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Together, we stand for a world beyond waste

Improving the way we regulate circular resources in the UK

Presidential Report 2022

Anthesis

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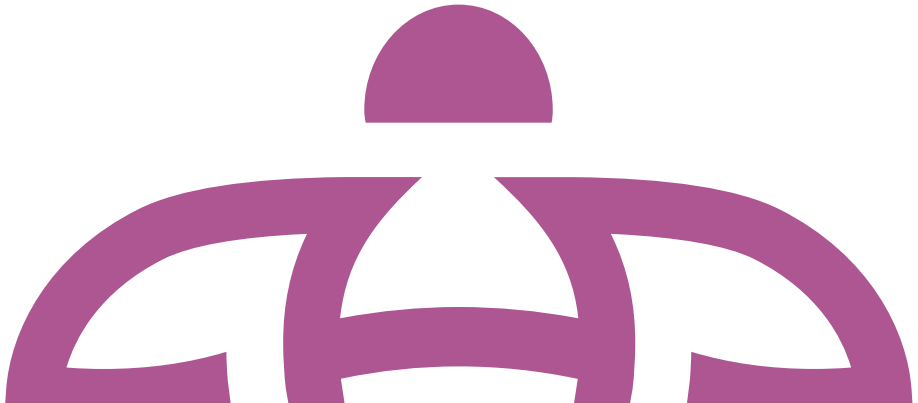

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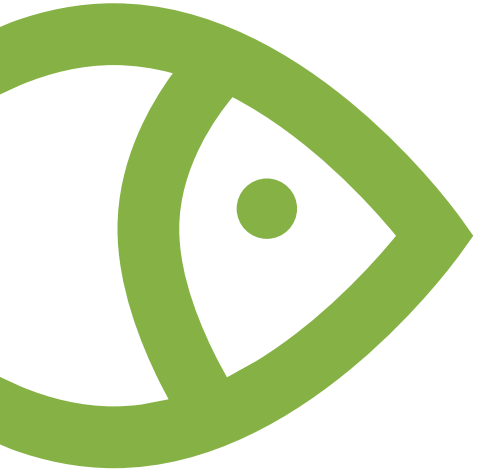
1. Introduction & objectives

1.Introduction & objectives



The work of the resources and waste sector is vital to delivering a circular economy. It is within the waste management chain that valuable resources are collected post-use, and sorted, processed, and ultimately recycled into raw materials for use in the manufacturing supply chain. The point at which 'End of Waste' (EoW) criteria are met is important to ensure this can happen. It means that the material is no longer subject to waste management regulations, and it can be sold and used in the same manner as other raw materials. Therefore, it is an essential link to ensure their continued use. The criteria that determines when material reaches EoW is defined in law (Article 6 of the Waste Framework Directive (WFD) (2008/98/EC)).

There is significant anecdotal evidence suggesting that businesses in the resources and waste sector and beyond struggle with uncertainty around EoW tests and their application by regulators. This is directly damaging existing businesses and hampers investment in the innovation and new infrastructure required to minimise the loss of valuable resources. The European Union has acknowledged the key role EoW plays in delivering the Circular Economy Action Plan and is resuming its work on developing such criteria to create a well-functioning internal market for secondary raw materials.

Regulatory certainty is crucial for investment and, taking a global perspective, if achieving EoW status for products is perceived to be a high risk, UK projects may not secure the funding needed to deliver the innovations and infrastructure needed to achieve a circular economy. If materials from waste treatment remain classified as wastes, their markets are limited to those that can deal with the waste 'stigma' and to customers with the required waste authorisations. The materials cannot be traded in the same way as other raw materials as they remain subject to waste management legislation. As such, their value is likely to be constrained. Commodities are traded globally and the UK risks losing investment to other countries that have clearer positions (or no enforcement) on EoW criteria.

Objectives

The aim of the CIWM President's Report is to investigate the understanding and application of EoW criteria in each nation of the UK and identify if any improvements could be made to speed the transition to a circular economy. The scope covers:

- a summary of the EoW processes in each nation of the UK including interviews with regulators to understand their approach to EoW regulation;
- an assessment of the level of understanding of EoW issues in the resources & waste sector and the experience of those seeking to make EoW decisions;
- a review of the implementation of EoW in other countries to identify best practice/alternative models;
- consideration of how circular economy innovations may be impacted by EoW and how this could be overcome; and
- recommendations on how stakeholders can be given the regulatory certainty required to stimulate investment in processing, new technology and the innovation required to meet policy ambitions.

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EoW has a vital role in a circular economy

We need to move beyond a linear 'take, make and dispose' economy to a circular economy that minimises the loss of resources from the system. The Ellen MacArthur Foundation defines the circular economy[1] as:

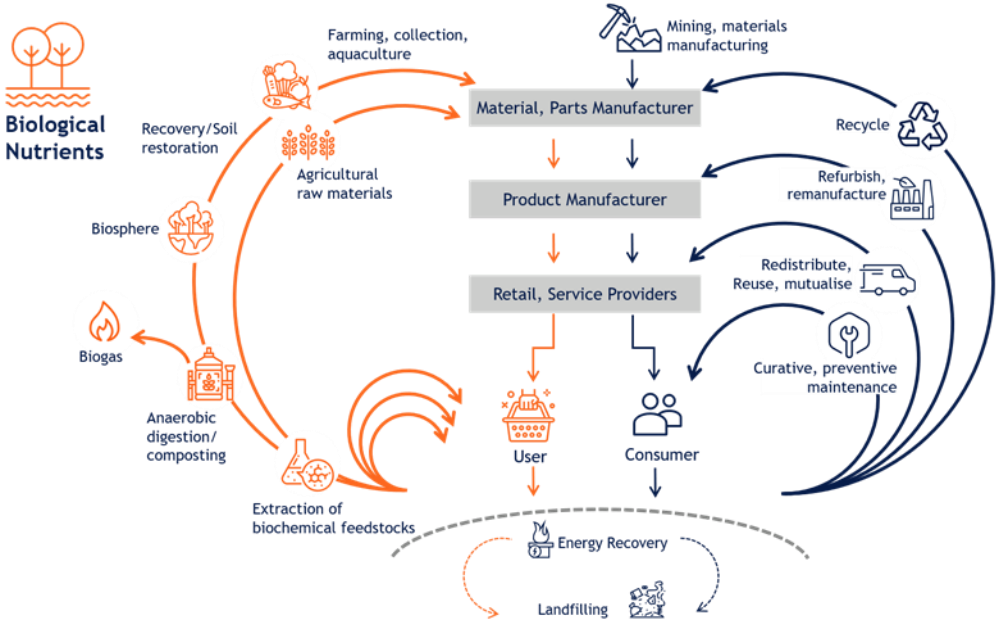
"…based on three principles, driven by design:

- ***Eliminate** waste and pollution;*
- ***Circulate** products and materials (at their highest value); and*
- ***Regenerate** nature,*

It is underpinned by a transition to renewable energy and materials. A circular economy decouples economic activity from the consumption of finite resources. It is a resilient system that is good for business, people and the environment"

Government policy is aligning with the principles of the circular economy in the UK, setting recycling targets, introducing regulations and fiscal drivers that demand and incentivise a more resource efficient and sustainable economy. The key role that a circular economy has in reaching the 2050 UK's target to reduce carbon emissions is also recognised in the Net Zero Strategy: Build Back Greener[2]. In 2020, UK nations transposed the requirements of the Circular Economy Package[3] into their own legislation and this is reflected in nation level strategy documents.

EoW plays a vital role in the circular economy as it defines the point at which a material or component is no longer subject to waste regulation and can be sold, used and regulated as any other raw material or product. To maximise the circular use of resources, the UK needs a clear and consistent framework for decisions.



1. https://ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview
2. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033990/net-zero-strategy-beis.pdf
3. https://www.gov.uk/government/publications/circular-economy-package-policy-statement/circular-economy-package-policy-statement

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Circular thinking, linear Regulation?

The UK's waste legislation has developed over many decades and has been driven by the need to control the environmental and human health risks associated with managing waste. Foundational legislation such as the Environmental Protection Act 1990[1], covered the regulation of waste management facilities and introduced the Duty of Care which established a new legal duty on those handling and managing waste to ensure it is done safely and in compliance with legislation. Waste policy was designed around a linear model of consumption with a focus on safe treatment and disposal, recycling and re-use being at relatively low levels for most materials during this period.

Towards the end of the last century, waste policy and legislation became more focused on minimising waste generation and maximising recycling. Producer Responsibility Obligations for packaging waste were introduced in 1997[2] and introduced what equates to EoW criteria for recycled packaging materials. Defining this point was necessary because Packaging waste Recovery Notes (PRNs) could only be issued at the point at which material had been fully recycled.

Regulation and guidance on EoW criteria for non-packaging materials continued to be ambiguous until a ruling by the Court of Appeal in OSS Group Limited v Environment Agency in 2007. The case focused on a secondary fuel manufactured from waste lubricating and fuel oil. The ruling set out the criteria products must meet to be deemed to have met EoW. As there was no conflict with EU law, operators were able to rely almost exclusively on the criteria it set and it became the main source of English law for several decades.

Since this case, more case law has been created including that set by Safety-Kleen Limited v Environment Agency (2020) which determined that used kerosene collected from customers and subsequently used by Safety-Kleen to wash out drums at a depot, was considered waste at the point of collection.

In Scotland, there was an equally important case involving the status of sewage sludge being burnt as a fuel in Longannet Power Station. In the case of Scottish Power v Scottish Environmental Protection Agency (SEPA) (2004), In this case, the judge decided that the sludge was waste and therefore subject to waste regulation.

In 2008, the Waste Framework Directive[3] enshrined the 'definition of waste' and set clear boundaries for its application. The definition increased the scope of materials that were considered to be waste and therefore subject to regulation. This increased the need for clear EoW criteria to define the point at which materials would fall out of regulation and subsequent revisions included criteria for defining by-products (not subject to waste regulation) and the EoW test, the most recent being the 2018 amendments[4]. A flow chart setting out the decision pathway for defining whether or not a material or component is a waste and therefore subject to waste regulation is included as Appendix 1.

1. https://www.legislation.gov.uk/ukpga/1990/43/contents
2. https://www.legislation.gov.uk/uksi/1997/648/contents/made
3. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32008L0098
4. https://www.gov.uk/government/publications/legal-definition-of-waste-guidance/definition-of-waste-2018-waste-framework-directive-amendments

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2. Applying EoW criteria in the UK

Current approach to defining EoW

Definition of waste

Defra and the Welsh Government have produced joint guidance[1] to help users decide if a material is waste or is not waste. This decision process is integral to considering EoW. The guidance covers the following, with part 3 specifically relating to the EoW test:

1. Decide if your material is waste using the 'discard test'. Confirms discard includes activities and operations such as recycling and includes unintentional discard.
2. Identify when waste rules apply. Includes when a waste undergoes a recovery operation.
3. Find out when waste ceases to be waste. Describes the specific tests that must be met to make sure a waste has achieved EoW. Links to detailed guidance entitled 'Check if your material is waste'[2].
4. Find out when waste rules do not apply. Describes when material has not been discarded and therefore is not waste, namely:
    - Deliberately created in a production process and is a product.
    - Reused again for the same purpose as was originally intended, without treatment.
    - A by-product of a production process. Unavoidable production residues and can be either waste or non-waste by-product. By-products must have a certain and lawful use, can be used directly, and meet product environmental and health protection requirements.

Defining End of Waste

There are **four options** to determine if a material has been fully recovered and ceases to be waste:

1. Follow a relevant EoW regulation in the WFD and transposed into UK law[4]. Applies to limited, specific materials (iron, steel & aluminium scrap, glass cullet, and copper scrap).
2. Follow the requirements of a quality protocol (QP) / Resource Framework. Applies to a limited number of materials with specific inputs and uses. QPs are under review (2022) see page 6.
3. Self-assessment. No need to notify the regulator. Does not provide any assurance that the regulator or Courts would take the same view.
4. Seeking opinion from the regulator, for example through the Environment Agency's definition of waste service in England.

The following pages summarise the approaches of the four UK regulators to QPs and case-by-case decisions.

A Flow chart for defining waste in each nation of the UK is included in the Appendices

1.https://www.gov.uk/government/publications/legal-definition-of-waste-guidance/decide-if-a-material-is-waste-or-not

2.https://www.gov.uk/guidance/check-if-your-material-is-waste

3.https://www.legislation.gov.uk/uksi/2020/904/contents/made

4. For England, Wales & Northern Ireland by The Waste (Circular Economy) (Amendment) Regulations 2020 and a separate Statutory Instrument in Wales

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Current approach to defining end of waste

Quality Protocols and Resource Frameworks

The regulators have published 13 QPs as 'generic' EoW positions. The EA is reviewing them (2022), using task and finish groups, to determine any issues, e.g., if they include the latest technical standards or best practice; if they don't demonstrate EoW; if industry would like additional input wastes or end uses; or there are new processes or markets. During the review, the QP will still apply.

The outcome may range from a minor to full revision (before being reissued as a Resource Framework) to their withdrawal. Each review that was undertaken by 1 December 2021 concluded the QP needed updating. The review timeline is also undefined for several materials, adding to uncertainty.

The QPs were developed by the EA, in most cases jointly with NRW and NIEA. SEPA has not adopted any QPs but has published guidance on seeking EoW for a sub-set of QP materials, including in some cases referring to the QPs.

With the QPs under review by the EA, there is uncertainty over which will be retained and become Resource Frameworks. It is unclear what modifications will be incorporated, and whether Natural Resources Wales (NRW) and/or the Northern Ireland Environment Agency (NIEA) will adopt these (or retain the current QPs that they co-developed). The review may also impact SEPA's approach to cross-reference the current QPs for some materials. The EA review will also be funded by industry, and it is unclear if this might be a barrier to other nations simply adopting the Resource Frameworks.

	England	Scotland	Wales	NI
Anaerobic digestate	Being revised	Guidance[1]	Applies	Applies
Compost	Being revised	Guidance[2]	Applies	Applies
Poultry litter ash	Being revised		Applies	Applies
Aggregates	Being revised	Guidance[3]	Applies	Applies
Processed fuel oil	Needs revising (risk of withdrawal)	Guidance[4]	Applies	Applies
Tyre-derived rubber	Needs revising (risk of withdrawal)		Applies	Unclear[5]
PFA & FBA	Under review		Applies	Applies
Biodiesel	Review pending		Applies	Applies
Biomethane	Review pending		Applies	
Gypsum	Review pending	Guidance	Applies	Applies
Non-packaging plastics	Review pending		Applies	Unclear[6]
Steel slag	Review pending		Applies	Unclear[6]
Flat glass	Review pending		Apples	
Asphalt road planings		Guidance		

[1] Presented as a Position Statement, however controls appear equivalent to EoW guidance for compost. Referenced QP in relation to inputs. Plastic % limit relative to N is significantly lower than QP limit.
[2] References compost QP.
[3] Acceptable inputs slightly reduced from QP; excludes trommel fines from mixed wastes. States it is for buyers and sellers to establish standards and specifications are met during individual transactions.
[4] SEPA states that it will provide a 'written confirmation' of EoW (not opinion). Inputs waste oils & oil-based mud cuttings.
[5] DAERA website lists this QP under those that have been published by NIEA. However, the QP states that it applies in England and Wales.
[6] DAERA website does not list QP under those published by NIEA. EA website and QP state QP applies in NI.

National approaches to defining end of waste

Although the regulatory framework around EoW is the same in each nation of the UK, waste is a devolved matter, and this has led to subtle differences in the approach of each nation. The following paragraphs describe the requirements in each nation.

