental topics, particularly biodiversity, and to some extent water, landscape and human health. Reference to the effects on soil are highlighted in the scoped-in topic sections where relevant.*	

Ref	Consultation Response	Commentary / action taken	Relevant location in Environmental Report
		The presence of litter and flytipping is not considered to result in significant morphological and/or physiological changes to seabed strata and/or bottom sediments." This approach is considered to avoid repetition of the linked effects for soil and other environmental topics, whilst also accounting for potentially significant effects of the strategy proposals on the soil environment.	
SEPA 3	SEPA considers that discussion on flytipping is light in comparison with that on litter and suggests that it would be helpful for the Environmental Report to set the reasoning for this out in more detail.	It is acknowledged that reference to flytipping may be limited in the Scoping Report. The Environmental Report includes further consideration of the information available on	3.8 Summary and Overview of Difficulties Encountered 4.2 to 9.2: Baseline

Ref	Consultation Response	Commentary / action taken	Relevant location in Environmental Report
	This would help to demonstrate that both litter and flytipping have been addressed to the full extent that the evidence allows. SEPA suggests that the baseline context would benefit from a more detailed analysis of flytipping figures and it would be helpful to include some explanation regarding the limitations on current data for flytipping quantities.	flytipping in the assessment of effects for each environmental topic, beyond that included in the Scoping Report. Where possible, this highlights sources of information and data relevant to flytipping, including issues with the availability and consistency of available data.	Characteristics for the Environmental Topics 4.3 to 9.3: Consideration of likely significant effects for the Environmental Topics
SEPA 4	SEPA considers that discussion in the SEA Scoping Report with regards to Human Health appears to combine / confuse two separate issues i.e. the issue of "sharp material" is quite different to the issue of exposure to asbestos. SEPA suggests that it	The Environmental Report reflects the information available to carry out an assessment of the effects on human health, which has covered a variety of different aspects associated with risks to health from physical	5. Human Health

Ref	Consultation Response	Commentary / action taken	Relevant location in Environmental Report
	would be helpful to deal with these issues separately in the SEA.	hazards and mental health/wellbeing.	
SEPA 5	SEPA highlights that the timescales for consultation on the National Litter and Flytipping Strategy differs from that for the SEA Environmental Report. SEPA has requested clarification on the reasons for this approach.	The point regarding different time periods for consultation is acknowledged. It is now confirmed that the consultation on the National Litter and Flytipping Strategy and the SEA Environmental Report will be held at the same time and will be of equal duration (a minimum of 12 weeks).	11.3 Next Steps
NatureScot			
NatureScot1	NatureScot comments that it is happy with the SEA Criteria for the assessment methodology set out in the SEA Scoping Report but suggests that the wording is amended for clarity and	The points relating to clarity and consistency are acknowledged. The relevant section in the Environmental Report has been updated to provide a more consistent approach to	3.4 Significant Environmental Effects

4.3 to 9.3: Consideration of likely significant |

Ref	Consultation Response	Commentary / action taken	Relevant location in Environmental Report
	consistency. In particular, NatureScot highlights that there is reference to "Answering the assessment questions…", so suggests either rewording the SEA criteria to be presented as a set of questions, or alternatively, an additional column could be added with the questions to be answered for each of the SEA criteria.	the use of wording, which removes reference to 'SEA Questions' but retains 'SEA Criteria'. Consideration was given to developing a series of questions related to the SEA Criteria presented in the Scoping Report but it was felt that this would not necessarily add to the assessment of effects for each environmental topic. The intention behind the stated criteria was judged to be sufficiently clear and comprehensive in terms of the aims for each environmental topic, which provides the basis for assessing the effects of the strategy proposals.	effects for the Environmental Topics

