Explanatory Memorandum to The Waste Separation Requirements (Wales) (Amendment) Regulations 2026

This Explanatory Memorandum has been prepared by the Local Government, Housing, Climate Change and Rural Affairs Group, and is laid before Senedd Cymru in conjunction with the above subordinate legislation and in accordance with Standing Order 27.1

Cabinet Secretary's Declaration

In my view, this Explanatory Memorandum gives a fair and reasonable view of the expected impact of The Waste Separation Requirements (Wales) (Amendment) Regulations 2026. I am satisfied that the benefits justify the likely costs.

Huw Irranca-Davies MS
Deputy First Minister & Cabinet Secretary for Climate Change and Rural Affairs
27 January 2026

PART 1

1. Description

1.1 The Waste Separation Requirements (Wales) Regulations 2023 ("the 2023 Regulations") came into force on 6 April 2024 and include, amongst others, a statutory duty on occupiers of non-domestic premises in Wales (including businesses, the public sector and third sector) to present **unsold** small waste electrical and electronic equipment ("sWEEE") separately for collection and onward recycling.

1.2 The Waste Separation Requirements (Wales) (Amendment) Regulations 2026 ("the amending Regulations") will amend the 2023 Regulations to require all non-domestic premises to keep their sWEEE (not just *unsold* sWEEE) separate from all other waste streams and arrange for it to be collected by a licensed waste carrier or take it to a suitable drop-off location for recycling. It will create a corresponding obligation on waste collectors that collect sWEEE to do so separately from other materials, not to subsequently mix sWEEE and to send it for recycling.

2. Matters of special interest to the Legislation, Justice and Constitution Committee

2.1 To aid scrutiny of these Regulations, a draft of the revised "Separate Collection of Waste Materials for Recycling – A Code of Practice for Wales" has been laid for information purposes.

3. Legislative background

3.1 Part 4 of the Environment (Wales) Act 2016 inserted sections 45AA and 45AB into the Environmental Protection Act 1990 ("the 1990 Act"). Section 45AA contains regulation-making powers for the Welsh Ministers to create 'separation requirements' relating to the duties contained in section 45AA(1), (2) and (4). Section 45AA(10) allows the Welsh Ministers to create exceptions to the duties in section 45AA(1), (2) and (4).

3.2 Sections 36(2), 39, 42, 45 and 52 to 55 of the Regulatory Enforcement and Sanctions Act 2008 ("RESA 2008") give the Welsh Ministers power to create a civil sanctions regime in respect of offences contained in enactments set out in Schedule 6 to the RESA 2008. This includes offences under Part 2 of the 1990 Act, which includes section 45AA.

3.3 Section 2 of the Pollution Prevention and Control Act 1999 ("the 1999 Act") gives power to the Welsh Ministers to make regulations that may regulate activities which, among other things, are capable of causing any environmental pollution. The 1999 Act originally granted these powers to the Secretary of State but these powers, so far as they are exercisable in relation to Wales, were transferred first to the National Assembly for Wales, pursuant to the National Assembly for Wales (Transfer of

Functions) Order 2005, and now rest with the Welsh Ministers pursuant to paragraph 30 of Schedule 11 to the Government of Wales Act 2006.

3.4 The power contained in RESA 2008 is an order-making power, whilst the powers in the 1990 Act and the 1999 Act are regulation-making powers. Section 39 of the Legislation (Wales) Act 2019 provides that where the Welsh Ministers have a power or duty to make subordinate legislation in the form of regulations, rules or an order made by Welsh statutory instrument, they may exercise the power or duty by making the subordinate legislation in any other of those forms by Welsh statutory instrument.

3.5 Regulations made under section 45AA are subject to the affirmative procedure by virtue of section 160A(2) and (5) of the 1990 Act, section 2(8) of the 1999 Act and section 61(2) of RESA 2008. Pursuant to paragraph 2 of Schedule 1A to the Legislation (Wales) Act 2019, reference to the "affirmative procedure" is to be read instead as reference to the Senedd approval procedure referred to in section 37C of that Act.

4. Purpose and intended effect of the legislation

4.1 The 2023 Regulations already require occupiers of non-domestic premises in Wales (including businesses, the public sector and third sector) to present certain specified recyclable materials separately for collection. This includes unsold sWEEE.

4.2 Specifically, the **current** specified recyclable materials for separate presentation are:

- glass;
- plastics and metals, cartons and other fibre-plastic composite packaging of a similar composition;
- paper and card;
- food waste (for premises producing more than 5kg per week);
- **unsold** small waste electrical and electronic equipment;
- unsold textiles.

4.3 The rationale, purpose and benefits of the original 2023 Regulations were consulted on in 2019 and 2022 and are detailed in the Explanatory Memorandum and Regulatory Impact Assessment as published at the time.

4.4 The purpose of the amending Regulations is to capture sWEEE and not just unsold sWEEE. The previous Minister for Climate Change, Julie James MS, stated in a Written Statement issued on 20 July 2023 that the requirement to separate sWEEE would come into force two years after the 6 April 2024 coming into force date. This was to allow sufficient time for businesses and the waste industry to prepare and make any necessary adjustments to practices and procedures to enable the separate presentation, collection and recycling for sWEEE and not just unsold sWEEE.

4.5 From 6 April 2026, in accordance with amendments made by the amending Regulations, the minimum specified recyclable materials for separate presentation will be:

- glass;
- plastics and metals, cartons and other fibre-plastic composite packaging of a similar composition;
- paper and card;
- food waste (for premises producing more than 5kg per week);
- small waste electrical and electronic equipment; and
- unsold textiles.

4.6 Occupiers of non-domestic premises will be required, from 6 April 2026, to keep their sWEEE (not just unsold sWEEE) separate from other waste streams and arrange for it to be collected by a licensed waste carrier or take it to a suitable drop-off location for recycling. It will create a corresponding obligation on waste collectors that collect this material to do so separately from other materials, not to subsequently mix it and to send it for recycling. This requirement will apply to any electrical item less than 50 centimetres on its longest edge.