England

Wastes must have been through a recycling or other recovery operation, i.e., something is done to remove any 'waste-like' characteristics (such as contamination) and turn it into a useful material to be used in place of a non-waste. In some cases, this can be as simple as a check to confirm it is suitable for re-use. If a comparator is available, EoW is usually achieved when the recovery process is complete, and the material can replace the comparator. This can be as a feedstock, if the comparator is feedstock, or once ready for its final use. The following criteria form the EoW test:

- the material is to be used for a specific purpose;
- a market or demand exists. Use is certain;
- it fulfils the technical requirements for the specific purposes and meets existing legislation and standards for products; and
- the use will not lead to overall adverse environmental or human health impacts based on a 'reasonable worst case' approach.

A full risk assessment is required if the general risk assessment shows that there is a:

- higher concentration or quantity of contaminants than the comparator, including when emitted to the environment; or
- contamination is lower weight-for-weight but will be higher than comparator overall because a larger volume of the material will be used for the same effect.

Operators must define the input waste and treatment processes where they could impact the technical specification of final material; set quality criteria and limit values for pollutants if the final material quality can vary and use a management system to prove compliance with criteria.

Case-by-case assessments should define:

a. Process inputs used to generate the final material.
b. Input waste sampling data to identify potential risks.
c. Specification for input waste. Part of WAC and include Substances of Potential Concern (SoPCs).
d. Describe the process. Including flow chart and equipment.
e. Specification for final material. SoPCs and quality controls.
f. Uses of final material. By whom, and why in the way stated.
g. Non-waste comparator. Use if possible or explain why not.
h. Market & potential customers. One process or wide market.
i. Technical requirements, legislation & standards for final use.
j. Environmental and human health impact. Justify analysis.
k. Risk assessment if comparator or if compares unfavorably.

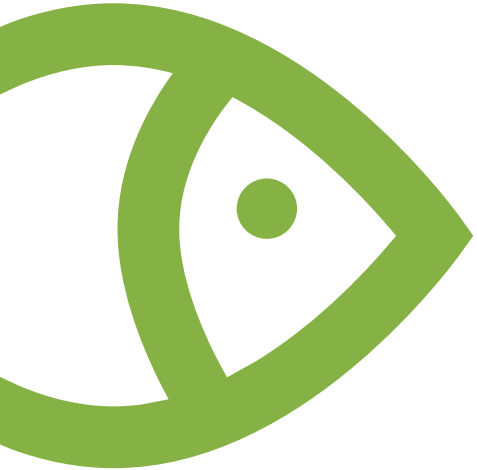
Northern Ireland

NIEA provides a view about whether a material satisfies the EoW test by assessing each submission against waste law principles and WFD. There is no appeal process.

Detailed guidance is provided, which is comparable to that on GOV.UK (not described in detail). This states that once a potential applicant engages with NIEA, it may be appropriate for NIEA to provide specific information related to a particular waste type, comparator details, or product. NIEA provides specific detailed guidance for:

- products to be applied to land;
- manufacturing and construction products; and
- fuel products.

Current approach to defining end of waste



Wales

England and Wales have published joint guidance, and both apply case law (including the OSS case where Lord Justice Carnworth established the EoW criteria/test. This related to the WFD 2006/12/EC). The approach as set out in the guidance therefore mirrors the judgement. Additional case law of equal importance has built up following this case, covering a range of EoW issues.

Importantly, part 3 of the joint guidance that relates to the EoW test links to the detailed guidance 'Check if your material is waste'. That is prepared by the EA and explicitly states that it applies to England. Therefore, there is doubt over the extent of relevant guidance to businesses in Wales. The joint guidance also refers to seeking opinion from the definition of waste service in England.

Scotland

SEPA has published its own guidance on definition of waste and EoW[1]. This clarifies the following considerations:

- meeting a product specification is not itself evidence of suitability, unless it considers potential environmental and health impacts as well as performance. Standards are normally for virgin materials so don't set contaminant limits.
- if further processing is needed before use it may be waste.
- recovered waste can be reclassified as waste e.g., if disposed, or used unnecessarily in excessive quantities.

The Appendices include EoW decision flow charts for each nation, showing the requirements that must be met and options available

[1] https://www.sepa.org.uk/regulations/waste/guidance/

Specific cases in which permits are not pursued

There are a limited number of specific circumstances in which the regulators have taken a position not to pursue the requirement for a permit in specific circumstances. This means that even though a material being managed or used remains, there is still the potential for it to be used beneficially without an authorisation if the strict conditions are met. Note that these positions are at the discretion of the regulator and can therefore be changed or withdrawn at any time if evidence becomes available that it is leading to harm to the environment or human health. Other authorisations such as planning permission may be required. The approach to these positions varies in each nation.

England

Regulatory position statements (RPS)

The Environment Agency does not currently pursue the need for an environmental permit in specific cases for some activities. RPSs explain when you do not need to apply for a permit for those activities. They do not apply to any other activities, even if they are under the same legislation. You may still need other permits or licences for other activities. For example, if a RPS establishes the criteria for carrying out an activity without the regulatory pursuing an environmental permit for a waste operation, you may still need an environmental permit for a groundwater activity. If the review date in a RPS issued by the Environment Agency has passed, the RPS remains in force and can be relied upon until it is removed from GOV.UK or marked as withdrawn. If the RPS says that it expires on a certain date it cannot be relied upon and does not apply after that date.

Low risk waste positions (LRWPs)

The Environment Agency has provided LRWPs for waste operations that it considers may be suitable for an exemption. The Environment Agency is not currently enforcing the need for an environmental permit for such activities. LRWPs explain when you do not need to apply for an environmental permit for those activities. The Environment Agency will review these LRWPs regularly. If a LRWP is withdrawn or amended, you can carry on doing the activity for 3 months from the date of the change. Following this. the activity must cease or an Environmental Permit or exemption (if appropriate) must be in place.

Wales

Regulatory Decisions (RDs)

NRW publishes Regulatory Decisions (RDs) which describe situations in which it will not take enforcement action. Currently none relate to EoW but they are published here. Each RD will have a revision date where the decision is made whether to re-issue, amend or withdraw.

Low Risk Waste Recovery Options (LRWROs)

NRW also develop Low Risk Waste Recovery Options (LRWROs) which cover waste activities that are low risk but are not covered by an exemption, can be carried out in Wales without a permit. They are not published on their website. LRWRO's don't typically have a revision date so remain in place until they are revised or withdrawn.

Scotland

Position Statements

SEPA have published a series of position statements that clarify their regulatory position on a number of waste activities. These can be viewed on their website here.

Northern Ireland

Regulatory Position Statements (RPS)

DAERA publishes a series of RPSs that provide guidance on the regulatory requirements associated with operations or materials. These cover specific circumstances and wastes including some by-products, excavated materials and several Low Risk Activities. The RPSs are available here.

3. The approach of regulators

Common themes

All of the UK environmental regulators kindly made time available to the project to share information on their approach to regulating EoW and discuss their experience of the current regulatory regime, considering what was working well and what may benefit from improvement. A summary of the common themes emerging from these interviews include:

- **Small teams of specialists** – EoW regulation is considered to be a specialist activity in all the regulators, and is driven from a policy and compliance perspective by very small groups of people, a few individuals in some cases. This makes it difficult to respond to peaks in workload, to build resilience if staff are unavailable, and creates the potential for personal bias, beliefs, and approaches to disproportionately impact on the culture and decisions made by the team (although it should be noted that no examples were identified during research for this project). A lack of scrutiny and accountability may also result.
- **Lack of resources** – budgets of the environmental regulators are under pressure, which has forced them to focus on chargeable aspects of regulation. The Environment Agency has set a fee to cover its EoW assessment costs, which could result in significant financial benefit to the customer. However, in some cases, the Agency has struggled to meet customer expectations for reasonable service levels and timeframes (none are set by the regulator), as it is not set up to provide a commercial service in this area. Resource constraints are not only financial but also include the availability of, and access to, the technical expertise required to reach an opinion. Technical experts have other role responsibilities and EoW opinions may not be prioritised over this work.
- **Confidentiality** – regulators are unable to guarantee that information submitted to them for an EoW assessment will remain confidential due to their obligations under the Freedom of Information Act 2000 and the Environmental Information Regulations 2004. There is evidence that this has prevented or stopped assessments being completed.
- **Limited understanding of EoW regulation amongst frontline officers** – there was general acknowledgement that the level of understanding around EoW for officers inspecting waste management sites and regulated industries was generally poor although there are obviously some exceptions. This means that many opportunities to educate operators about the correct approach to EoW or take enforcement action to ensure compliance and prevent deliberate misuse are missed.
- **Inability to provide long-term certainty** – regulators understand that businesses investing in producing circular materials from waste require long-term certainty to secure investment as a change in status would significantly impact on their market and therefore profitability. Whilst revised QPs and Resource Frameworks offer a stable approach to regulation, LRWPs, RPSs and their equivalents offer less certainty. Whilst this is undesirable, the general view was that if more information becomes available that indicates an environmental or human health risk, the regulators must be able to quickly change position to address this.
- **Assessing the viability of markets** – some regulators noted the difficulty of assessing the viability, demand and longevity of markets proposed in EoW submissions. This is particularly challenging for 'innovative' uses of a material where there is no obvious comparator. Notably this is considered a 'red flag' by NRW – i.e. an indicator that the EoW test cannot be met.
- **Companies seeking commercial advantage** – some companies seek EoW decisions to give them a competitive advantage as they can use lower priced feedstock (of a similar quality) or sell to a wider market. As such, submissions can be very specific to a proprietary material or application. Whilst this is acceptable, it requires significant regulator resources to determine, with limited environmental outcome.

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Common framework, different approaches

All UK environmental regulators work to the same regulations and frameworks for determining EoW decisions, however, there are subtle differences between the approaches across the nations, as summarised in Figure 1. Differences centre around the following:

- The level of pro-active engagement with stakeholders.
- Whether EoW assessments are a charged for service.
- Whether stakeholders are encouraged to make and rely on their own judgements or confirm these with regulators to minimise the risk of enforcement action.
- Whether the potential risk to human health and the environment is assessed only at the point of use or for the whole lifecycle of the product i.e. when it becomes waste at end of life.

This means that in some cases, a non-waste can become legally waste as it crosses internal national boundaries.

Figure 1: EoW approaches of the regulators

Environment Agency	Cyfoeth Naturiol Cymru Natural Resources Wales	SEPA Scottish Environment Protection Agency	NIEA
The EA is the only regulator to charge for EoW opinions. Since introducing charges, the number of formal applications received have fallen by approximately 75%. It offers a pre-application assessment but had few customers take this route. The EA is keen to empower customers to make their own determinations and promote understanding that the assessment undertaken by the regulator is the same as they can undertake themselves. Determinations sometimes "more of an art than a science" particularly for unique scenarios, making it difficult to apply generic guidance.	NRW encourages engagement on EoW decisions and doesn't currently charge, although a discretionary charge is possible if a submission is complex. NRW places great emphasis on the use of a material or component and does not support EoW positions where that involves the replacement of other material in a product which is considered to be 'delayed disposal' rather than a genuine re-use application. It applies a whole lifecycle approach to the assessment of risk, including the risk posed when the material reaches end of life.	SEPA has tailored its approach to the Scottish market. As such, only QPs that are relevant to materials being produced in Scotland have been adopted and the same approach is likely for Resource Frameworks. SEPA encourages customers to engage with them on EoW decisions and seek an opinion. They want to work with Scottish businesses to find solutions acknowledging that guidance on EoW is relatively old. As waste is a devolved issue, they are keen to steer EoW decisions in the best interests of Scotland whilst recognising that consistency between nations is important.	The team that manages EoW issues in Northern Ireland is very small and has limited resources. It is not directly involved in the QP review process due to limited resources but is likely to mirror the decisions made by other regulators recognising that consistency across the UK is important. Due to resource constraints, there is no formal system for making submissions for EoW decisions but they operate an 'open door' policy to engaging with customers and there is no charge for opinions. There are no equivalent LRWPs in Northern Ireland.

4. EoW regulation in Europe

EoW in the European Union

Overall context and EU-level criteria

- Most Member States (MS) have transposed WFD Articles 5 & 6 word-for-word into national legislation including the Republic of Ireland.
- EU-level EoW regulations have been set for a few priority materials (iron, steel & aluminium, copper scrap, and glass cullet) to which MS are bound. MS cannot apply different provisions to the same scope of EoW criteria (unless they are more stringent).
- EU-level criteria are being developed for other materials using the EU "comitology" procedure, with representatives from participating MS. The Joint Research Council (JRC) has developed a methodology, with pilot case studies for compost, aggregates, and metal scrap.
- Where EU-level criteria have not been set, MS may decide if certain waste has ceased to be waste when used in designated markets, considering applicable case law. This can be through:
  - Binding national criteria (to be notified to EC and published under the EU's Technical Regulation Information System); or
  - Single case decisions (no requirement to notify).
- Several MS do not have national criteria and do not currently intend to establish them (Denmark, Sweden, Poland, Slovakia, Cyprus, Luxembourg, and Romania).
- Most MS (DG ENV 2020) see a need for additional EU guidance on EoW and by-product status for specific materials, namely:
  - tyre-derived rubber
  - steel slags
  - SRF/RDF
  - C&D waste
  - digestate & compost
  - solid biomass fuels
  - processed fuel oil
  - tyre pyrolysis oil
  - olive pomace
  - biodiesel
  - animal fat
  - paper
  - textiles
  - plastic waste (especially 'complex', not common polymers)

MS approaches to EoW & by-product status

- Approaches differ, particularly in single case decisions.
- WFD does not specify potential forms of case-by-case decisions and depending on MS legislation they differ, e.g.:
  - decision by the national competent authority (e.g., Environment Ministry or Agency)
  - decision by local or regional authorities (e.g., Italy, Sweden)
  - decision as part of a waste permit or IED-permit (e.g., Belgium Brussels region, Czechia, Finland, Hungary, The Netherlands, Romania, Slovakia)
  - self-assessment with a verification or non-binding opinion of the competent authority
- There are interesting models, such as Sweden taking a more 'self regulation' approach where other regulatory regimes such as REACH play a role. A summary of MS approaches is provided in the following slide.
- For by-products, there are no binding EU criteria and MS are not required to provide information on any national criteria or single case decisions to the EC. A small number of MS have published criteria for certain by-products, this includes:
  - excavated soil and stones (Italy, Ireland)
  - C&D materials (The Netherlands)
  - wood/wood residues (Austria, Bulgaria, Slovenia)

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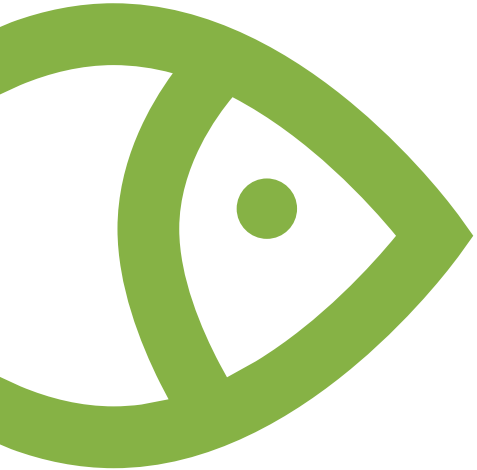
Summary of MS national EoW criteria



Material (current/foreseen EoW status)	MS (no data for Germany, Latvia, or Malta)
C&D, aggregates, building materials	Austria, Bulgaria, Croatia, Belgium, United Kingdom (plus steel slag), Netherlands
Waste wood	Austria, France
Substitute fuels, SRF, processed used oil as fuel	Austria, Italy, Czechia, Croatia, France (plus distillation residues of used oils), Spain, United Kingdom
Compost, fermentation products, digestate, fertiliser and soil improver	Austria, Bulgaria, Estonia, Czechia, Slovenia, Portugal, Croatia, Belgium, United Kingdom
Biochar, drying products or ashes	Estonia (sewage sludge), United Kingdom (poultry litter ash)
Fuel additive from oil shale mining waste	Estonia
Tyre chips added to shale oil production/ tyre-derived rubber materials	Italy, Estonia, United Kingdom
Reclaimed asphalt pavement	Italy, Czechia
Dredging materials	Italy
Used absorbent products (nappies)	Italy
Recovered plastics (flakes, agglomerates, granules)	Portugal, United Kingdom (non-packaging plastics)
Paper	Belgium (Walloon)
Soil	Belgium (Flanders)
Biomethane	United Kingdom
Flat glass	United Kingdom
Biodiesel	United Kingdom
Gypsum from plasterboard	United Kingdom
Pulverised fuel ash (PFA)/furnace bottom ash (FBA)	United Kingdom
Re-used objects (incl. packaging, tyres, WEEE, textiles, cut textile rags, furniture components)	France
Specific used chemicals	France

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After DG ENV, 2020

National approaches to end of waste

Selected MS information on alternative national approaches

Austria

EoW only applied if the overall environmental impact is *reduced* as a result of the substitution of the comparable raw material.