Ref	Consultation Response	Commentary / action taken	Relevant location in Environmental Report
NatureScot2	NatureScot requests further clarification on what is meant by the statement '*The assessment has adopted a primary tier to explore the potential for significant primary environmental effects...*'	We can confirm that the Environmental Report has considered the objectives and aims (primary tier) included in the proposals for each of the four strategy themes, along with an assessment of the proposed actions (secondary tier) associated with these strategy themes. References to 'primary tier' and 'primary environmental effects' have been removed, with the use of the terms: Aims, Objectives and Actions reflecting the approach used in the Environmental Report.	3.4 Significant Environmental Effects 4.3 to 9.3: Consideration of likely significant effects for the Environmental Topics 10.1 Compatibility assessment of aims and objectives for the NLFS
NatureScot3	NatureScot considers that litter and flytipping could	In the Scoping Report the following justification	Section 3.2 Scope of the

Ref	Consultation Response	Commentary / action taken	Relevant location in Environmental Report
	have impacts on soil and recommends that soil is scoped into the assessment, or further clarification is given as to why effects are unlikely to be significant on this receptor in terrestrial environments as well as aquatic.	was provided as the basis for scoping out soil as a topic for assessment: *"The presence of litter and flytipping is not considered to result in significant morphological and/or physiological changes to seabed strata and/or bottom sediments."* The decision to scope out soil as a topic for assessment is considered to be appropriate for this SEA, however, it is recognised that the above justification needs to include reference to the potential for effects of the proposals on the terrestrial (land-based)	assessment, Table 3-1

Ref	Consultation Response	Commentary / action taken	Relevant location in Environmental Report
		soil environment. The justification in the Environmental Report has been updated to provide further clarification of the reasons for scoping out Soil as a topic, with the following text added to Table 3-1 SEA topics scoping and justification: "*The presence of litter and flytipping may have adverse impacts on the physical and chemical structure of land-based soil systems, however, it is considered that the effects on soil are closely associated to the related effects on plants and animals, including soil ecosystems, and the net effects are captured in other environmental*	

Ref	Consultation Response	Commentary / action taken	Relevant location in Environmental Report
		topics, particularly biodiversity, and to some extent water, landscape and human health. Reference to the effects on soil are highlighted in the scoped-in topic sections where relevant. *The presence of litter and flytipping is not considered to result in significant morphological and/or physiological changes to seabed strata and/or bottom sediments.."* This approach is considered to avoid repetition of the linked effects for soil and other environmental topics, whilst also accounting for potentially significant effects of the strategy	

Ref	Consultation Response	Commentary / action taken	Relevant location in Environmental Report
		proposals on the soil environment.	
NatureScot4	NatureScot acknowledges that while there is less evidence on the effects of litter and flytipping on terrestrial biodiversity than compared to marine biodiversity, it would be useful for the SEA to explore terrestrial impacts on biodiversity, even if this is based on anecdotal evidence.	It is confirmed that the Environmental Report has considered information available to carry out an assessment of the effects on both marine and terrestrial biodiversity.	3. Biodiversity, flora and fauna
Historic Environment Scotland (HES)			
HES1	HES is content with the proposed 8 week consultation period for the SEA Environmental Report but recommends that the consultation period for the draft National Litter and Flytipping Strategy document and its	The point regarding different time periods for consultation is acknowledged. It is now confirmed that the consultation on the National Litter and Flytipping Strategy and the SEA Environmental Report will be held at the	11.3 Next Steps

Ref	Consultation Response	Commentary / action taken	Relevant location in Environmental Report
	assessment should be the same length of time (currently indicated to be 12 weeks).	same time and will be of equal duration (a minimum of 12 weeks).	

Appendix B – SEA Compliance Checklist

Environmental Report Requirements	
Relevant Sections of the Environmental Assessment Act	**Section(s) of This Report**
14 (2) The report shall identify, describe and evaluate the likely significant effects on the environment of implementing—	
(a) the proposals in the plan or programme; and	See sections: 4.3 Biodiversity, Flora and Fauna: Consideration of likely significant environmental effects 5.3 Human Health: Consideration of likely significant environmental effects 6.3 Water: Consideration of likely significant environmental effects 7.3 Climatic Factors: Consideration of likely significant environmental effects 8.3 Material assets: Consideration of likely significant environmental effects 9.3 Landscape and Visual Impacts: Consideration of likely significant environmental effects