4.7 The purpose and benefits of the 2023 Regulations are also relevant for the purpose of the amending Regulations (to separate sWEEE and not just unsold sWEEE) - i.e. they will increase the quality and amount of recycling, reduce waste being sent to incineration and landfill and contribute to Wales' ability to reach the commitment to zero waste and net zero carbon emissions by 2050, accelerating progress towards a circular economy. Importantly, the increased capture of valuable materials that can be fed back into the economy will strengthen supply chains and resilience and reduce reliance on the extraction of raw material and associated biodiversity loss.

4.8 The sWEEE requirement is the latest phase of our successful Workplace Recycling reforms, which are anticipated to deliver a modelled cumulative net benefit of £194.6M Net Present Value over 10 years from the combined package of measures.

4.9 The sWEEE element of these reforms is expected to reduce CO2e by 7,437 tonnes, reduce NO2 by 6 tonnes and increase recycling of sWEEE by 37,757 tonnes over 10 years. Part 2 of this Explanatory Memorandum sets out the findings of the Regulatory Impact Assessment (RIA) in more detail. Other wider benefits identified in the RIA (but not included in the RIA NPV calculation) include:

- estimated improvements in non-domestic sWEEE recycling and overall non-domestic municipal waste recycling rates:
    - Non-domestic sWEEE recycling rate increases from 15.6% to 74.6%
    - Overall non-domestic recycling rate increases from 62.9% to 63.3%

- avoidance and reduction in the number of waste fires caused by lithium-ion batteries found in many small electricals; sWEEE items that contain lithium-ion batteries placed in residual waste streams are subject to compaction during the collection process, which is a cause of waste fires. The RIA estimated that the policy could avoid between 2.6 and 15.9 fires per year with a potential saving of between £2.1m and £12.5m per year, assuming an 'average' cost per fire.
- creation of 91 additional green jobs across Wales; this represents a relatively conservative approach and may not reflect the full extent of the jobs that may be created because of the policy. For example, a larger and more reliable supply of sWEEE for dismantling in Wales may lead to WEEE re-processors to increase employment at their sites or to consider investing in additional sites in parts of Wales that are not well served at present.
- opportunity to recover valuable and critical materials that would otherwise be lost; the production of many small electrical items requires the use of precious metals such as gold, silver and platinum and critical raw materials (CRMs). The extraction of precious metals from circuit boards is already taking place in Wales, in facilities like the Royal Mint's, although there is a need for further investment in reprocessing capability to maximise the potential benefits from the extraction of CRMs.
- potential to reduce the escape of poly- and perfluoroalkyl substances (PFAS) into the environment; when small electricals enter the environment, they can leach a wide range of potentially toxic chemicals. The policy is likely to give rise to cheaper and more easily accessible non-domestic sWEEE collections which may reduce any incentive to dispose of waste containing sWEEE irresponsibly and reduce of the amount of PFAS entering the residual waste stream (and especially landfill) through the diversion of sWEEE into recycling.
- mutual reinforcement of Welsh local authorities' efforts to encourage householders to separate domestic sWEEE for recycling.

5. Consultation

5.1 The Workplace Recycling Regulations build on over a decade of engagement with communities and partners. The Welsh Government has engaged with a range of stakeholders on the development of source separation policy dating back to at least 2009 including the:

- 2009 - Towards Zero Waste consultation
- 2013-2014 - Environment Bill White Paper consultation
- 2019-2020 - Consultation on Beyond Recycling, the Circular Economy Strategy for Wales

5.2 Furthermore, we have undertaken consultations in 2019 and 2022 about workplace recycling regulations.

5.3 The 2019 consultation asked for views on proposals on the preferred policy option to increase the quality and quantity of recycling from non-domestic premises through the separate presentation and collection of specified

recyclable waste streams, including the separation of sWEEE. There was general positivity to the proposals. There was also overall positivity in terms of how this would assist Wales in moving forward in managing its resources more effectively.

5.4 In 2022/23 we consulted on the draft code of practice 'Separate Collection of Waste Materials for Recycling – A Code of Practice for Wales' ("the Code"), which provided practical guidance on how to meet the separation requirements in Wales for recyclable waste materials from non-domestic premises, and on proposals for enforcing the proposed regulations. This included consulting on the proposal to initially proceed with the requirement to separate unsold sWEEE initially, with the requirement to separate sWEEE coming into force two years later.

5.5 Most recently, we have undertaken a 12-week consultation which ran from 30 July – 22 October 2025. The purpose of this consultation was to seek views about proposed revisions to the Code, to reflect planned amendments to the 2023 Regulations, through the amending Regulations, to implement the previously consulted upon commitment to bring in a requirement for non-domestic premises to present sWEEE for separate collection by April 2026 and not just unsold sWEEE. The revised code also includes minor updates within the original policy scope to improve clarity and consistency following feedback since implementation of the Workplace Recycling Regulations in April 2024.

5.6 The consultation was drawn to the attention of a wide range of industry stakeholders including local authorities, public bodies and workplace and waste sector representative bodies and regulators.

5.7 In total there were 41 responses. All the proposed amendments to the Code put forward in the consultation were supported by the majority of respondents that expressed an opinion. In particular, 90% of respondents stated they were either very satisfied or somewhat satisfied that it is sufficiently clear within the Code that sWEEE from non-domestic premises will be subject to the separation requirements from April 2026.

5.8 The consultation documents and a summary of the responses are available at Revisions to the Separate Collection of Waste Materials for Recycling: A Code of Practice for Wales | GOV.WALES.

6 PART 2 – REGULATORY IMPACT ASSESSMENT

6.1 This Regulatory Impact Assessment is taken from the 'Regulatory Impact of Options to Increase Workplace Recycling in Wales – Update to include Small Waste Electrical and Electronic Equipment'[1] published April 2025.

6.2 Costs and Benefits

6.2.1 The analysis presented here is primarily based on modelling carried out by Eunomia Research & Consulting Ltd on behalf of the Welsh Government.

6.2.2 The modelling analysed the expected effect of the policy on the waste management behaviour of occupiers of non-domestic premises and the impact the requirements would have on waste management logistics and costs.