Focus on input waste quality (including requiring a declaration of no mixing or blending). For example, the acceptable aggregates waste input list is noticeably more limited than the UK aggregates QP.

France

Criteria and procedures for EoW status apply to certain objects and chemical products to encourage preparation for re-use.

Criteria reflect WFD but also include contractual conditions under which objects will be sold and operator obligations for traceability.

Germany

EoW status is defined in the Circular Economy Act (KrWG). Criteria include that the use of the substance *engenders no harm*.

Decisions are at State level and include EoW properties of used tyres (for trade with third countries).

Denmark

There are no national EoW criteria for any waste streams.

Legislative impetus for incineration is considered a barrier for beneficial use (e.g., for organic waste).

Italy

National legislation is intended to allow industry to overcome differences that arise with localised, case-by-case approvals, with common standards to support recycling plants and give users certainty via certification. EoW can be established if waste, following treatment, meets these conditions:

- does not exceed contamination thresholds set in legislation.
- does not pose an environmental risk, particularly to groundwater and surface water.
- must not have a greater environmental impact than the raw material it is replacing in the authorised plant.
- the manufacturer provides declaration of conformity (type and quantity of materials used, recovery process, destination site, certification that specific criteria are met).

EoW status can also be authorised case-by-case via an ordinary recovery plant or IED permit by a regional or provincial Authority.

Criteria for both non-hazardous and hazardous wastes have been established:

- non-hazardous. Specifies waste eligible for recovery; sets maximum permissible treated quantities of waste; sampling procedures; physical and chemical properties of treated waste. 195 categories of waste defined under 15 sub-categories (e.g., paper, plastic, wood waste, wastes to produce RDF, waste to be recovered as fertiliser).
- hazardous. 29 EoW categories under 6 sub-categories: ferrous metallic waste, precious metallic waste, metal scraps, hazardous sludges, inorganic and organic liquid waste.

National approaches to end of waste

Selected MS information on alternative national approaches

Sweden

Contextually, Sweden's compliance system is founded on operator self-monitoring. In relation to EoW, operators are responsible for assessing if waste has ceased to be a waste after a recycling process. The EPA recommends that operators consult the regulator. Within the supervision framework, the operator's decision is examined, and the regulator may agree, or order the operator to continue managing the material as a waste.

The assessment is considered important because when recycled material is used to manufacture new materials, someone must be accountable for compliance with the chemical and product legislation that takes over (e.g., REACH).

Portugal

Typically uses general binding rules to regulate EoW. EoW Regulations require waste operators to implement a Management System:

- that shows evidence of compliance with the EU Regulation requirements.
- produce (for each product delivery) a declaration of compliance.
- submit the management system to a tri-annual verification, by an accredited conformity assessment body.

Belgium, Flanders (Flemish Region)

Focuses on criteria for finished raw materials for specific uses, setting a prescription for materials to become "new resources". Includes for example, fertiliser/soil improver, building material, soil, and production of ferrous and non-ferrous metals.

Applicants for EoW must complete a raw material declaration for evaluation. Government may require specific waste streams are issued with a resource certificate before a material can be regarded as EoW or by-product in compliance with EU and Flemish criteria.

Comment on alternative approaches to C&D waste

The Netherlands has established criteria for recycled aggregates, which must meet requirements for production control, product quality, declaration of conformity, and quality assurance.

The Netherlands takes a broadly similar approach to the EA for EoW for aggregates and has a mature market for recycled and secondary aggregates.

Conversely, the Danish EPA has refrained from implementing criteria for C&D waste due to concerns including the inability to set common criteria to protect the environment throughout Europe, due to:

- differences in climate, soil properties and background levels of substances in the environment;
- the environmental assessment of EoW materials requires significant resources; and
- concern over coherency with existing legislation e.g., whether products will be subject to REACH.

In Belgium (Brussels Capital Region), no C&D waste has ceased to be waste, citing that reuse of concrete waste contradicts soil legislation. In Walloon Region, there is no EoW status for C&D waste but an intention to define criteria for recycled aggregate and excavated soil.

In France, criteria for C&D waste are under development but considered unenforceable due to analysis requirements and as every transaction requires a contract signed by the Prefecture.

A German Federal Court decision ruled that EoW applies to C&D waste. A coordinated and coherent approach to using recycled construction materials is in progress, including C&D, treated soil, and railway ballast.

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5.The experience of stakeholders

Scope of the interviews

Telephone interviews were undertaken with 12 industry stakeholders to gather views on the regulation of EoW in the UK.

Participants were identified though a combination of recommendations provided by the project steering group and those responding to requests for information published on LinkedIn, CIWM Connect and other social media channels by both CIWM and Anthesis.

Interviewees were selected to cover all nations of the UK and a range of stakeholders across the traditional waste management sector, other sectors using waste derived products and raw materials, and their advisors. Respondents that could not be included in the interviews were invited to contribute to the study by submitting written answers to the interview questions. The interviews were informal and although based around semi-structured questions (See Figure 2), interviewees were encouraged to cover all relevant experience and insight to the project.

Scope of the telephone interviews

- The details of the materials you have sought or made EoW decisions for, the inputs and applications for which they were to be used;
- The approach taken i.e. QP/LRWP, a view sought from the regulator or 'self-certified' decision;
- Experience of the process and of the application of EoW by the regulator more generally;
- The impact on the business of the uncertainty around EoW and/or the determination (both yes and no) i.e. lost investment, higher/lower recycling tonnages, virgin materials avoided, revenue generation etc.; and
- What you think could be done to improve regulatory certainty and make it easier for business to easily and confidently apply EoW tests.

Figure 2: Semi-structured interview questions

Common themes from stakeholders

Synthesis of the interview outcomes identified a series of challenges and barriers that must be addressed if the UK is to improve the regulation of circular materials. These are discussed in the following pages.

1 Best route to end of waste

- The system is **complex** with "too many routes to EoW". Perceived to undermine the validity of the process.
- **Specialist advice** is required to help operators determine the best route to an EoW decision. This includes specialist legal advice as the law around EoW is very complex and technical. This adds cost.
- A **regulator's opinion was seen as vital** by many as it gives the market confidence and is considered to protect the operator from the risk of enforcement action, reputational damage and the residual liability associated with products sold.
- **Cost vs reward** –in England, the cost of a Resource Framework is approx. £40k and between £10k-£20k for a bespoke opinion (although it can be as low as £2k-£3k in more simple cases). Has to be cost effective for low value materials.
- **Time** – an issue if a decision is required quickly for a business.

2 Understanding & engagement

- The **level of understanding** of EoW in the waste sector is perceived to be very low. Waste is being treated as non-waste as some stakeholders believe that it has a financial value and there is demand, it is sufficient to determine it has been 'recycled'.
- It is considered a **highly complex and specialist area** with those who are aware of the EoW tests, not having sufficient level of understanding and expertise to apply the test themselves. The **complexity drives a lack of engagement** with the requirements.
- There is a strong perception that a **significant tonnage of waste is being treated as a non-waste** and falling out of regulation without proper consideration of EoW esp. soils.
- **Risk of enforcement action** is considered to be very low.

3 Regulator assessments/advice

Stakeholders described a **range of experiences** of making EoW submissions to the regulator, some very good and some which were more problematic. Whilst noting the **personal professionalism** and customer focus of the officers, the following points were raised as being frequent challenges:

- Consistency of approach between national regulators.
- The fact that an opinion only applies to the nation in which it was made so waste can change status as it crosses borders.
- Lack of control over the process – costs, timeline, point of contact etc.
- Concerns over the level of technical understanding of officers assessing the evidence.
- Concerns over confidentiality of information submitted.
- The use and application of comparator materials and products.

4 Uncertainty is a barrier to investment

- Current approaches to regulating EoW generate a great deal of **uncertainty** for stakeholders.
- This uncertainty is a result of the complex processes & perceived lack of control or confidence in regulator assessments. It is **focused on legitimate operators** as they seek assurance and require confirmation of compliance from regulators before investing. Operators that make their own assessment often fear regulators may take a different view (but can accept that risk) whilst others unknowingly or knowingly act illegally, believing there is very little risk of enforcement action.
- Many waste treatment project **developers are not aware** of the need to evidence EoW for their outputs or the risk to their business case if the EoW test is not met.
- **Investment is being delayed or lost** because of the need to confirm EoW status for products before it is secured.

1. Choosing the best route for EoW decisions

Although there is only one 'EoW test' set out in legislation, stakeholders have a number of options to demonstrate and if required, confirm that the product or material has met the requirements. Stakeholders want to understand the mechanisms of proving the test has been met and potential implications of each option for their business. Those that have not been through the process before commonly have to seek legal or specialist advice on the most appropriate route for them, adding cost and potentially delay, before the material can be put to beneficial use.

The factors that influence the choice of route were cited as:

- **Cost vs risk** – only the Environment Agency currently charge for EoW submissions. Stakeholders reported that the cost of trying to develop a Resource Framework is approximately £40k (although this is likely to be shared between a group of businesses) and the cost of bespoke EoW decisions can cost between £2k-£20k a well-evidenced submission being cheaper as it can be assessed more quickly. The cost of making submissions has to be offset against the value of the material or product meaning that it can be a barrier for low value or low tonnage materials in some cases and therefore prevent their recycling and encouraging disposal, one stating *"if you make it too expensive, it's cheaper just to landfill it".*
- **Confirmation from the regulator** – the majority of stakeholders highlighted the importance of gaining confirmation that their material or product had reached EoW from the regulator, even in a case where they had received legal opinion that it had. This was required to give the management comfort that the business could proceed without risk of enforcement action and negative publicity. Comfort was also needed so that the businesses would not be at risk from any residual liability associated with the products it had sold as a non-waste for example, additive to building blocks used in housing etc. and for which any claim could be significant. For small businesses, this could be catastrophic for the management both personally and professionally. The market also demands this level of comfort and stakeholders identified a number of examples where customers required confirmation from a regulator that the material was fit for use.
- **Time** – the timeline in which a decision was required was an important factor in choosing the best route to EoW. It was widely accepted that any engagement with a regulator was likely to increase the time before a determination could be made . Therefore, those that required a timely decision, have to weigh the perceived risk associated with making their own assessment i.e. that the regulator may take a different view, leaving them open to enforcement action at a later date.

"There are too many routes to EoW and that undermines the whole regime"

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2. Understanding & engagement

Stakeholders were commonly of the view that the level of understating of EoW across the waste management sector and in commercial markets was generally very low. This deficit of understanding manifests in two areas:

- awareness of the requirement to meet the EoW test and it's existence is generally low. Many believing that if a material or product has a value and there is a market demand for it, this alone is sufficient to conclude that it has ben recycled and therefore no longer subject to waste regulation. Recent experience has also shown that ignorance of EoW is not limited to smaller businesses. An example of a project developer looking to invest significant amounts in a innovative waste treatment technologies (pyrolysis) was also unaware of the need for outputs to meet the test to avoid regulation.

- where there is awareness of the EoW test, the 'mechanics' of the assessment and options available to stakeholders is not well understood and therefore operators commonly rely on the services of specialist advisors. It should be noted that even some legal advisors struggled to understand the EoW test and its application and this then led to incorrect advice, and an EoW legal specialist being commissioned.

Importantly, the view of most stakeholders was that a significant quantity of waste is being used without meeting the EoW test whilst the focus of the regulators is on a tiny fraction of waste that is presented to them for an opinion. The tonnages involved could not be estimated by those interviewed but the graphic attempts to illustrate the scale of the issue.

** Environment Agency receives approx. 20 submissions per annum, SEPA approx. 20 per annum, Wales, 12 per annum and DAERA, 5 per annum*

" The complexity of EoW is a barrier to engagement"

" Legitimate business spend time and money to ensure they meet the test. Criminals just get on with it"

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3. EoW assessments by the regulators (1)

Stakeholders that had submitted, or had considered submitting information for an EoW opinion from the regulators were asked for their views on the strengths and weaknesses of the process. The following points summarise the key points raised in the interviews:

A lack of control over the assessment process:

- difficulty finding the appropriate officer to discuss EoW issues.
- once submissions are made, stakeholders would welcome a named officer as a **single point of contact**.
- **long waits for the results of the assessment** - a significant issue – there is no specified response time and the 'open-ended' nature of the process was very problematic for business loosing potential revenue or incurring costs in the meantime. Customers felt there was no accountability for regulators in terms of response times. One example given was a waste derived fertiliser for which there was a significant demand from the horticultural sector. A submission was made but the determination period was so long that the period of seasonal demand passed and potential customers instead imported alternative material to the UK from China. Other stakeholders commonly reported waits of up to 2 years. There was the general perception that levels of customer service has declined over recent years although there were examples of opinions being given in 3-4 weeks in some cases (Northern Ireland).
- **confidentiality** – regulators cannot ensure data and information will be kept confidential as a result of the Environmental Information Regulations. This creates a difficult choice for businesses seeking confirmation from the regulator but unable to risk the release of proprietary information.
- **requests for additional information** – stakeholders were often frustrated by requests for additional information which they felt delayed the assessment and in some cases involved significant extra cost. One example was a request for additional sampling costing tens of thousands of pounds which the applicant felt was irrelevant to their product but that they had to do if they wanted the regulator to continue the assessment.
- **lack of understanding** – many stakeholders mentioned concerns regarding the technical knowledge and experience of the staff involved in the assessments. These concerns were raised by the nature of clarification questions received, particularly around combustion.
- **lack of appeal process** – many stakeholders saw a submission to the regulator as being a risk. The risks being of a negative outcome based on a misunderstanding of the material, product, market or application. There is no appeals process that could be used to address these concerns which even if they continue to believe it meets the test, would leave them in the situation of having to act against regulatory advice. The only option would be to test the opinion in court which would be costly and time consuming.
- **costs** – even where regulators don't charge, obtaining an opinion has been described as a "long, time consuming process". The Environment Agency charges commercial rates for the assessment but there are no commercial terms to protect the customer and set service levels. There were administrative complaints such as invoices without purchase orders and with the wrong contact name. It should be noted however that one company's view was that having to pay a fee gave the opinion more credibility as it meant it had been properly considered in detail by the regulator. EoW is not the only cost. When combined with REACH costs can escalate to approx. £200K. If costs get too high, it's more cost effective to dispose of the material or products as waste.