Environmental Report Requirements	
Relevant Sections of the Environmental Assessment Act	**Section(s) of This Report**
(b) reasonable alternatives to the plan or programme.	See section: 2.3 Consideration of Reasonable Alternatives
14 (3) The report shall include such of the information specified in schedule 3 as may reasonably be required.	
Information referred to in schedule 3	
1. An outline of the contents and main objectives of the plan or programme, and of its relationship (if any) with other qualifying plans and programmes.	See sections: 1.1 Background to the National Litter and Flytipping Strategy (NLFS) 1.2 Background to Strategic Environmental Assessment 1.3 Purpose of Environmental Report 1.4 Environmental Report Structure 2. The National Litter and Flytipping Strategy 2.1 Overview and aims (of the NLFS) 2.2 The New Strategy.

Environmental Report Requirements	
Relevant Sections of the Environmental Assessment Act	**Section(s) of This Report**
	2.3 Consideration of Reasonable Alternatives Sections 4.1, 5.1, 6.1, 7.1, 8.1 and 9.1 which relate for each topic to the Relationship with other Plans, Programmes and Strategies and Environmental Objectives
2. The relevant aspects of the current state of the environment; and the likely evolution thereof without implementation of the plan or programme.	See sections: 4.2 Biodiversity, Flora and Fauna: Baseline Characteristics 5.2 Human Health: Baseline Characteristics 6.2 Water: Baseline Characteristics 7.2 Climatic Factors Baseline Characteristics 8.2 Material assets: Baseline Characteristics 9.2 Landscape and Visual Impacts; Baseline Characteristics
3. The environmental characteristics of areas likely to be significantly affected.	See sections:

Environmental Report Requirements	
Relevant Sections of the Environmental Assessment Act	**Section(s) of This Report**
	4.2 Biodiversity, Flora and Fauna: Baseline Characteristics 5.2 Human Health: Baseline Characteristics 6.2 Water: Baseline Characteristics 7.2 Climatic Factors Baseline Characteristics 8.2 Material assets: Baseline Characteristics 9.2 Landscape and Visual Impacts; Baseline Characteristics
4. Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Council Directive 79/409/EEC on the conservation of wild birds and Council Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna (as last amended by Council Directive 97/62/EC).	See sections: 4.1 Biodiversity, Flora and Fauna: Relationship with other Plans, Programmes and Strategies and Environmental Objectives 4.2 Biodiversity, Flora and Fauna: Baseline Characteristics 5.1 Human Health: Relationship with other Plans, Programmes and Strategies and Environmental Objectives

Environmental Report Requirements	
Relevant Sections of the Environmental Assessment Act	**Section(s) of This Report**
	5.2 Human Health: Baseline Characteristics
	6.1 Water: Relationship with other Plans, Programmes and Strategies and Environmental Objectives
	6.2 Water: Baseline Characteristics
	7.1 Climatic Factors: Relationship with other Plans, Programmes and Strategies and Environmental Objectives
	7.2 Climatic Factors Baseline Characteristics
	8.1 Material assets: Relationship with other Plans, Programmes and Strategies and Environmental Objectives
	8.2 Material assets: Baseline Characteristics
	9.1 Landscape and Visual Impacts: Relationship with other Plans, Programmes and Strategies and Environmental Objectives

Environmental Report Requirements	
Relevant Sections of the Environmental Assessment Act	**Section(s) of This Report**
	9.2 Landscape and Visual Impacts; Baseline Characteristics
5. The environmental protection objectives, established at international, Community or Member State level, which are relevant; and the way those objectives and any environmental considerations have been taken into account during its preparation.	See sections: 4.1 Biodiversity, Flora and Fauna: Relationship with other Plans, Programmes and Strategies and Environmental Objectives 5.1 Human Health: Relationship with other Plans, Programmes and Strategies and Environmental Objectives 6.1 Water: Relationship with other Plans, Programmes and Strategies and Environmental Objectives 7.1 Climatic Factors: Relationship with other Plans, Programmes and Strategies and Environmental Objectives 8.1 Material assets: Relationship with other Plans, Programmes and Strategies and Environmental Objectives 9.1 Landscape and Visual Impacts: Relationship with other Plans,