6.2.3 In the modelling, some costs are attributed to waste collectors. This category includes local authority collections of waste from non-domestic premises under their duty (under the Environmental Protection Act 1990) to collect commercial waste on request. However, within a properly functioning competitive market, waste collectors (including local authorities) will pass their costs on to the customer (non-domestic property waste producers). Thus, these costs will apply in part to waste producers rather than the waste industry.

6.2.4 The modelling has been carried out using the best available data, including the latest survey of industrial and commercial waste arisings in Wales,[2] the Environment Agency's data on Non-Household WEEE placed on the market and collected for recycling in the UK, compositional data gathered by WRAP and ONS data on the business population of Wales.[3] Key assumptions regarding collection logistics have been tested with other experts and representatives of the waste industry. However, there are a number of areas of uncertainty that should be acknowledged, as follows:

- No Wales-specific data on non-household sWEEE arisings is available.
- Some sWEEE is dual use between households and other types of premises, and may not be fully accounted for in the UK-level data on material placed on the market or collected for recycling.
- Data on non-household sWEEE collected for recycling or as part of mixed waste streams in Wales is very limited, with even the detailed survey of industrial and commercial waste not distinguishing between small and larger WEEE.

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[1] Regulatory impact of options to increase workplace recycling

[2] Natural Resources Wales (2021) *Survey of Industrial and Commercial Waste Generated in Wales 2018*, available here: https://naturalresources.wales/media/693534/survey-of-commerical-and-industrial-waste-generated-in-wales-2018.pdf

[3] Office for National Statistics (2022) *UK Business Counts* available here: https://www.nomisweb.co.uk/sources/ukbc

- Current collection methodologies for sWEEE have been developed in a context where small numbers of non-domestic premises occupiers currently choose to have separate collections. While efforts have been made to understand how waste collectors would respond to increased demand for this service, which would be expected to improve round efficiency, it is possible that new containment and collection models will emerge that would improve on those modelled.
- The value of sWEEE can vary over time and is affected by a number of factors including the market value of its constituent materials, the costs of dismantling sWEEE to access those materials, and the value of producer responsibility payments in any particular year.
- The cost of treating residual waste can also vary over time depending on market conditions and the prevailing rate of Landfill Tax. It is not yet possible to give a reliable estimate of the impact that the inclusion of incineration within the UK Emissions Trading Scheme may have on the cost of sending residual waste in Wales for thermal treatment or the impact that removing some or all sWEEE from that residual waste might have on the cost.

6.2.5 The costs that arise as a result of implementing the policy are presented below.

Environmental Costs and Benefits

6.2.6 For the analysis, a range of environmental costs were modelled, including:

- Emissions of greenhouse gases (expressed as CO2e equivalent)
- Levels of NO2 pollution
- Tonnes of recycling
- Monetised environmental impacts

The costs are shown below.

Table 1: Environmental Impacts, 10 Years

Environmental Factor	Impact of the policy
Tonnes CO_2e	-7,437
Tonnes NO_2	-6
Tonnes recycling	37,757
Monetised Environmental Cost (NPV)	-£1.9m

Landfill Disposals Tax and Fuel Duty

6.2.7 Table 2 shows the modelled estimate of Landfill Disposals Tax revenue as a result of the landfilling of materials and the Fuel Duty under this option.

Table 2: Landfill Disposals Tax and Fuel Duty, 10 Year NPV

	Impact of the policy (£m)
Landfill Disposals Tax and Fuel Duty	-£0.3m

Jobs

6.2.8 The modelling predicts the policy will create an average of 91 new jobs in the waste management sector (both in waste collection and sWEEE reprocessing) across the first 10 years of its operation.

Costs and Benefits to the Main Sectors

6.2.9 The costs to the different sectors are presented in the sections below and summarised in Table 9.

Costs and Benefits to Waste Management Businesses

6.2.10 The waste management industry includes waste collection companies, local authorities that collect waste from non-domestic premises, operators of intermediate storage and treatment facilities such as waste transfer stations and end stage recovery and disposal facilities such as energy from waste facilities and landfill sites.

6.2.11 In a properly functioning, competitive market the costs and costs savings accruing to waste management businesses would be expected to be passed on to the customer (non-domestic waste producers).

6.2.12 The modelling has assumed that the changes resulting from the policy intervention will not result in a change to the way that the waste market allocates costs. Thus, for the purposes of estimating the costs to businesses for this section, it has been assumed that all costs or cost savings to waste management businesses will be passed to their customers (ultimately waste producers).

6.2.13 The costs or costs savings to waste management businesses are included within Table 3, but are assumed in this model to ultimate passed to the waste producer.

6.2.14 Costs include:

- Transitional costs
- On-going administrative costs
- Costs of Waste Collection (Residual and recycling/recovery)
- Landfill Disposals Tax

The benefits include:

- Disposal/Processing of residual waste
- Materials Revenue

6.2.15 The net impact is a cost (£1.6m NPV over 10 years) to waste management businesses compared to the baseline over the appraisal period. However, as noted above, it is anticipated that competitive forces will result in waste management businesses passing much of this cost onto waste producers.

Table 3: Breakdown of Financial Costs to Waste Management Businesses

	Financial costs to waste management businesses of collecting additional sWEEE, £m (NPV)
Infrastructure transitional costs	£0.0m
Transitional and On-going administrative costs	£4.1m
Waste collections (recycling & residual)	£10.4m
Residual waste processing/disposal	-£4.6m
Materials revenue (net of processing)	-£8.0m
Landfill Disposals Tax and Fuel Duty	-£0.3m
NET FINANCIAL COST	**£1.6m**

Infrastructure Transitional Costs and Benefits

6.2.16 The infrastructure transitional costs are the financial costs of upgrading and/or building new waste transfer stations under the options. As the policy does not affect a large tonnage of material, and much of this is expected to be handled through existing infrastructure that is already permitted to receive WEEE, it is not predicted that any significant additional investment in new infrastructure would be required.

Administrative Costs and Benefits

6.2.17 Table 4 shows the administrative costs as a result of the sWEEE policy. The majority (72%) of this cost is accounted for by the requirements for operational changes such as updating collection routes and amending driver timetables, followed by the requirement for new guidelines for employees and / or customers (28%).