"Approaching the regulator is high risk as you're 'sticking your head above the parapet'"

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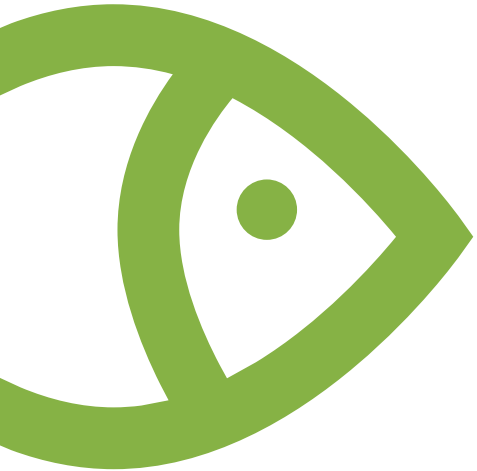
3. EoW assessments by the regulators (2)



"If you make the process too difficult and long, a lot of people will turn to self-certification with varying degrees of robustness"

Acceptable inputs and markets

- **input wastes** – the input waste materials treated and used to create the materials or components for which the EoW opinion is sought must be specified. This mirrors the approach of QPs and Resource Frameworks. Stakeholders identified that this can create costly barriers to EoW as another full assessment is required to add a waste code. They also felt that the use of European Waste Catalogue (EWC) codes was a 'blunt tool' that did not strengthen environmental protection as the use of the codes by people describing waste is often inaccurate and it can be easily manipulated by unscrupulous operators.
- **defining markets and applications** – similarly to the difficulty and costs associated with adding or changing input materials, selling waste derived products into new markets and applications was also seen as problematic. Stakeholder perception is that regulators seek to control risk to human health & the environment by being extremely prescriptive about the applications the material can be used for but that could be counterproductive at times as it limited the legitimate uses of the resources.
- **demonstrating markets** – interviews with the regulators identified a lack of confidence when assessing market demand and the efforts introduced to increase that confidence were identified as problematic by stakeholders asking for opinions. This was particularly so in Northern Ireland when DAERA request certificates from customers which again was considered to be overly prescriptive, impact on customer confidence and hamper the sale of the material as additional administration is required compared to 'non-waste derived products.

Geographical coverage

- **EoW opinions are valid only in the UK nations in which they are given** – effectively, the status of waste can change once it crosses an internal UK border. This point was raised by several stakeholders to illustrate the difficulty and uncertainty associated with the use of materials that they considered to have met the EoW tests. As submissions tend to be specific to one facility or application, this may be less of a barrier in practice that stakeholders perceive and no specific example of an operator seeking multiple opinions for the same material was referenced. However, this may be due to the small sample size.
- **EoW opinions do not guarantee the status for exported waste** – stakeholders believed that a significant tonnage of waste derived products and materials exported for use overseas without a formal EoW assessment or being identified by the regulator. For legitimate operators who have sought an EoW opinion cite the fact that it does not extend to the receiving country and this creates a compliance and commercial risk should the regulator in the receiving country decide it had not met the test.

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3. EoW assessments by the regulators (3)

The use of comparators

The EoW test requires that the use will not lead to overall adverse environmental or human health impacts . The regulators use a 'reasonable worst case' as a basis for risk assessment. This requires the determination of the environmental and human health impacts with a non-waste derived 'comparator' that is used for the same application. The Environment Agency published a list of comparators for common applications although it should be noted that the use of a comparator is not a legal requirement. Self certification doesn't require a comparator, instead, users have only to ensure that the product meets a recognised standard and the other conditions of the EoW test.

The interviews identified significant concerns about the use and choice of comparators. These include:

- the comparators represent an unrealistic standard against which to make an assessment. Specifically, waste derived materials are likely to contain some contamination but this may not have a significant detrimental impact on the environment and therefore some allowances should be made for this if it keeps resources in use. One stakeholder noted *"there is no such thing as zero pollution"*. They argue that polluting materials are permitted in new products citing the use of "carbon black, zinc, cadmium and chromium used in the manufacture of tyres and cited examples of uncontrolled activities involving the use of waste that have a much more significant detrimental impact; and
- the choice of comparator required by the regulator is inappropriate in that it's characteristics or application is not analogous to the material being assessed against it. Examples given included having to compare anaerobic digestate with cow slurry, wood chip used for animal bedding with straw, having to undertake a risk assessment using 100% of the material in question when only a mix containing 10% would ever be used, and ignoring the addition of other substances that mitigate the environmental impact associated with the use of the material, for example the use of mitigants in combustion.
- there is no consideration of the environmental impacts of the alternative, this being the continued treatment of the material and the likelihood that this could be recovery (energy from waste) or landfill, all of which have an impact on the environment either directly or indirectly by contributing to carbon emissions and therefore climate change.
- some stakeholders advocated for the adoption of a lifecycle assessment approach to the use of comparators, believing that when whole life environmental and human health impacts are considered, the outcome of the comparison with waste derived products would be more realistic and potentially more favourable.

Example: Syngas

Syngas is produced from the pyrolysis or gasification of waste feedstocks. It contains a mixture of gasses which can include carbon monoxide, hydrogen, methane and carbon dioxide. When assessing syngas for the EoW test, the EA requires that natural gas is used as a comparator, the quality of which can vary significantly and differs from syngas. It is understood that the regulator has developed an acceptable specification for syngas but that it has not been made publicly available and therefore many are unaware that is can be used. There was also concern that some of the limits in the specification are set much lower than those allowed in natural gas.

4. Uncertainty is a barrier to investment

In addition to the inherent complexity of end of waste, stakeholders also reported that uncertainty was also a big challenge, even for businesses that were using products legally at present. The emerging themes included:

- **demonstrating EoW before a product can be produced** – there was real concern that that fact that an EoW opinion cannot be given without a product that can be tested is a significant barrier to investment. Project developers are unlikely to invest in new infrastructure to manufacture waste derived products without the certainty that they can be sold without being subject to waste regulation. A number of examples were referenced including a company looking to invest in re-refining waste oil and smaller examples of small investments in equipment that were prevented.

- **uncertainty around the risk of enforcement** – the stakeholders reflected that for operators concerned with legal compliance, ensuring the rigorous application of the EoW test and in many cases, seeking confirmation from the regulator was required before treating the material differently. However, there were a number of examples given in which less scrupulous operators were treating material as having met EoW and risking the intervention of a regulator. This leads to an 'uneven playing field' with those operators willing to take the risk having a commercial advantage and those concerned to ensure compliance being at a disadvantage (in addition to the potential loss of a resource). One example was the use of road sweepings in the manufacture of topsoil with many operators adding the material. The use of topsoil is another commonly used material where the EoW test is not being rigorously applied but there is seemingly little risk of enforcement action.

- **maintaining EoW**– EoW status is dependant on a very specific input, process, output and application. If any of these parameters change, the opinion is no longer valid and this allows little flexibility to operators.

- **Regulatory Positions etc** – in circumstances where material remains a waste but its use is low risk, the activity may be allowed by a position issued by the regulator as long as specific conditions are met. Whilst these are welcome and in some cases widely used, they can be revised or withdrawn at any time. This means that investors cannot be certain that they will be able to benefit from them over the long term creating a significant risk to their business model and stifling investment.

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6. Conclusions and recommendations

The case for change

A widely understood and easily regulated system for achieving EoW is vital to establishing a circular economy, protecting the environment and human health. This project has found that the way we manage EoW issues currently is not achieving these outcomes in all cases and there is a significant case for considering an alternative approach. CIWM believes that the case for change is as follows:

Protecting the environment and human health must be a priority when regulating EoW. However, this does not mean 'zero contaminants', but rather how materials are to be used and controlled in their use (as many products must be). The complexity of the current system is not achieving this for two reasons:

- it is not widely understood by those managing waste derived materials and components therefore it is passively or actively ignored or mis-applied in many cases.
- the current system actively pushes waste towards those ignorant of or deliberately ignoring EoW tests as those that are seeking to comply carry financial and operational burden of generating evidence, keeping records and incurring the cost of specialist advice whilst criminals avoid these costs with very little risk of prosecution.

The current approach to regulating EoW is challenging for the regulators – The project has found that regulating EoW is also a challenge for the following reasons:

- the main focus of the regulators are the regulation of waste management facilities, the Duty of Care and disrupting illegal activities. EoW not considered to be a core activity and is not funded through charges in all but England (and this only covers time spent on assessment) making it difficult to sufficiently resource the staff and training required. As a result, their work is limited to small teams of specialists who operate outside the core services and as such, can struggle to secure the expertise and resources required to respond to submissions. **These teams are seen by stakeholders as the 'gatekeepers' to end of waste, circular waste treatment investment, and often significant business critical decisions but are not set up to deliver the required level of service.**
- the application and regulation of the EoW test is so complex that most staff don't understand it. This means opportunities to educate customers and take enforce action are regularly missed.
- as waste is a devolved issue, nations have diverged in their approaches to EoW and as a result, it is not possible to achieve consistency in the UK with the same material potentially having to be assessed 4 times, potentially with different opinions to get certainty for the UK as a whole. This is complicated for regulators and potentially undermines the validity of the regime for all.
- there are some 'grey areas' where the regulation of a specific waste may be disproportionate and not in the pubic interest. RPSs and LRWPS attempt to address these cases but they are perceived as a messy, 'sticking plaster' type approach which create more complexity and uncertainty due to their changeable nature. Linked to the definition of waste, there are some materials that are high volume, low value and which are commonly seen as fit for recycling, topsoil and other excavated material being an example. Regulating these materials is difficult and the lack of enforcement action maybe interpreted by the sector as indicating tacit approval.

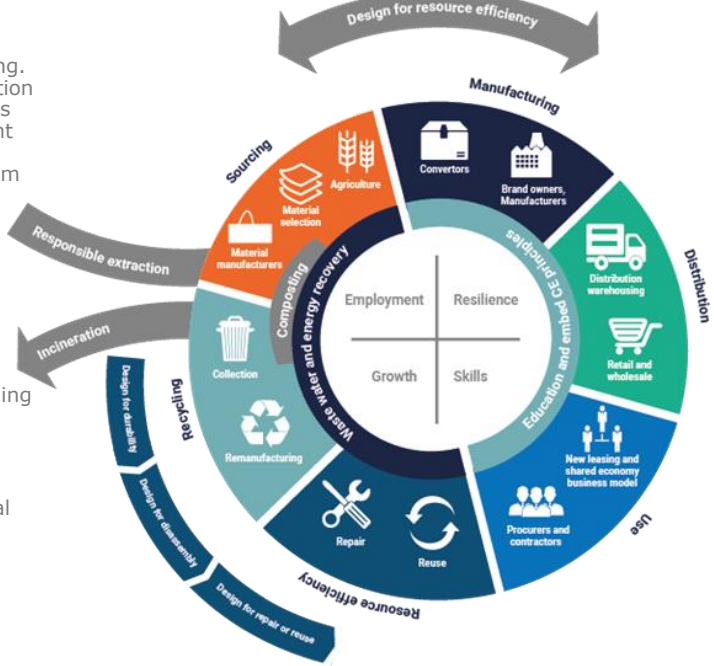
The case for change

- **assessing risk to the environment & human health** – a significant element of the EoW regime is risk assessment and the principle that the material should not be any more polluting than the material it is replacing. In some cases comparators are used but they are often considered to be poor proxies for the material in question and only take account of the chemical nature of the material, not the environmental and human health impacts of that product as a whole, across it's entire lifecycle. A lifecycle approach will give a more realistic assessment of the comparative impacts however potentially add complexity. Linked to this, there is a counterfactual to consider. If a material or component is not re-used or recycled, it will be sent for energy recovery (energy from waste) or landfill disposal. Both of these options have environmental impacts that are currently being discounted, along with the impacts of having to create more raw materials that the material in question could have offset.

- **the effort and regulatory focus is on the wrong part of the sector** – in short, the businesses which are engaging with the regulators over EoW issues and seeking opinions are not the problem. A great deal of time and money is being spent by compliant businesses to generate the evidence required to demonstrate their material meets the EoW test, and by the regulators to give an informed opinion on that evidence. There is a widespread perception that a significantly greater tonnage of waste is being used without regard to the EOW test, both intentionally or unintentionally. The has the effect of penalising legitimate business whilst those willing to take the risk of enforcement action can seemingly act with impunity as the focus and resources of the regulators are on the assessment process.

- **the current system will suppress the circular economy and hamper the achievement of recycling targets and the proposed target for the reduction of residual waste** – the project has identified several examples of materials that could be re-used or recycled but instead, they have been disposed of because of delays in the assessment process, because the cost of obtaining the evidence for an assessment (through the regulator or self-certification) was prohibitive when compared to the value of the material or where compliant operators were too nervous about the potential for enforcement action to take the perceived risk of declaring that it had met the EoW test.

- **regulatory certainty is vital for investment** – the current system does not give investors the regulatory certainty they need to invest. The CAPEX required may be relatively small, for example, to purchase equipment to allow existing facilities to recycle more material. In other cases it may be very large, for example, to develop ad deliver the infrastructure needed and some of the emerging technologies that are considered to be vital to increase recycling rates and produce the sustainable fuels required to reach net zero by 2050. Whilst it is possible to agree a RPS to cover the operation of new technology in the early stages, this option is not well publicised. A consistent regulatory approach and opinion across all UK nations, consistent and effective enforcement to create a level playing field, longevity for position statements and importantly, defining an approach that can be used where products have not yet been created is vital to give investors sufficient confidence to proceed where they are likely to meet the EoW test.



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Summary of the challenges identified

Challenge	Description
Complexity	• the existing EoW regime is complex and seen as a specialist field by the sector and within the regulators. • the complexity drives a lack of understanding and engagement with the EoW rules and processes. • because of the complexity, stakeholders seek confirmation from the regulator for reassurance for themselves and their customers.
Regulation & enforcement	• currently regulatory effort is focused on a very small tonnage of material, typically brought forward by businesses that are very focused on legal compliance, to small specialist teams. • general understanding of EoW amongst inspectors is low and there is little proactive identification or enforcement of EoW. • this leads to a high level of focus on small tonnages brought forward by operators that are, or strive to be, legally compliant.
Cost, speed & consistency of EoW assessments	• the teams dealing with EoW opinions in each nation are very small with knowledge concentrated in a small number of officers with the legal and technical expertise required and no formal networks (i.e. experts often have other 'day jobs'). • this results in restricted capacity and low levels of resilience leading to delays, particularly an issue for the EA where charging sets a level of expectation from the customer. • as teams are very small and the work sits slightly outside the delivery of 'core business', there is the potential for individuals to have disproportionate influence on decision making without ensuring that there is sufficient scrutiny and accountability. • limited joint working or harmonisation of approach and decisions between nations meaning some operators have to seek opinion from more than one. • confidentiality – Environment Agency may have a solution to this.
Scope of opinions to the wider sector	• some operators see an EoW opinion as a commercial advantage and therefore deliberately seek to make them bespoke to their product or treatment process. • this requires significant regulatory effort for little environmental protection/outcomes.
'Level playing field' beyond UK borders	• perception that other nations take a more relaxed approach to EoW – example of Denmark. • uncertainty around international movements – an opinion from a UK regulator may not be shared by the receiving county and vice versa. Instances of materials being shipped as waste to 'be safe rather than sorry' but this restricts markets.

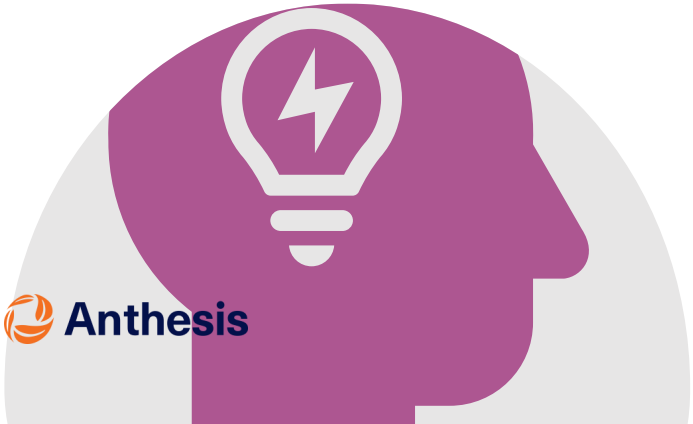
Summary of Recommendations

This project has combined stakeholder insights and the in-house experience of Anthesis's team to propose some solutions that have the potential to improve the application and regulation of EoW in the UK. Please note that these are high level proposals at this stage and will require further work to fully test. The table below sets out a summary of the potential changes against the challenges they seek to overcome. More detail is presented in the following slides.