Environmental Report Requirements	
Relevant Sections of the Environmental Assessment Act	**Section(s) of This Report**
	Programmes and Strategies and Environmental Objectives
6. The likely significant effects on the environment, including— a) on issues such as - i. biodiversity and natural heritage; ii. population; iii. human health; iv. fauna; v. flora; vi. soil; vii. water; viii. air; ix. climatic factors; x. material assets; xi. cultural heritage and historic environment, including architectural and archaeological heritage; xii. landscape; xiii. the inter-relationship between the issues referred to in heads (i) to (xii). b) short, medium and long-term effects. c) permanent and temporary effects. d) positive and negative effects.	See sections: Table 3-1 and 4 Biodiversity, Flora and Fauna 5 Human Health 6 Water 7 Climatic Factors 8 Material assets 9 Landscape and Visual Impacts

Environmental Report Requirements	
Relevant Sections of the Environmental Assessment Act	**Section(s) of This Report**
e) secondary, cumulative and synergistic effects.	
7. The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the marine spatial plan or programme.	See sections: 4.3 Biodiversity, Flora and Fauna: Consideration of likely significant environmental effects 5.3 Human Health: Consideration of likely significant environmental effects 6.3 Water: Consideration of likely significant environmental effects 7.3 Climatic Factors: Consideration of likely significant environmental effects 8.3 Material assets: Consideration of likely significant environmental effects 9.3 Landscape and Visual Impacts: Consideration of likely significant environmental effects
8. An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of	See Section 3: The approach to the assessment

Environmental Report Requirements	
Relevant Sections of the Environmental Assessment Act	Section(s) of This Report
expertise) encountered in compiling the required information.	
9. A description of the measures envisaged concerning monitoring in accordance with section 19.	See section 11.2: Proposals for monitoring
10. A non-technical summary	See page 2

Appendix C – Aims, Objectives and Actions for Litter

Litter Strategy	
Behaviour Change	
Aim	Improve the consistency and nature of our communications so people have greater awareness and understanding of their responsibility in preventing litter and motivate people to behave responsibly.
Objectives	Understand litter perceptions and behaviour to allow targeted approaches to be developed.
	Develop and adopt a shared approach between Scottish Government, Local Authorities, public agencies and the third section, to litter prevention and behaviour change across Scotland.
Actions	Conduct research to understand the full range of influences on littering behaviours across various contexts and audience groups.
	Develop a sustained, evidence based, national anti-littering campaign and deliver this consistently and collaboratively across Scotland.
Services and Infrastructure	
Aim	Scotland's services and infrastructure are fit for purpose and prioritise action and innovation that proactively prevents litter and supports a circular economy.
Objectives	Encourage a shared approach to services that will effectively support litter prevention.
	Empower community groups to take action.

Litter Strategy	
Actions	Explore the use of flexible and innovative interventions to support litter prevention and removal.
	Encourage collaboration and share best practice between local authorities, national parks and other duty bodies to optimise services.
	Create a national litter hub to provide information and advice to community groups.
	Increase the use of citizen science to support data on levels and composition of litter.
	Carry out a review of the development, implementation and progress of the Code of Practice for Litter and Refuse (2018).
Enforcement	
Aim	There is a strong and consistent enforcement model across Scotland that is fit for purpose and acts as a proportional deterrent and effectively stops people from littering.
Objectives	Develop an effective enforcement model.
	Improve the consistency of enforcement practices.
Actions	Conduct an evidence review of barriers to enforcement of litter offences.
	Explore raising current fixed penalty notice amounts for a litter offence.
	Develop guidance on enforcement best practices and seek agreement for this to be voluntarily adopted by Local Authorities and National Parks.
	Review current powers for enforcing littering offences.

Litter Strategy	
	Explore potential alternative penalties to monetary fixed penalties for a litter offence.
	Explore using civil penalties in relation to littering offences.
	Create fixed penalties for the registered keeper of the vehicle for littering from vehicles.