Table 4: Administrative Costs to Waste Management Businesses (rounded to nearest £1,000)

Activity	Year 1 (£)	Year 2 (£)	Sum of Years 3 – 10 (£)	10 Year Total (NPV £)
Waste Collection and Processing – Additional sWEEE Policy Costs				
Understanding the policy	3,000	0	0	3,000

Activity	Year 1 (£)	Year 2 (£)	Sum of Years 3 – 10 (£)	10 Year Total (NPV £)
Determining how to implement the policy	1,148,000	0	0	1,148,000
Making operational changes	0	3,022,000	0	2,920,000
Total sWEEE costs	**1,151,000**	**3,022,000**	**0**	**4,071,000**

Costs and Benefits to Waste Producers

6.2.18 As noted above, in a properly functioning market, the costs (and savings) accruing to waste management businesses are passed to their customers in the form of charges to remove waste, subject to competition between service providers. Thus, the costs above would be expected to be incurred by waste producers.

6.2.19 Waste producers may incur additional transitional costs related to:

- Training and awareness
- Modifying internal procedures and guidance
- Implementing a new bin system
- Organising a new collection system

6.2.20 Eunomia assumed that bin systems are reviewed reasonably regularly and, therefore after the second year of the assessment period, any updates to the bins and their collection systems would not be additional to what would have occurred otherwise (i.e. within the baseline).

6.2.21 It has also been assumed that the effort required by employees to place the small amount of sWEEE that arises into a separate bin would be negligible and that the time this action requires would not be significant enough to result in an additional cost.

6.2.22 The transitional costs on waste producers of the policy are presented in Table 5 below, these transitional costs are incurred in the first two years.

Table 5: Forecast Transitional Costs for Waste Producers (rounded to nearest £1,000)

Activity	Year 1 (£)	Year 2 (£)	Sum of Years 3 – 10 (£)	10 Year Total (NPV £)
Waste Producer – Additional sWEEE Costs				
Understanding the policy	4,000	0	0	4,000
Internal Procedures	1,783,000	0	0	1,783,000
Organising New Bin System	0	607,000	0	587,000

Organising New Collections	0	896,000	0	866,000
Total (£)	**1,787,000**	**1,503,000**	**0**	**3,240,000**

6.2.23 To estimate the overall costs or cost savings to waste producers, Eunomia has taken into account the combined net costs of the option. These consist of the costs or savings to waste management businesses and the transitional costs to waste producers, applied to a typical waste producer, based on size of local units (number of employees). The results are shown in Table 6.

Table 6: Weekly Financial and Administrative Cost Impact per local unit of sWEEE collection, relative to the baseline - 2030 (£), (negative values represent a saving)

Size band	Local Unit Size Band (Employees)						
	0-4	**5-9**	**10-19**	**20-49**	**50-99**	**100-249**	**250+**
Additional sWEEE	£0.27	£0.13	£0.06	-£0.29	-£0.62	-£2.40	-£31.59

6.2.24 The transitional costs are estimated, for all waste producers, to be £3.2 million NPV over ten years.

Costs and Benefits to Welsh Government

6.2.25 The costs to the Welsh Government are presented below in Table 7.

6.2.26 The modelling has costed for the Welsh Government to undertake the following tasks:

- Marketing
- Training.

Table 7: Breakdown of Financial Costs to Welsh Government (rounded to nearest £100)

Activity	Year 1 (£)	Year 2 (£)	Sum of Years 3 – 10 (£)	10 Year Total (NPV £)
Welsh Government – Additional sWEEE Costs				
Marketing (requirement to sort sWEEE)	120,000	50,000	0	168,300
Conducting training workshops & organising information campaigns (requirement to sort)	200	0	0	200
Total Cost (£)	**120,200**	**50,000**	**0**	**168,500**

Costs and Benefits to Natural Resources Wales

6.2.27 It is expected that the regulation and enforcement costs already incurred by NRW in implementing the Waste Separation Requirements (Wales) Regulations 2023 will be sufficient to also cover the inclusion of sWEEE, so no additional costs have been assumed.

Costs and Benefits to Local Authorities

6.2.28 There is assumed to be a small cost to local authorities from implementing, changing or operating booking systems at household recycling centres (HRCs), to allow them to accept sWEEE from non-domestic premises. Discussions with WRAP and local authorities indicated that authorities have sufficient reception arrangements in place to enable the small amount of commercial sWEEE to be identified and directed appropriately, and for any necessary checks regarding appointments and waste carrier licenses to be made.

Table 8: Breakdown of Financial Costs to Local Authorities (rounded to nearest £100)

Activity	Year 1 (£)	Year 2 (£)	Sum of Years 3 – 10 (£)	10 Year Total (NPV £)
Local Authority – Additional sWEEE Costs				
Booking systems	134,000	10,000	60,000	210,100

6.2.29 No other costs are assumed and local authority collection of non-domestic waste service should be operated on a full cost recovery basis (though some costs or benefits may be passed to local authorities from waste management companies, depending on which suppliers of commercial waste services businesses decide to use).

Costs and Benefits: Summary Table – 10 Year NPV

6.2.30 Table 9, below, summarises the costs and benefits to the main sectors of the sWEEE proposals. Avoided Landfill Disposals Tax and Fuel Duty are transfer payments and therefore a total cost without these transfers is also presented.

Table 9: Impact of sWEEE Summary Table - 10 Year NPV (rounded to nearest £100,000)

	Additional sWEEE Costs (£m)
Welsh Government	
Transitional costs	£0.2
On-going administrative costs	£0.0
NRW	
Transitional costs	£0.0

	Additional sWEEE Costs (£m)
On-going administrative costs	£0.0
Local Authority	
Transitional costs	£0.0
On-going administrative costs	£0.2
All Waste Producers	
Transitional costs	£3.2
On-going administrative costs	£0.0
Waste Management Businesses	
Infrastructure Transitional costs	£0.0
On-going administrative costs	£4.1
Waste collections (recycling & residual)	£10.4
Residual waste processing/disposal	-£4.6
Materials revenue (net of processing)	-£8.0
Landfill Disposals Tax and Fuel Duty*	-£0.3
Monetised Environmental Costs	
All environmental costs	-£1.9

Total Cost	£3.3
Total Cost (ex LDT and Fuel Duty)**	£3.6

Total Welsh Government	£0.2
Total NRW	£0.0
Total Local Authority	£0.2
Total All Waste Producers	£3.2
Total Waste Management Businesses*	£1.6

Costs in this table attributed in this table to waste management companies are in practice expected to be passed to waste producers. However, for the purposes of this table they are attributed to waste management businesses.