Challenge	Solution	Description	Outcome
Nation/level opinions and differing approaches of the regulators	1	Re-establish regular meetings between EoW teams in the national regulators. Seek to agree & publish UK wide guidance and opinion.	Simplified approach and reduced costs for stakeholders, Increased resilience and greater efficiency in regulatory teams if knowledge and learning is shared.
Complexity and costs Low levels of enforcement Constrained resources	2	Explore the potential to leverage existing regulatory and product controls to control risk. Rather than the complex, stand alone process that focuses regulator resources on the compliant businesses, market drivers, product standards and existing regulatory controls to control risks.	Alignment with market mechanisms improves understanding. Lower cost for businesses. Regulator resources can be focused on compliance and enforcement – where waste has not met the EoW test, it remains waste & can be regulated.
Low levels of enforcement	3	Digital waste tracking has the potential to transform intelligence on wastes considered to have met EoW status. Regulators would have almost real time data on loads moved as EoW allowing fast intervention and monitoring.	The potential for fast intervention if illegal activity is suspected. Also generates insights into the type and tonnage of waste subjected to EoW test. Waste tracking will re-enforce data-led, timely intervention.
Low levels of awareness & understanding of End of Waste	4	Training on EoW issues for regulatory staff visiting waste management sites.	Increased potential to identify non-compliance and give advice and guidance in the field/take enforcement action.
Creating regulatory certainty to stimulate investment	5	Identify priority materials, technologies or applications that have the potential to play a significant role in the circular economy and investigate the potential to develop a position.	Increased regulatory certainty will 'unlock' investment in new technology and has the potential to deliver significant environmental benefits.
Delays and costs for stakeholders	6	Actively promote the validity of EoW decisions by operators to reduce the 'gate keeper' effect.	Faster decision making for stakeholders, reduced pressure on regulators.
Improvements of EoW submission processes	7	There are a number of low cost changes that can be made to improve the perception of the EoW service & advice.	Improved relationship with stakeholders potentially leading to increased engagement.
Assessing environmental harm	8	Consider the environmental impact of alternative fate of material and potential to use a lifecycle approach.	Improved environmental outcomes – minimising harm to the environment & human health.

Solution #1 Increased collaboration by regulators

Different approaches and positions between national regulators



Increased collaboration between regulators

Waste regulation is a devolved issue, however, there is the potential to explore a more consistent approach across the UK as a whole. This will reduce complexity for stakeholders, remove the risk of 'waste tourism' & give operators and investors a level playing field.

EoW teams from the regulators should re-establish regular meetings to share knowledge and seek to agree consistent positions and joint guidance wherever possible. There is a precedent for this as 'Best Available Techniques' (BAT) is decided at a UK level and there is a similar approach with the REACH Regulations. This could be informed by the European Commission approach i.e. a committee process with representation and expertise from each national regulator and using an agreed approach.

National teams currently dealing with EoW issues are very small, comprising of only a few members of staff. Working more closely together would have the effect of increasing efficiency (as knowledge could be shared) and expertise across the group, providing additional resilience and minimise the risk of undue influence by individual views.

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Solution #2 Leverage existing controls to demonstrate EoW

Leverage other environmental and market controls

The current regulatory approach to assessing the EoW test is a 'stand alone' process that has little reference to market forces or other regulatory regimes. At times, this creates frustration amongst stakeholders who perceive the commercial and environmental benefits of the material being a non-waste obvious and having to navigate a formal decision is complex, 'risky' (in terms of mis-understanding leading to an unexpected opinion from the regulator) and costly. It can also add significant delay before the status of the material can be confirmed.

Standing back from the processes that have evolved to regulate end of waste, it is clear that many of the concerns it seeks to mitigate are already controlled by the markets and other regulatory regimes. As such, the potential to move away from current practice and rely on these controls should be explored, the potential benefits being – the release of the regulators from the role of 'gatekeeper' to focus only on illegal activities, reduced costs and delay to business seeking to prove EoW and potentially a significant increase in recycling and landfill diversion.

Instead of a stand alone regulatory regime for EoW– leverage other commercial and regulatory controls

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Solution #2 Leverage existing controls to demonstrate EoW

Moving away from a distinct and 'stand alone' service with the focus on the regulators to 'sign off' on EoW decisions towards a greater reliance on existing market controls and other regulatory regimes has the potential to deliver significant benefits which include:

- Greater alignment with a commercial, market driven approach i.e. if there is a demand, these things will happen naturally, with environmental risks controlled by customer specification and other regulatory regimes focused on receiving sites and product standards;
- Releasing regulator resources from the focus on typically more compliant businesses seeking confirmation of EoW status, to instead focus on illegitimate businesses and illegal activity. This would deliver greater environmental protection and contribute to creating a 'level playing field' for stakeholders;
- The additional resources made available could also be used to identify and disrupt other illegal activities involving the use of waste such as land spreading and trommel fines, focusing resources on high risk activities for the environment and human health;
- Moving away from the perception that the regulators are 'gatekeepers' for EoW which results in additional costs and on some occasions, delays before waste derived products can be used. A different approach would grow market confidence in these products and stimulate a circular economy;
- Investors looking at new infrastructure would have greater regulatory certainty against which to leverage investment. The risk being limited to whether the technologies will, in operation, produce products to the required specification (a more acceptable commercial and technological risk); and
- REGULATORS DO NOT LOSE THE ABILITY TO REGULATE as if the EoW test is not met, the material remains a waste and can be regulated as such.

Potential framework for managing EoW risks through existing controls

EoW criteria

1. The substance or object is to be used for specific purposes	This criteria may not be required if the others are met as risk in use would be controlled by other means.
2. A market or demand exists for such a substance or object	Requiring a sales contract or equivalent 'commitment to buy' would demonstrate demand, mirroring the current approach in NI. Any product without this would not meet the EoW test & as such be subject to legislation, reducing risk of stockpiling.
3. The substance or object fulfils the technical requirements for the specific purposes and meets the existing legislation and standards applicable to products	Use customer specification & industry standards where available. Explore potential for specifications for common waste derived products or those specific to waste treatment activity to be set within environmental permits.
4. The use of the substance or object will not lead to overall adverse environmental or human health impacts	As an example, chemicals placed on the market are required to comply with REACH Regulations which control risks to the environment & human health. Waste derived fuels are commonly used at facilities where emission limits are controlled by other regulatory regimes. This is also similar to chemical feedstocks at plants where emissions are similarly controlled.

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Solution #3 Improving intelligence though tracking

Digital waste tracking

In 2022, Defra consulted on the introduction of a Smart Waste Tracking Service for the UK. Although the final details of the service are subject to the findings, one of the proposals is that materials and products that have reached EoW status will be included in the scope of the system for their first movement i.e. from the site of manufacture to the first receiving site. Currently, there are very little data available on materials that have reached end of waste. Waste tracking will 'shine a light' into the dark areas of the UK's waste management system that can currently be easily hidden.

Depending on how it is implemented, digital reporting of waste movements will allow regulators to identify the materials and loads being designated as having met EoW status and the sites and companies involved in real or almost real time. Where waste is 'lost' from the system or illegal activities suspected, they will be able to make fast interventions to prevent environmental harm and harm to human health.

Digital waste tracking will also generate valuable data to understand the type and quantities of waste reaching EoW status in the UK and the applications it is being used for. This will provide valuable insight into trends in recycling rates, circular business models and demand for secondary materials.

Lack of resources to identify mis-application of EoW criteria and waste crime

Solution #4 Increase understanding of EoW

Improve understanding of EoW

Additional understanding and awareness is required for:

- regulatory officers to enable them to increase the identification of non-compliance, give advice and guidance or take enforcement action if required.
- waste operators creating products from waste.
- the market using waste derived products.

This should be targeted at the large proportion of the sector that is ignorant of the issues and acting contrary to the legislative requirements.

This should be undertaken in partnership with efforts to simplify the requirements.

Improve guidance on EoW assessment and empower operators & markets to have confidence

Solution #5 Priority materials & new technology

Investors need regulatory certainty to develop and build the infrastructure we need

<u>Proactive support to clarify the EoW position for products produced by new technologies</u>

New technologies and innovative products manufactured from waste, particularly plastics, have a significant role to play if we are to transition to a circular economy within the limitations of this decisive decade.

With a significant lead-in time to commercial operation and with the need to attract investment, the Government and regulators could reduce uncertainty (perceived as investment risk) and shape the environmental outcomes they want to see by working proactively with the sector to define how products would be treated and used in the supply chain.

Identifying priority areas for pro-active work to unlock investment could be facilitated by an 'EoW practitioner group' with membership drawn from the regulators, industry representatives and specialist advisors.

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Solution #6 Gatekeeper

Improve confidence in self assessment

At present operators feel strongly motivated to seek the regulator's opinion on EoW due to the significant legal and commercial liability should they not agree with their determination and to reassure customers of the quality of the product.

Some of the uncertainty comes from the differing interpretation that can be taken from EoW guidance. This could be improved if the current system could be simplified (see Solution #2) and the regulators adopt a communication strategy that empowers operators and the market to make self-certification decisions, understanding that they have the same legal weight as an opinion from a regulator.

Improve guidance on EoWassessment and empower operators & markets to have confidence

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Solution #7 Small changes to improve applications

Some business formally seeking opinions feel a lack of control and transparency

Small changes to the EoW service and engagement to improve customer satisfaction

Stakeholders that had made submissions to the Environment Agency's EoW service and engaged with the other regulators identified the following changes that would improve the customer experience:

- named individual (technical not just administrative) as the main contact.
- involve customers more closely in the decision making process to build confidence the submission is well understood and foster a collaborative approach.
- provide a realistic estimate of costs based on the time required to assess similar submissions whilst recognising this can be difficult to establish early in the process.
- ensure that internal administration processes are in place to manage Purchase Orders & invoicing.
- use funds to secure necessary internal, and where required, external experts with the required expertise.
- ensure web pages on EoW give a point of contact and make it clear what information is required for the assessment.
- consider solutions to maintain confidentiality.

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Solution #8 Assessing environmental risk

Alternative approaches to assessing risk to the environment and human health

Some stakeholders believe that the current approach to assessing the risk of using waste derived products is flawed due to:

- comparator materials can be very different from the waste derived products that are being measured against them.
- the assessment doesn't consider the lifecycle impacts of the comparator compared to the waste derived product; and
- the assessment doesn't consider the environmental and human health impacts of the alternative fate of the material if it remains waste and has to go for recovery or disposal.

Whilst recognising that the projection of the environment and human health is vital, no activity or product is created without a degree of pollution and building in these considerations will allow for more holistic assessment of the risks and benefit of waste derived products.

Improve guidance on EoW assessment and empower operators & markets to have confidence

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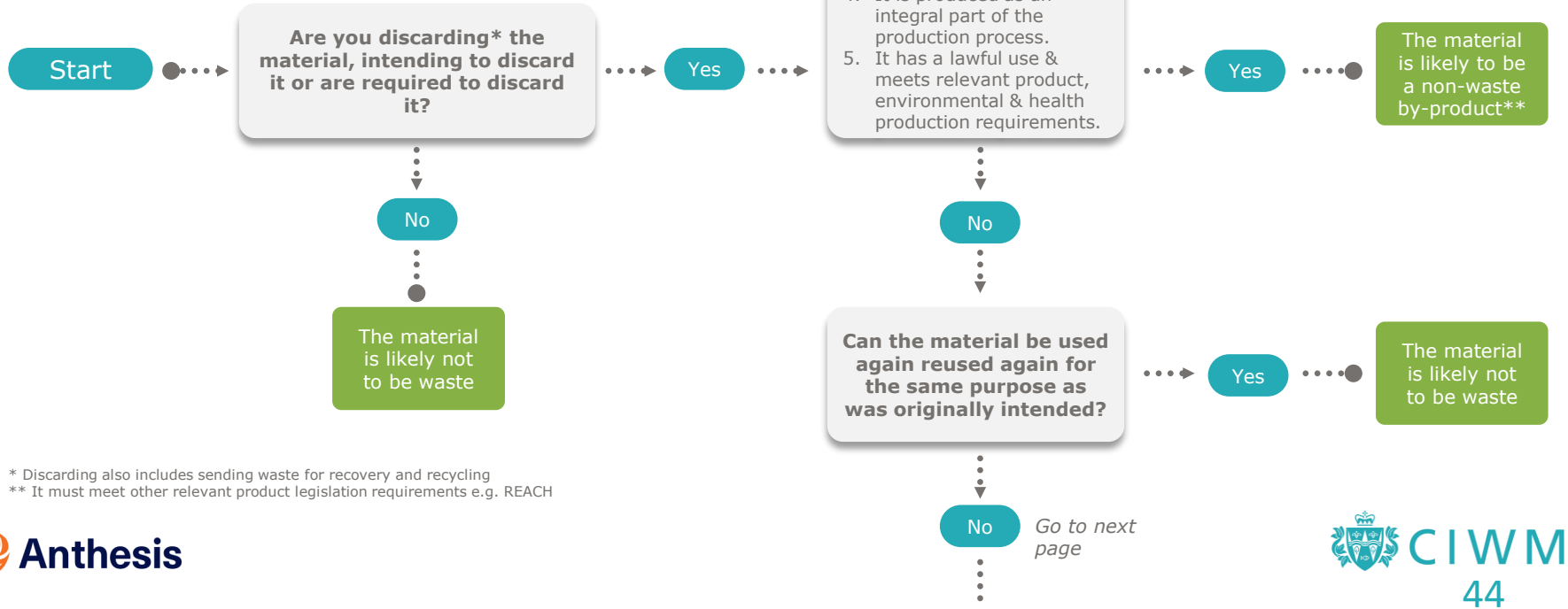
Appendices

Appendix 1: Decision flow chart for the definition of waste

Definition of Waste Flow Chart

Is my material a waste? | Page 1



* Discarding also includes sending waste for recovery and recycling
** It must meet other relevant product legislation requirements e.g. REACH

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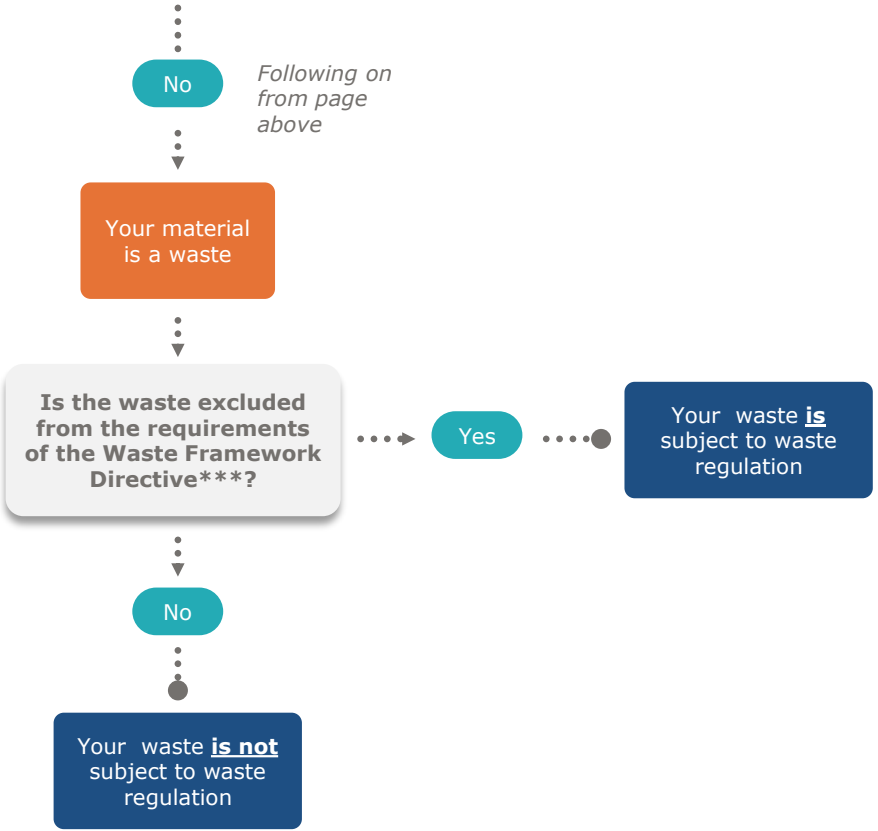
Definition of Waste Flow Chart