Data and Research	
Aim	We understand the behaviours, attitudes and drivers behind littering and develop an evidence base of litter data that can facilitate design, implementation and monitoring of effective policy interventions.
Objectives	Improve our understanding of the sources, levels and composition of litter.
Actions	Review the available litter data and approach to data collection across Scotland and reach an agreement between stakeholders on a common approach to collecting data.
	Identify commonly littered items and litter hotspots and work with Local Authorities and other duty bodies to develop targeted interventions to reduce litter.

Appendix D – Aims, Objectives and Actions for Flytipping

Flytipping Strategy	
Behaviour Change	
Aim	Improve flytipping messaging to ensure individuals are confident in their understanding of their role in disposing of waste appropriately and those who deliberately flytip are motivated and enabled to change their behaviour.
Objectives	Understand the flytipping behaviours to allow targeted approaches to be developed.
	Develop and adopt a shared approach between Scottish Government, Local Authorities, public agencies and the third sector to flytipping behaviour change across Scotland.
Actions	Conduct research to understand the full range of influences on flytipping behaviour across various contexts and audience groups and use this to design effective policy interventions.
	Develop a sustained, evidence based, national anti-flytipping behaviour change campaign and deliver this consistently and collaboratively across Scotland.
	Develop social media campaigns and guidance targeted at waste carriers and other businesses.
Services and Infrastructure	
Aim	There is a resilient national framework which provides consistent and joined up services that are effective for both preventing flytipping where possible and tackling it effectively where it does occur.
Objectives	Support development of consistent, innovative and effective waste services and infrastructure.

Flytipping Strategy	
	To provide support to private landowners and land managers that experience flytipping on their land.
Actions	Support and encourage information and resource sharing between Local Authorities, waste sector, SEPA and other organisations through the flytipping forum.
	Explore the role of technology in assisting private landowners and land managers deter flytipping on their land.
	Produce updated guidance for private landowners on dealing with flytipping.
	Explore alternative financial support mechanisms available to private landowners.
	Explore how to support and encourage more reuse and repair of products that are commonly flytipped.
	Explore flexible approach to waste disposal, with a view to trial interventions.
	Carry out research to create a single information point on the disposal of commonly flytipped materials.
Enforcement	
Aim	A strong, consistent enforcement model that is fit for purpose and acts as an effective deterrent for flytipping behaviour.
Objectives	Develop an effective enforcement model.
	Improve consistency of enforcement practices across Scotland.
Actions	Conduct an evidence review of barriers to enforcement.

Flytipping Strategy	
	Develop guidance on enforcement best practices, including on private land and seek for this to be voluntarily adopted by statutory bodies.
	Initially raise current fixed penalties issued by Police, Loch Lomond and Trossachs National Park for flytipping to the maximum (£500) and explore possibility of raising the maximum further at a later date.
	Explore raising current fixed penalties that can be issue by SEPA for flytipping offences to the maximum (£1000) and explore possibility of raising the maximum further at a later date.
	Review existing legislative powers for enforcing flytipping offences.
	Explore the ability to remove, suspend or deny Waste Carrier's Registration to individuals/companies fined for flytipping.
	Support information sharing on flytipping incidents and offenders between Local Authorities, Police and National Parks.
	Create powers to enable seizure of vehicles by SEPA used in flytipping.
	Explore the possibility and benefits of using civil penalties to enforce flytipping offences.
Data and Research	
Aim	Understand the behaviours and drivers behind flytipping and collect data and establish a monitoring program which provides guidance for policy and evaluates actions undertaken.
Objectives	Improve our understanding of the sources, levels and composition of flytipping.
Actions	Create a data sharing agreement and work with Local Authorities, other duty bodies, National Parks, private landowners and land managers,

Flytipping Strategy	
	businesses and the third sector to improve consistency of data collected in Scotland.
	Explore and seek to support the use of appropriate technology in data collection.
	Work with stakeholders to improve consistency of data collection in Scotland.
	Explore incorporating data into a national database.
	Review the Dumb Dumpers system and ensure that a fit for purpose mechanism for citizen reporting of flytipping exists in Scotland.
	Explore the development of a live picture of flytipping across Scotland.