** Landfill Disposals Tax will be directed to Welsh Government and Fuel Duty to UK Government*

*** This calculation excludes taxes, as taxes function simply as transfers between different entities rather than as a net overall cost – an increase in the total Landfill Disposals Tax paid is a cost to Welsh businesses but is an income to the Welsh government and thus neutral within the overall costs and benefits of the system.*

6.3 Other Wider Impacts

6.3.1 In addition to the impacts discussed above, the policy is expected to have a range of wider beneficial impacts. However, after detailed consideration, it was concluded that the impacts were insufficiently certain and/or insufficiently quantifiable to be included within the main cost-benefit analysis. Nevertheless, some of the impacts are potentially significant and merit discussion.

Impact on Recycling Performance

6.3.2 Many of the benefits of the policy arise due to the increase in non-domestic sWEEE recycling that it is expected to deliver – although the increase in recycling rate was not itself a monetizable benefit. The modelling carried out as part of this impact assessment included estimates of the improvement in non-domestic sWEEE recycling and overall non-domestic municipal waste recycling over the appraisal period, in comparison with the baseline position resulting from the introduction of the Workplace Recycling Regulations. The expected changes are:

- Non-domestic sWEEE recycling rate increases from 15.6% to 74.6%
- Overall non-domestic recycling rate increases from 62.9% to 63.3%

Fires from lithium-ion batteries

6.3.3 It is widely reported that WEEE (especially sWEEE items that contain lithium ion batteries) placed in residual waste stream, and thus subject to compaction during the collection process, is a cause of waste fires. There is no consistent method of estimating the proportion of waste fires that are attributable to lithium ion batteries rather than other causes. Different estimates have been made of the number of fires across the UK that are attributable to lithium ion batteries, ranging from 2004 (average for 2014-2019) to 1,2005 (2023) per year. Recent estimates have been higher, but there is no consistent methodology for gathering data on waste fires, making it difficult to determine whether the problem is increasing. It has been estimated that almost two thirds of the lithium ion batteries thrown away by UK adults were embedded in WEEE.6 This would almost exclusively be sWEEE, due to the impracticality of disposing of larger WEEE items in the residual waste stream.

6.3.4 The total economic and environmental cost of waste fires was estimated at £158m in 2021, with an average cost of £786,000. The great majority of costs were found to be economic costs to waste management companies, although 5% were assessed to be environmental costs and 1.5% social costs. The cost of each fire varies depending on the extent of the damage that it causes. Eunomia's 2021 study introduced a categorisation system that grouped fires into four levels of damage costs.

[4] Eunomia Research & Consulting Ltd (2021) *Cutting Lithium-ion Battery Fires in the Waste Industry*. Report for Environmental Services Association. Available at: https://www.circularonline.co.uk/wp-content/uploads/2021/01/Waste-Fires-Caused-by-Li-ion-Batteries_v3.0.pdf
[5] Dennis, P (2024) Over 1,200 battery fires in bin lorries and waste sites last year. *Circular*. Available at: https://www.circularonline.co.uk/news/over-1200-battery-fires-in-bin-lorries-and-waste-sites-last-year/
[6] Dennis, P (2024) Over 1,200 battery fires in bin lorries and waste sites last year. Circular. Available at: https://www.circularonline.co.uk/news/over-1200-battery-fires-in-bin-lorries-and-waste-sites-last-year/

Table 10:Categorisation of Waste Fires

Fire Severity Category	% of Total Fires Estimated	Cost per Fire (£mil)	Annual number of waste fires attributed to Li-ion batteries	Estimated Annual Cost (£mil)
1	0.8%	£3.8	1.7	£6.6
2	5%	£1.8	10.4	£19.0
3	73%	£0.9	147.5	£128.6
4	21%	£0.1	41.8	£3.8
Total			**201**	**£158.0**

6.3.5 The available research does not break down fires by the UK nation in which they occur, the frequency with which the arise in household and non-household waste, or the proportion that occur in residual waste. However:

- if it is assumed that fires are broadly proportionate to population, Wales would experience approximately 4.5% of the UK total, or between 9.2 and 55.6 per year.
- If fires occur principally in residual waste and are as likely (per tonne) in household and non-household waste, then comparing Statistics Wales' figures for residual household waste in 2023/24 (531,839 tonnes) and the 2023 estimate of municipal non-household waste modelled as part of this RIA (825,714 tonnes) would imply that 60.8% of fires would occur in non-household residual waste. This would suggest between 5.6 and 33.8 fires each year arising in non-household waste in Wales, of which two thirds would be attributable to sWEEE.

6.3.6 The policy would significantly reduce the proportion of non-household sWEEE that is placed in the residual waste stream, but it would not eliminate it. It is not clear whether there would be a linear decrease in the incidence of waste fires as a result of this reduction (i.e. fires would reduce in direct proportion to the reduction in sWEEE in the residual waste). However, the policy is expected to result in approximately a 75% decrease in the amount of sWEEE in residual non-household waste. If a linear decrease was to be achieved, and no corresponding reduction in loose battery disposal in residual waste occurred, the policy would avoid between 2.6 and 15.9 fires per year. If it is assumed that each avoided fire has the average costs, this would result in a potential saving of between £2.1m and £12.5m per year.

6.3.7 Whilst these calculations are highly speculative and the range of potential impacts is very wide, it is likely that the policy will have some beneficial impact on the number of waste fires, and that any such benefit may result in quite substantial savings.

Precious Metals and Critical Raw Materials

6.3.8 The production of many small electrical items requires the use of precious metals such as gold, silver and platinum and critical raw materials (CRMs). CRMs are defined in the UK Critical Minerals Strategy as materials that are "vitally important" to the UK economy but which are also subject to "major risks to their security of supply".[7] Relevant examples include lithium, cobalt, magnesium and tin.