Is my material a waste? | Page 2

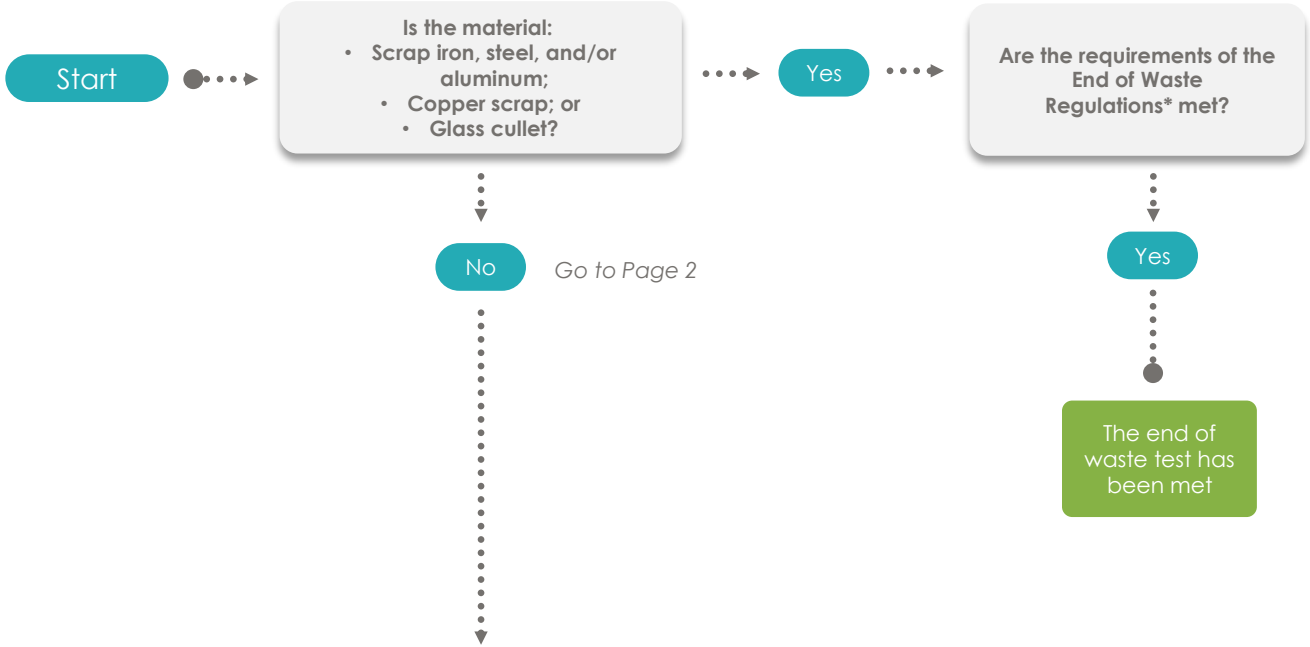


*** Excluded wastes are listed in Article 2 of the Wase Framework Directive

Appendix 2: EoW decision flow chart for England

ENGLAND FLOW CHART

End of Waste | Page 1



** In order to meet the end of waste test:*

- *a specified quality criteria must be achieved and a producer or importer must be able to issue a statement of conformity*
- *a certified quality management system must be in place which can demonstrate compliance with the quality criteria*

End of waste Regulation for scrap iron, steel and aluminium can be found here , the End of Waste Regulation for glass cullet can be found here, the End of Waste Regulation for copper scrap is here.

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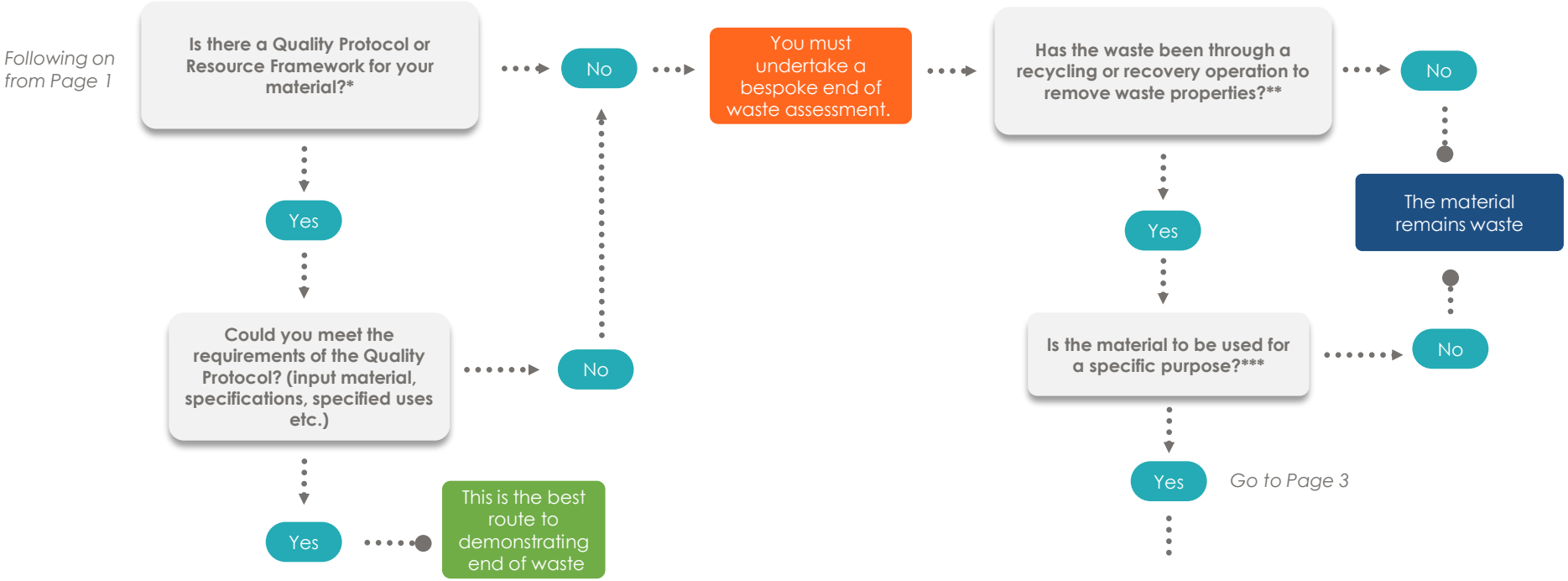
ENGLAND FLOW CHART

End of Waste | Page 2



* The Environment Agency is reviewing all 13 Quality Protocols (QP) with the aim of updating them to Resource Frameworks or withdrawing them. The most up-to-date information on each QP can be found here

** This can be anything from a visual check to a complex process

*** If there is more than one use, the material is only likely to have a specific use if those uses can exist alongside each other. With multiple uses, multiple assessments should be considered

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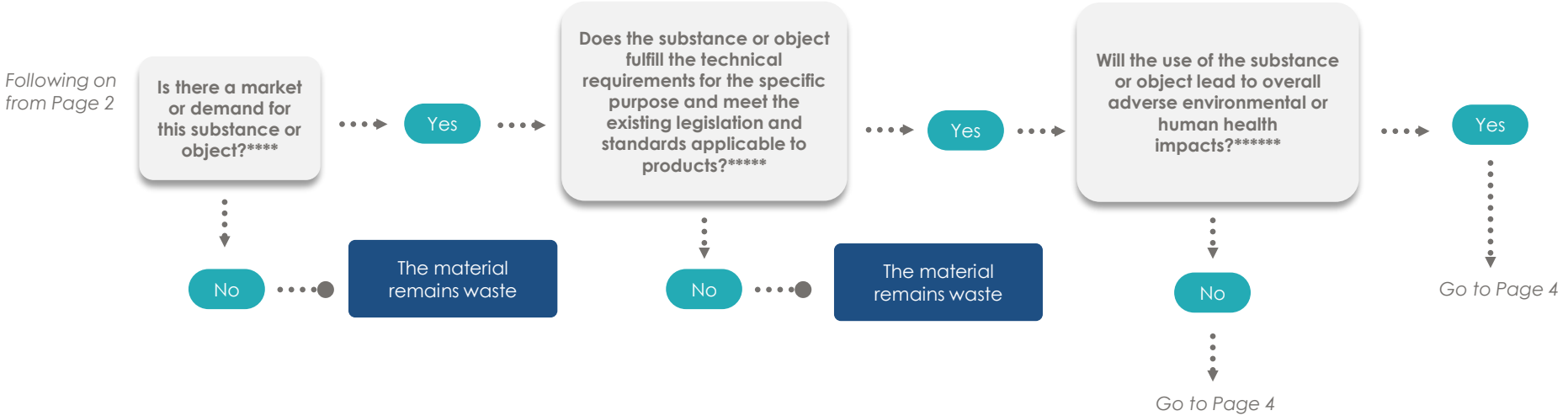


**** Decide if the material's use is certain i.e.:

- Consider why it will be purchased; evidence of larger and more established potential purchasers is stronger.
- Consider if it is fit for purpose and is stored and treated to keep it so.
- Consider predicted sales and if proposed sale price compares to similar products.
- Consider if there is an established market, if so its size, history, purchasing ability, and your experience of the market, to establish that it meets the market need and will sell.
- Consider evidence of market, e.g., contracts or written interest (quantity, quality, price).
- Indefinite storage indicates there is not a market; short-term market may not be considered certain enough.

***** To decide if the material meets all relevant product, environmental and health protection requirements, consider if it meets all relevant technical specifications and standards and legislation.

****** If there is a comparator for the substance or object – do a risk assessment using the comparator approach. Use an analogous non-waste substance or object as a comparator. It must be a likely competitor in the market and used in the same way as the substance or material in question, including storage, transport, handling, and use. If the material has multiple uses, the comparator should have all those uses. If there is not an appropriate non-waste comparator – do a general risk assessment of all substances of potential concern (SOPCs).

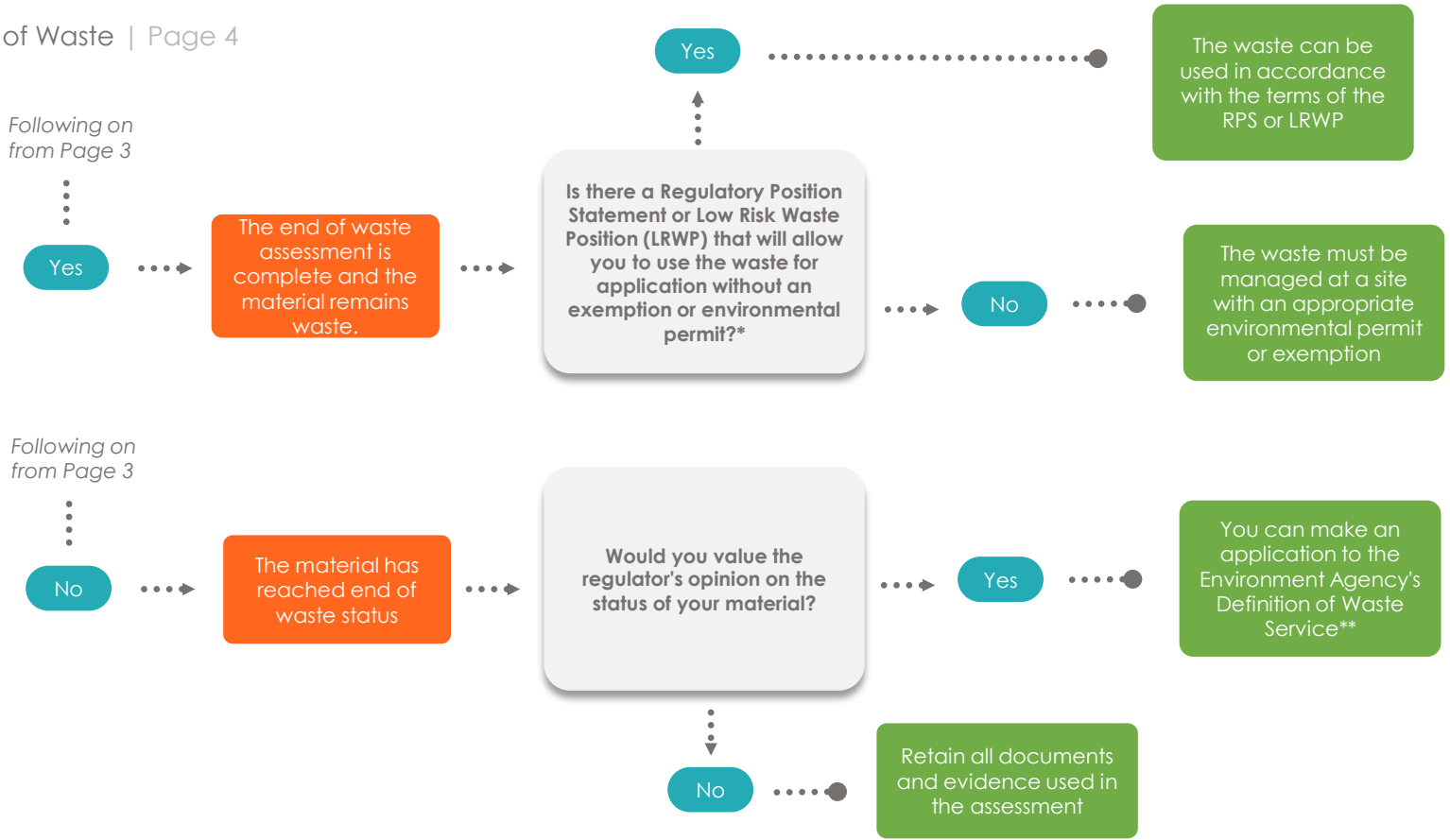
The material must be of no significantly greater risk to the environment or human health than the non-waste derived product. A 'reasonable worst-case scenario' approach is used. An initial assessment should include (where relevant):

- Composition – basic elements.
- Physical parameters (e.g., water content).
- Advanced analysis where needed (e.g., speciation of elements or ecotoxicology).
- Calorific value (fuels only).

Full risk assessment for SOPCs (equivalent to risk assessment when there is no comparator) if initial assessment shows they:

- Higher concentration or quantity than non-waste, including when emitted to environment.
- Lower weight-for-weight but will be higher than comparator because a larger volume of the material will be used for the same effect

The risk assessment must show that the use of the material does not lead to overall adverse environmental and human health harm – that is, a material must be of no significant risk to the environment or human health.



** The Environment Agency publish Regulatory Position Statements (RPSs) which allow low risk activities to take place without an environmental permit or exemption. These can be found here*
The Environment Agency also publishes these low risk waste positions (LRWPs) for waste operations that it considers may be suitable for an exemption. Some of these relate to the use of waste and can be found here

*** Details of the service, application form and information required can be found here*
The Environment Agency charges for this service (currently £125 per hour)

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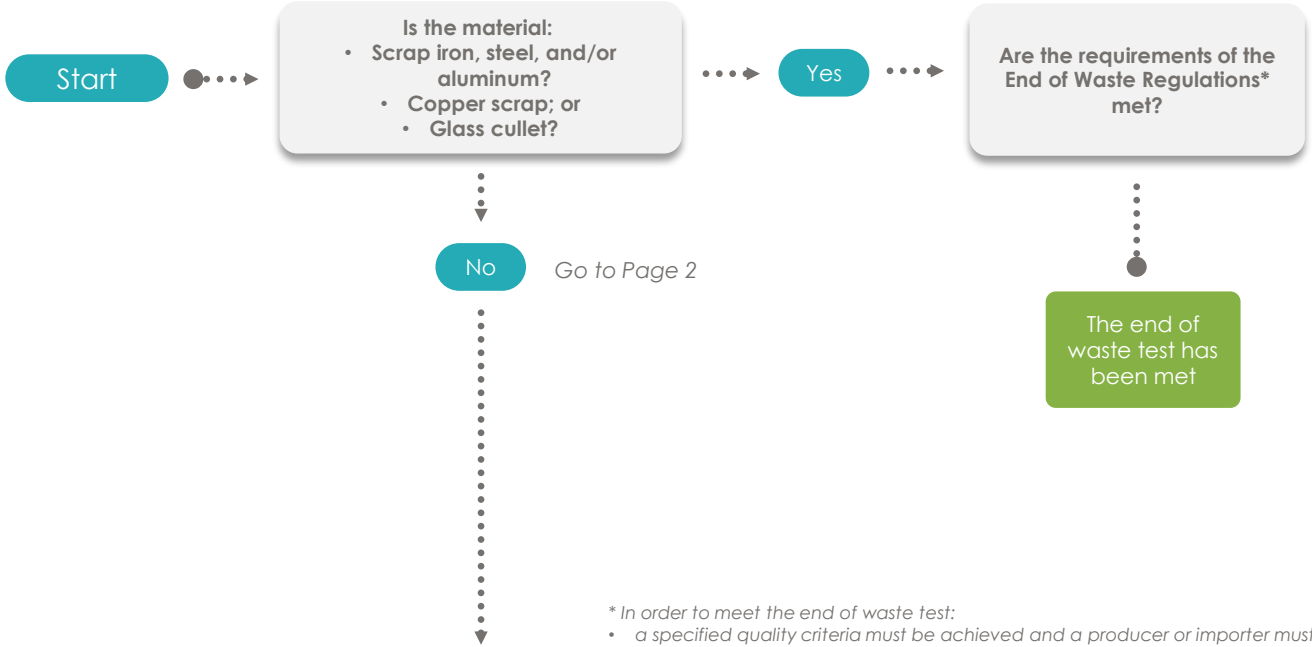
Appendix 3: EoW decision flow chart for Wales

WALES FLOW CHART

End of Waste | Page 1



** In order to meet the end of waste test:*

- *a specified quality criteria must be achieved and a producer or importer must be able to issue a statement of conformity*
- *a certified quality management system must be in place which can demonstrate compliance with the quality criteria*

End of waste Regulation for scrap iron, steel and aluminium can be found here , the End of Waste Regulation for glass cullet can be found here, the End of Waste Regulation for copper scrap is here.

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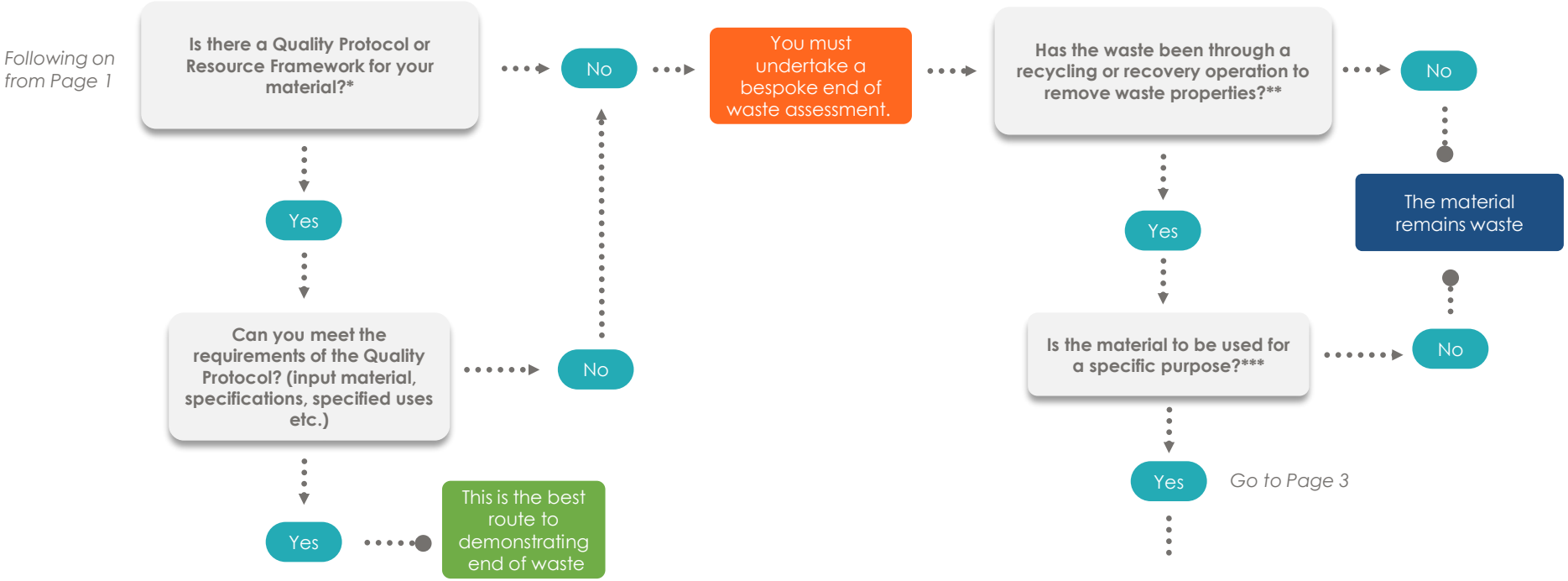
WALES FLOW CHART

End of Waste | Page 2

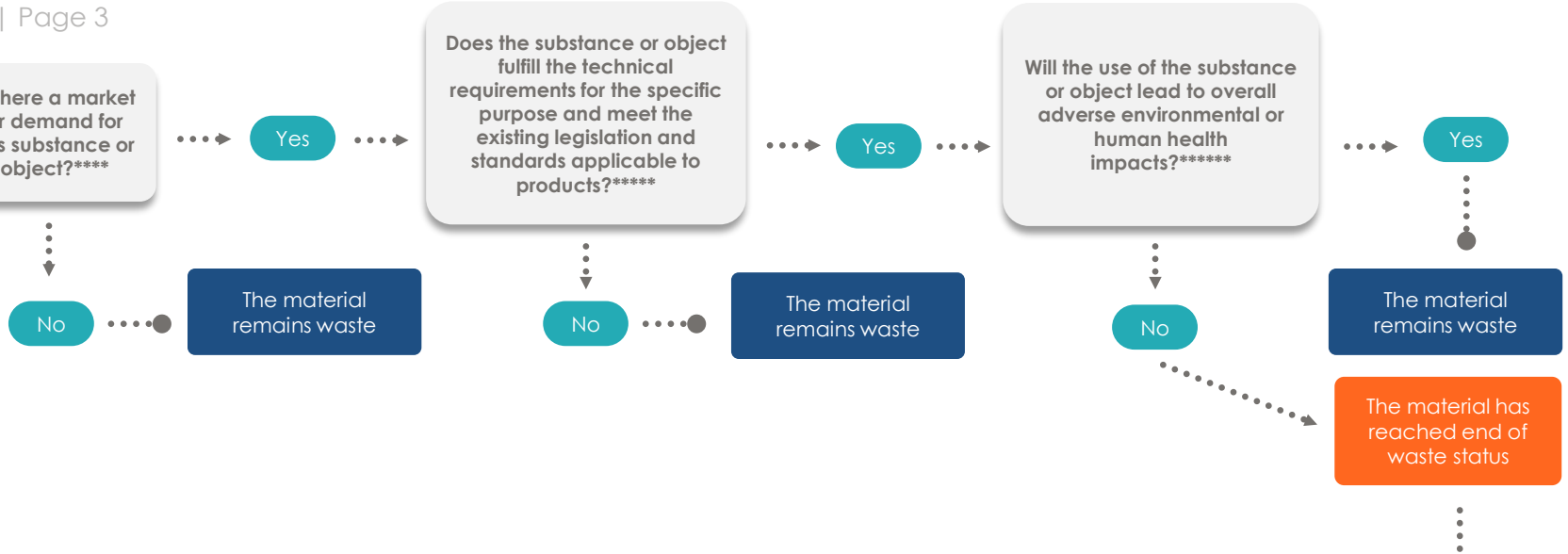


** The Environment Agency are reviewing the Quality Protocols (QP) to decide whether the content needs to be revised and updated to Resource Frameworks. If revisions are required this will be done for each QP individually with the relevant industry through task and finish groups. NRW are part of this revision process through the task and finish groups to ensure cross border issues are addressed and to manage consistency of approach. If this revision process is not followed then the Environment Agency and NRW may withdraw their support for the QP therefore it is advisable to check the status regularly.*

*** This can be anything from a visual check to a complex process*

**** If there is more than one use, the material is only likely to have a specific use if those uses can exist alongside each other. With multiple uses, multiple assessments should be considered*

Following on from Page 2



Go to Page 4

**** Decide if the material's use is certain. **NRW emphasises the importance of ensuring genuine recovery takes place as part of all waste definition assessments.** Consider:

- Why it will be purchased; evidence of larger and more established potential purchasers is stronger.
- If it is fit for purpose and is stored and treated to keep it so.
- Whether predicted sales and if proposed sale price compares to similar products.
- If there is an established market, if so its size, history, purchasing ability, and your experience of the market, to establish that it meets the market need and will sell.
- Evidence of market, e.g., contracts or written interest (quantity, quality, price).
- Indefinite storage indicates there is not a market; short-term market may not be considered certain enough.

***** To decide if the material meets all relevant product, environmental and health protection requirements, consider if it meets all relevant technical specifications and standards and legislation. Use an analogous non-waste substance or object as a comparator. It must be a likely competitor in the market and used in the same way as the substance or material in question, including storage, transport, handling, and use. If the material has multiple uses, the comparator should have all those uses.

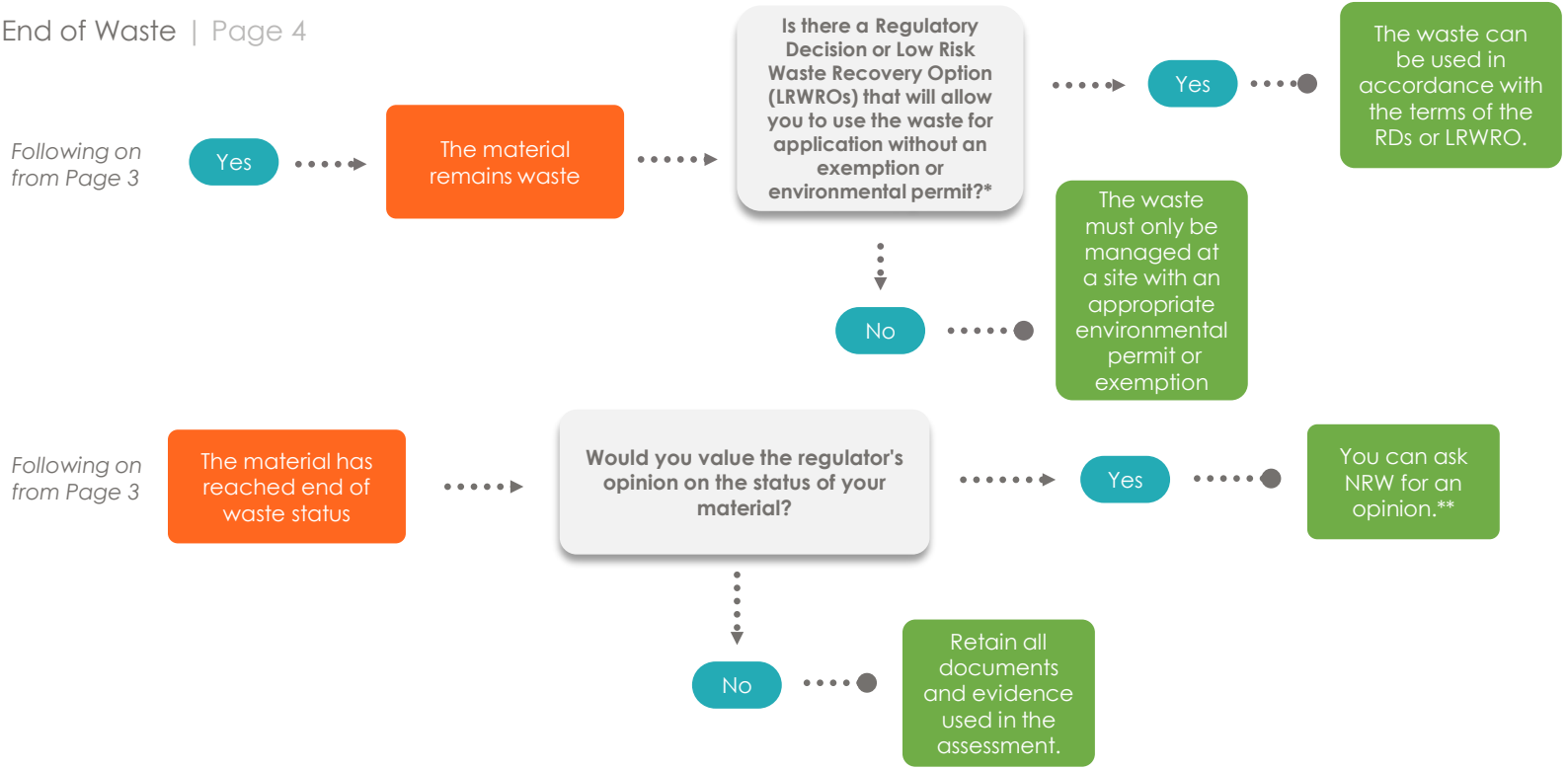
****** If there is a comparator for the substance or object – do a risk assessment using the comparator approach. This compares how the material is stored, transported, handled, and used. If there is not an appropriate non-waste comparator – do a general risk assessment of all substances of potential concern (SOPCs).

The material must be of no significantly greater risk to the environment or human health than the non-waste derived product. A 'reasonable worst-case scenario' approach is used. An initial assessment should include (where relevant):

- Composition – basic elements.
- Physical parameters (e.g., water content).
- Advanced analysis where needed (e.g., speciation of elements or ecotoxicology).
- Calorific value (fuels only).