6.3.9 The separate collection of sWEEE creates the opportunity for valuable resources to be recovered from this waste stream, although there is a need for investment in reprocessing capability to maximise the potential benefits.[8] The UK Critical Minerals Strategy identifies recovery and recycling of CRMs as a key step towards improving security of supply.

6.3.10 The extraction of precious metals from circuit boards is already taking place in Wales. The Royal Mint has opened a facility at Llantrisant where it has the capacity to extract hundreds of kilogrammes of gold from up to 4,000 tonnes of circuit boards each year, sourced from small and large WEEE from within the UK.[9]

6.3.11 At present, techniques to extract CRMs from sWEEE are less well developed. However, investments are being made in new facilities that will require feedstock to enable them to operate. For example, GAP and DEScycle have recently secured investment to develop a facility in Gateshead in the North East of England that will extract copper, palladium and gold from circuit boards.[10] Previously, an EU LIFE funded partnership between Re-Tek UK, Enscape Consulting and the University of West of Scotland trialled the collection and lab scale recovery of cobalt, gold and silver from WEEE.[11] Similarly, a trial was conducted by, Axion Recycling, E3 Recycling and the Industrial Technology Research Institute (ITRI) to recover cobalt, antimony, tantalum, platinum group metals, gold and silver from printed circuit boards.[12]

6.3.12 These developments and trials demonstrate the technical feasibility and growing economic case for recovery of CRMs from sWEEE, which would be supported by increased supply of sWEEE for recycling.

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[7] HM Government (2023) *Resilience for the Future: The UK's Critical Minerals Strategy*. Available at: https://www.gov.uk/government/publications/uk-critical-mineral-strategy/resilience-for-the-future-the-uks-critical-minerals-strategy

[8] Material Focus (2021) Recovering critical raw materials from waste electricals. Available at: https://www.materialfocus.org.uk/report-and-research/waste-electricals-towards-a-circular-economy-v2/

[9] Makortoff, K (2024) Royal Mint opens factory in south Wales to recover gold from e-waste. *The Guardian*. Available at: https://www.theguardian.com/uk-news/article/2024/aug/07/royal-mint-opens-factory-in-south-wales-to-recover-gold-from-e-waste

[10] DEScycle (2024) *£10.2m Series A Funding*. Available at: https://www.descycle.com/news/series-a

[11] Hursthouse, A. (2018) WEEE collection and CRM recovery trials: piloting a holistic approach for Scotland, Global NEST Journal, 20(4). Available at: https://doi.org/10.30955/gnj.002643

[12] Innovate UK (2018) Recovering value from circuit boards. Available at: https://iuk-business-connect.org.uk/news/recovering-value-from-circuit-boards/

6.3.13 There is also a security of supply case for greater recycling of precious metals and CRMs from sWEEE. Substantial deposits of CRMs and precious metals are found in a limited range of locations. The UK government found that, for each of the 18 CRMs identified in its critical minerals strategy, "the top three producer countries control between 73 and 98 percent of total global production" and that "China is the biggest producer of 12 out of the 18 minerals".[13] This gives rise to issues around security of supply.

6.3.14 Further, the process of extracting CRMs can be labour and energy intensive, and has the potential to be environmentally damaging, both to human health and to biodiversity. Mining can use a large amount of water, and mining waste often contains toxic chemicals like cyanide, mercury, arsenic, lead and zinc, which can pollute soil and waterways. Mining can also often encroach on protected natural areas, with the direct impact of mining being exacerbated by other accompanying activities such as agriculture, logging, and poaching.[14] These problems can give rise to particular concerns when mining takes place in countries where environmental and labour protections are weak.

6.3.15 The policy supports the UK Critical Minerals Strategy and has the potential to reduce Wales's reliance on virgin CRMs and precious metals. However, the need for new investment to enable a wider range of CRMs to be recovered from sWEEE, the relatively small tonnage of material affected by the policy, uncertainty regarding the composition of the sWEEE that may be captured, and the complex supply chains within which CRMs are traded means that it is difficult to make a reliable estimate of the supply chain benefits or the specific environmental harms avoided as a result of the policy.

Waste impacts

6.3.16 The export of waste electronics that are not suitable for reuse outside the OECD is prohibited. The sWEEE affected by the policy is material that is likely to be sent for disposal within the UK if not recycled. It would therefore be subject to UK waste legislation and should cause minimal impacts to biodiversity and human health in the UK as a result of disposal.

6.3.17 When sWEEE enters the environment, it can leach a wide range of potentially toxic chemicals. The impacts of these chemicals are diverse and may affect both human health and the wider biosphere.[15]

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[13] HM Government (2023) *Resilience for the Future: The UK's Critical Minerals Strategy*. Available at: https://www.gov.uk/government/publications/uk-critical-mineral-strategy/resilience-for-the-future-the-uks-critical-minerals-strategy

[14] PBL Netherlands Environmental Assessment Agency (2024) *Environmental impacts of extraction and processing of raw materials for the energy transition*. Available at: https://www.pbl.nl/system/files/document/2024-02/PBL-2024-Environmental-impacts-of-extraction-and-processing-of-raw-materials-for-the-energy-transition-5364.pdf

[15] See, for example, Ankit et al (2021) *Electronic waste and their leachates impact on human health and environment: Global ecological threat and management*. Environmental Technology & Innovation Vol 24. Available at: https://www.sciencedirect.com/science/article/pii/S2352186421006970

6.3.18 However, the policy is likely to give rise to cheaper and more easily accessible sWEEE collections for the occupiers of non-domestic premises. This may reduce any incentive to dispose of waste containing sWEEE irresponsibly.

6.3.19 WEEE contains poly- and perfluoroalkyl substances (PFAS). These are a large group of synthetic organofluorine chemicals that have been widely used since the 1940s. Due to the strength of the molecular bonds in these chemicals, PFAS can resist chemical attack and withstand high temperatures and are sometimes referred to as 'forever chemicals'. The impacts of these chemicals on the environment and human health is not yet well understood, but a recent study by the Environment Agency identified landfill sites as amongst the types of land use giving rise to the highest potential risk as a source of PFAS.[16] Treating landfill leachate to remove PFAS is difficult, although most can be destroyed through municipal waste incineration. Reducing the amount of PFAS entering the residual waste stream (and especially landfill) through the diversion of sWEEE into recycling may help to reduce the escape of these chemicals into the UK environment.

Consistency of recycling behaviour

6.3.20 Across Wales, many local authorities make arrangements to allow householders to recycle sWEEE alongside their other recycling at home; and all allow recycling of sWEEE at household recycling centres. Nevertheless, not all household sWEEE is diverted from residual waste.

6.3.21 It is widely considered that consistency in what can be recycled in different local authority areas can help people to become familiar with what can and can't be recycled, and to separate recyclables more reliably.[17] This may also be the case when greater consistency is achieved between what is recyclable at work and at home - one of the key objectives of the reforms introduced through The Waste Separation Requirements (Wales) Regulations 2023. England has also recently legislated to ensure that there is consistency between the list of materials that businesses and households are expected to recycle partly for this reason.

6.3.22 It is therefore reasonable to assume that the introduction of a requirement to separate non-household sWEEE for recycling may be mutually reinforcing with Welsh local authorities' efforts to encourage householders to separate sWEEE for recycling. However, there does not appear to be an evidence base that would enable this impact to be quantified in this RIA.

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[16] Environment Agency (2021) *Poly- and perfluoroalkyl substances (PFAS): sources, pathways and environmental data*. Available at: https://assets.publishing.service.gov.uk/media/611e31fbd3bf7f63b19cea2d/Poly-_and_perfluoroalkyl_substances_-sources_pathways_and_environmental_data_-_report.pdf

[17] See, for example, WRAP (2016) *Supporting evidence and analysis: The case for greater consistency in household recycling*. Available at: https://www.wrap.ngo/sites/default/files/2020-08/WRAP-consistency-supporting-evidence.pdf

Wider jobs impact

6.3.23 As indicated above, the policy is expected to create 91 additional jobs across Wales, principally in waste collection. However, this represents a relatively conservative approach and may not reflect the full extent of the jobs that may be created as a result of the policy.

6.3.24 For example, a larger and more reliable supply of sWEEE for dismantling in Wales may lead to WEEE reprocessors to increase employment at their established sites or to consider investing in additional sites in parts of Wales that are not well served at present. At a greater remove, it may support the growth or retention of jobs in industries that rely on the supply of materials extracted from the additional sWEEE that would be recycled.

6.3.25 In turn, the jobs generated directly or indirectly by the policy will have wider social benefits. For example, according to Public Health England, being in employment has the following health benefits:

- employment is generally the most important means of obtaining adequate economic resources, which are essential for material wellbeing and full participation in today's society
- work meets important psychosocial needs in societies where employment is the norm
- work is central to individual identity, social roles and social status
- employment and socio-economic status are the main drivers of social gradients in health[18]

6.3.26 It is therefore likely that there would be benefits associated with the additional employment opportunities created by the policy that are not fully quantified in the RIA.

6.4 Summary

6.4.1 A summary of the high-level environmental costs and benefits of the policy is shown in Table 11 and discussed below.

6.4.2 The table shows the impact of the policy and also the cumulative impact of the package of reforms collectively known as the Workplace Recycling Regulations. The negative values for CO2e and NO2 represent a reduction in emissions. Negative values in the Environmental cost and Total cost rows of the table represent a net benefit.

[18] Public Health England (2014) *Increasing employment opportunities and improving workplace health.* Available at: https://assets.publishing.service.gov.uk/media/5a7eecf2ed915d74e6227559/Review5_Employment_health_inequalities.pdf

Table 11: Summary of Policy – Main Impacts

	sWEEE Regulations	2023 Regulations**	2023 Regulations Revised (Differential) ***	Cumulative impact (sWEEE + 2023 Regulations Revised)
CO_2e (tonnes)	-7,400	-1,298,000	600	-1,304,800
NO_2 (tonnes)	-6	-5,224	14	-5,216
Recycling (tonnes)	38,000	2,313,000	-53,000	2,298,000
Environmental cost NPV (£M)	-£1.9	-£121.9	0.6	-£123.2
Total 10 year NPV cost* (£M)	**£3.6**	**-£186.9**	**-£11.29**	**-£194.60**

CO_2e is rounded to the nearest 100, recycling to the nearest 1,000
*Excludes Landfill Disposals Tax and Fuel Duty
** Table 19, Regulatory Impact of Options to Increase Workplace Recycling in Wales
*** Small amendments were made as agreed with Welsh Government to reflect NRW administrative costs and the amount of sWEEE in the baseline

6.4.3 There is a small difference between the baseline used in this modelling and the baseline used in the original impact assessment for the 2023 Regulations. This arose due to the collection of additional evidence regarding the current situation regarding sWEEE collections and a review of recent data on sWEEE recycling, which was not material in the context of the previous analysis.

6.5 Conclusion

6.5.1 The proposed change requires non-domestic premises to segregate sWEEE and deliver it either to a local authority Household Recycling Centre that accepts non-domestic sWEEE, a private drop-off/take-back site, or arrange separate collection by a licensed waste carrier. With sWEEE being defined as any electrical item less than 50 centimetres on its longest edge.

6.5.2 The modelling used shows costs are attributed to waste collectors. This category includes local authority collections of waste from non-domestic premises under their duty (under the Environmental Protection Act 1990) to collect commercial waste on request. However, within a properly functioning competitive market, waste collectors (including local authorities) will pass their costs on to the customer (non-domestic property waste producers). Thus, these costs will apply in part to waste producers rather than the waste industry.

6.5.3 The costs in the model include, On-going administrative costs, Costs of Waste Collection (Residual and recycling/recovery) and Landfill Disposals Tax. With the benefits included Disposal/Processing of residual waste and Materials Revenue.

6.5.4 To conclude the overall impact of the wider package of Workplace Recycling Reforms (the 2023 Regulations) is overwhelmingly positive, modelled to deliver an overall net benefit of £198.2 million net present value (NPV) over 10 years, based on revised assumptions. The phased introduction of this element of the reforms is modelled to have a net cost of £3.6M NPV over 10 years (noting that avoided costs due to lithium-ion fires have not been included in the model). This means there is a cumulative net benefit of £194.6 million net present value (NPV) over 10 years from the combined package of measures.

6.5.5 In addition, the sWEEE element of these reforms is expected to reduce CO2e by 7,437 tonnes, reduce NO2 by 6 tonnes and increase recycling by 37,757 tonnes over 10 years. The policy will also bring significant wider benefits, particularly in relation to the avoidance of fires. Given the environmental benefits and the significant wider benefits identified (not costed into the model) the Welsh Government intends to proceed with the planned legislative update already consulted on to bring in the new requirement to separate sWEEE as previously committed to.

6. Competition Assessment

6.1 A competition assessment has been undertaken[19]. The purpose of the assessment was to determine the impact of the Workplace Recycling Regulations on the competitiveness of businesses in the waste sector. This assessment included consideration of the requirement to collect small WEEE separately and not subsequently mix it.

6.2 The competition assessment included a survey of the waste industry. Those participating in the competition assessment were asked forward-looking questions about how they expected their businesses to respond to the Workplace Recycling Regulations.

6.3 The general conclusion of the competition assessment was that even though the Workplace Recycling Regulations might have an impact on the costs for waste handlers/processors, they are not expected to have a detrimental impact on competition in the Welsh waste industry.

6.4 The impact of the Workplace Recycling Regulations on waste producers (workplaces) has been considered in Part 2 of this Explanatory Memorandum, alongside the measures that are being put in place to mitigate any differential impacts.

7. Post implementation review

7.1 There is a range of expected outcomes from the Workplace Recycling Regulations that will bring both direct and indirect benefits to Wales and

[19] Increasing recycling at workplaces: assessment of effects on competitiveness | GOV.WALES.

further afield. They can be classified broadly into two categories:

1) **Primary (direct) outcomes** – principally changes in the rates and quality of recycling, incineration and landfill, and recycling collection service provision; and

2) **Secondary (indirect) outcomes** – wider benefits linked to increases in recycling and a reduction in incineration and landfill – for example, reduction in carbon (greenhouse gas) emissions, job creation, greater consistency in recycling collections, and higher quality recyclate as valuable resources fed back into the Welsh economy.

7.2 Monitoring activities measuring the delivery of the Workplace Recycling Regulations package of reforms against the desired primary outcomes are expected to start towards the end of 2025 and carried out periodically thereafter, with a more comprehensive implementation review anticipated within 3-5 years as is common practice. The precise attribution of the regulations to the secondary outcomes may be more challenging. Thus, the Welsh Government does not commit to monitoring each of secondary outcomes set out above. The decision to monitor any specific secondary outcome will depend on a host of factors and will be made subject to specific needs and circumstances.

7.3 The primary outcomes that will be monitored are defined as follows:

1) The Waste Separation Requirements (Wales) Regulations 2023 as amended by The Waste Separation Requirements (Wales) (Amendment) Regulations 2026

- Increased rates of recycling to meet the 70% recycling target set for 2025 for commercial waste (the most recently measured figure is 64% of commercial waste sent for recycling in 2018), and zero waste by 2050;
- Reduction in the amount of waste generated that is not recycled, per person (part of national indicator number 15 under the Well-Being of Future Generations (Wales) Act 2015) – manifested as a reduction in the amount of recyclable materials in the residual wastes sent for incineration or landfill;
- High rate of compliance with the separation requirements (at least 80% by end of 2027);
- High awareness of the recycling requirements and obligations to comply among the impacted businesses, public sector and third sector organisations (increase from 12% in March 2023 to 80% by June 2024 to 90% by end 2027); and
- High support of recycling requirements amongst the target audiences (increase from the level of 77% support in March 2023 to 85% support by 2027).

2) The Prohibition on the Incineration, or the Deposit in Landfill, of Specified Waste (Wales) Regulations 2023

- Reduced landfill - 12% in 2018 to <5% in 2025, and 0% by 2050 in line with WG target to meet zero waste by 2050.
- Reduced incineration/energy recovery from 9% in 2018 to 0% in 2050, in line with the Welsh Government's targets to reach zero waste by 2050 (with a caveat that the rate of EfW may at first go up as waste is diverted from landfill before it eventually decreases).

3) The Prohibition on Disposal of Food Waste to Sewer (Civil Sanctions) (Wales) Order 2023

- Reduced disposal of food waste to sewer; and
- Full compliance with the ban three years after it has come into force.

7.4 The primary outcomes will be monitored with a combination of quantitative and qualitative methods, depending on the nature of the outcome and the availability of an appropriate data source.

7.5 Previously it was envisaged that the planned Digital Waste Tracking System would, from 2025 onwards, serve as a primary data source for tracking recycling levels for industrial and commercial waste in Wales. The four nations are now working towards a target date of October 2026 to launch the first phase of a mandatory UK-wide digital waste tracking service for receivers of waste, subject to IT development progress and business transition needs. However, not all features will be available immediately. A second phase, planned for 2027, is expected to extend coverage to waste carriers and exempt facilities. The system's development progress can be monitored on the UK Government website.

7.6 In the meantime, prior to the full deployment of the Waste Tracking System, a number of additional data sources exist that will be used in the interim to monitor the outcomes. They include:

- WasteDataFlow
- National Resources Wales (NRW) compliance data
- NRW waste surveys
- NRW 'site return' data
- Electronic waste tracking (when available)
- Waste Compositional Analyses
- Surveys

7.7 Monitoring of the outcomes associated with a ban of food waste to sewer is expected to be led by Local Authority environmental health teams. Environmental Health Officers will be able to report the number of premises, out of those they visit, that they find disposing of food waste to sewer. For example, inspections will show if a premises has a sink grinder/macerator for food waste with evidence of food disposal,

and/or if there is no evidence of a food waste bin/collection.

7.8 The outcomes that cannot be measured using data from the Waste Tracking System and/or supplementary data sources listed above, can be monitored through a mix of other qualitative and quantitative evidence, including Welsh Government commissioned surveys, inspections and direct feedback from the businesses.