Full risk assessment for SOPCs (equivalent to risk assessment when there is no comparator) if initial assessment shows they:

- Higher concentration or quantity than non-waste, including when emitted to environment.
- Lower weight-for-weight but will be higher than comparator because a larger volume of the material will be used for the same effect



** There is no formal process for requesting an opinion from NRW. You will be required to submit information to inform the assessment. NRW do not charge for this advice.*

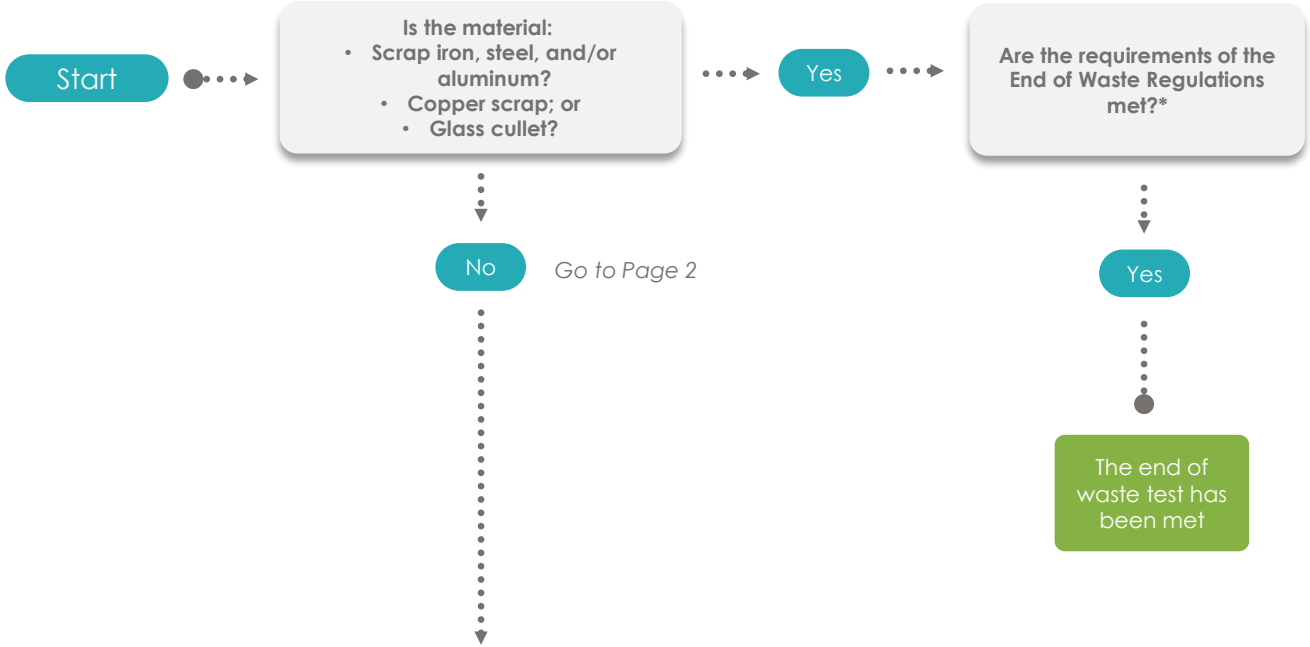
* NRW publish Regulatory Decisions (RDs) which describe situations in which they will not take enforcement action . Currently none relate to end of waste but they are published here, They. Each RD will have a revision date where the decision is made whether to re-issue, amend or withdraw.*

NRW also develop Low Risk Waste Recovery Options (LRWROs) which set out where waste activities that would typically need an EPR permit, but are not covered by an exemption, can be carried out in Wales without a permit. They are not published on their website. LRWRO's don't typically have a revision date so remain in place until they are revised or withdrawn

Appendix 4: EoW decision flow chart for Scotland

SCOTLAND FLOW CHART

Has my waste met the end of waste test? | Page 1



** In order to meet the end of waste test:*

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- *a certified quality management system must be in place which can demonstrate compliance with the quality criteria*

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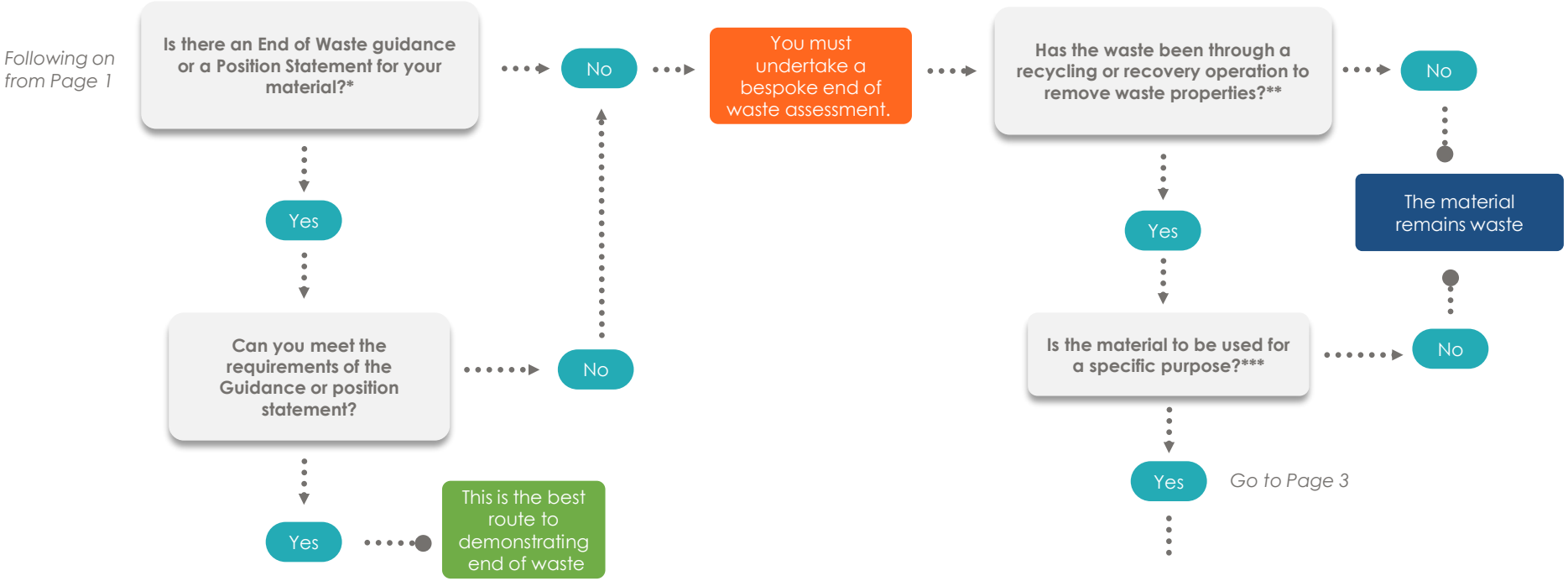
SCOTLAND FLOW CHART

Has my waste met the end of waste test? | Page 2



* SEPA publish End of Waste guidance and position statements for a number of materials here

** This can be anything from a visual check to a complex process

*** If there is more than one use, the material is only likely to have a specific use if those uses can exist alongside each other. With multiple uses, multiple assessments should be considered

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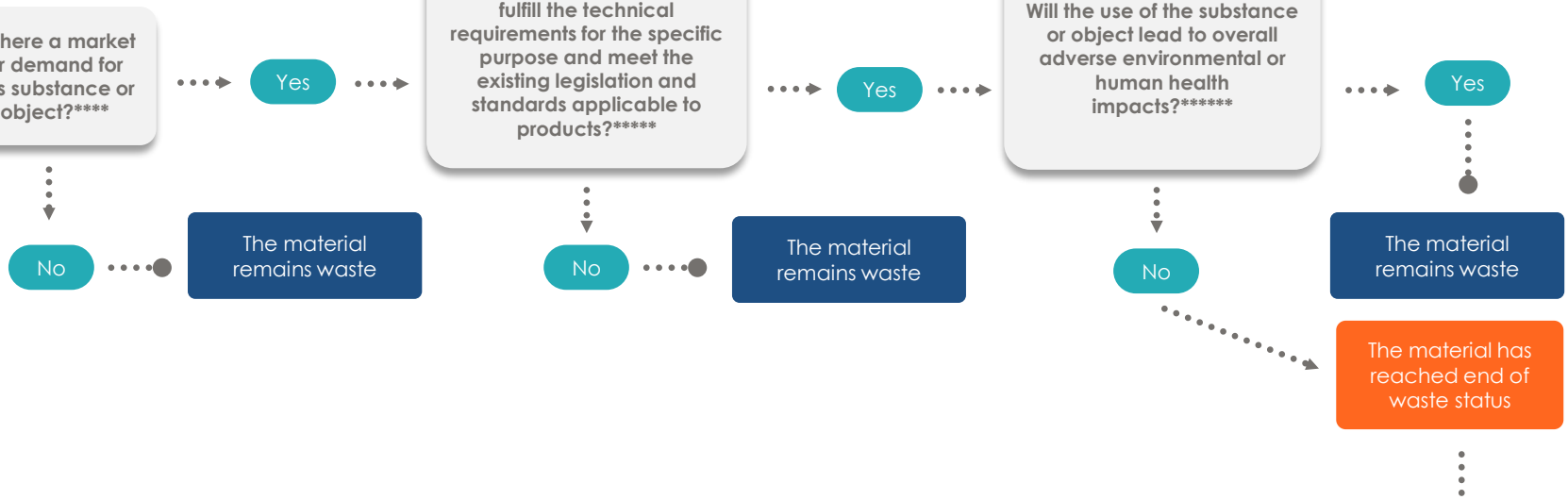


Go to Page 4

**** Decide if the material's use is certain i.e.:

- Consider why it will be purchased; evidence of larger and more established potential purchasers is stronger.
- Consider if it is fit for purpose and is stored and treated to keep it so.
- Consider predicted sales and if proposed sale price compares to similar products.
- Consider if there is an established market, if so its size, history, purchasing ability, and your experience of the market, to establish that it meets the market need and will sell.
- Consider evidence of market, e.g., contracts or written interest (quantity, quality, price).
- Indefinite storage indicates there is not a market; short-term market may not be considered certain enough.

***** To decide if the material meets all relevant product, environmental and health protection requirements, consider if it meets all relevant technical specifications and standards and legislation. Use an analogous non-waste substance or object as a comparator. It must be a likely competitor in the market and used in the same way as the substance or material in question, including storage, transport, handling, and use. If the material has multiple uses, the comparator should have all those uses.

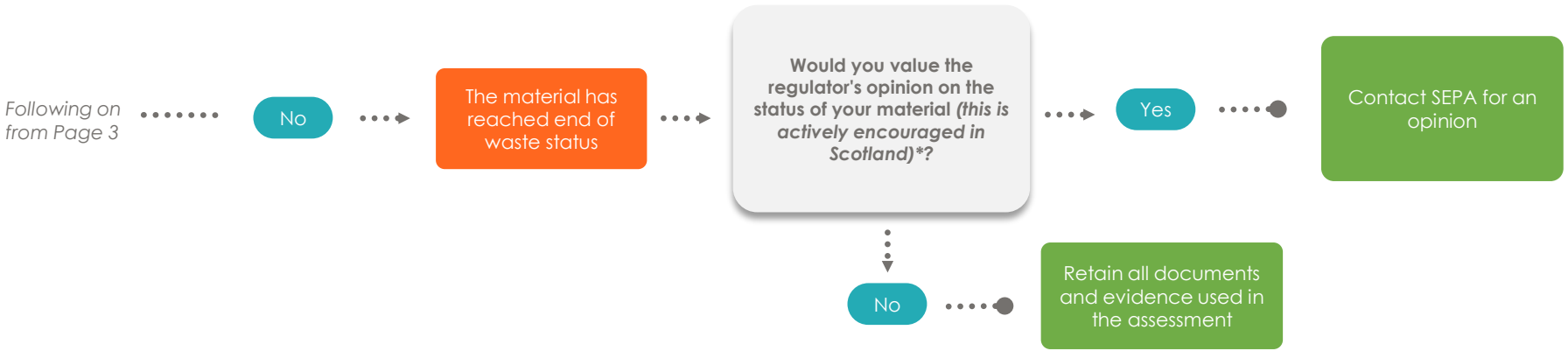
****** If there is a comparator for the substance or object – do a risk assessment using the comparator approach. This compares how the material is stored, transported, handled, and used. If there is not an appropriate non-waste comparator – do a general risk assessment of all substances of potential concern (SOPCs).

The material must be of no significantly greater risk to the environment or human health than the non-waste derived product. A 'reasonable worst-case scenario' approach is used. An initial assessment should include (where relevant):

- Composition – basic elements.
- Physical parameters (e.g., water content).
- Advanced analysis where needed (e.g., speciation of elements or ecotoxicology).
- Calorific value (fuels only).

Full risk assessment for SOPCs (equivalent to risk assessment when there is no comparator) if initial assessment shows they:

- Higher concentration or quantity than non-waste, including when emitted to environment.
- Lower weight-for-weight but will be higher than comparator because a larger volume of the material will be used for the same effect



** SEPA actively encourages all operators making end of waste decision to contact them for advice. SEPA do not charge for this service.

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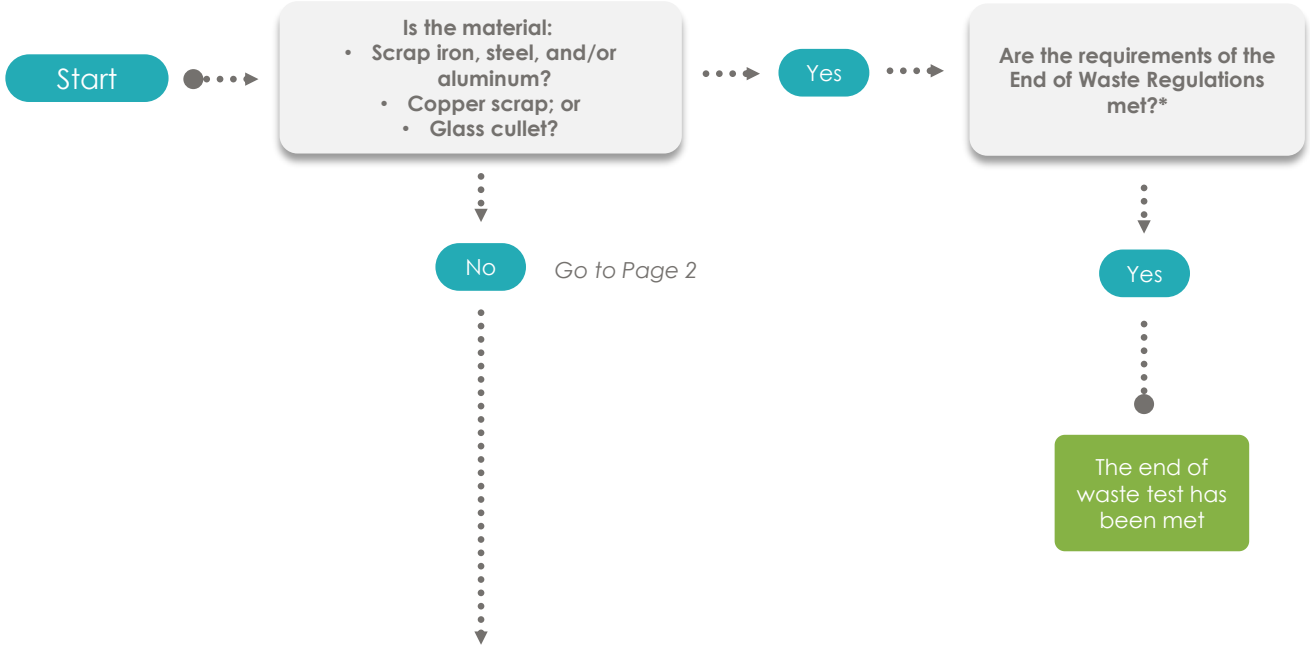
Appendix 5: EoW decision flow chart for Northern Ireland

NORTHERN IRELAND FLOW CHART

End of Waste | Page 1



** In order to meet the end of waste test:*

- *a specified quality criteria must be achieved and a producer or importer must be able to issue a statement of conformity*
- *a certified quality management system must be in place which can demonstrate compliance with the quality criteria*

End of waste Regulation for scrap iron, steel and aluminium can be found here , the End of Waste Regulation for glass cullet can be found here, the End of Waste Regulation for copper scrap is here.

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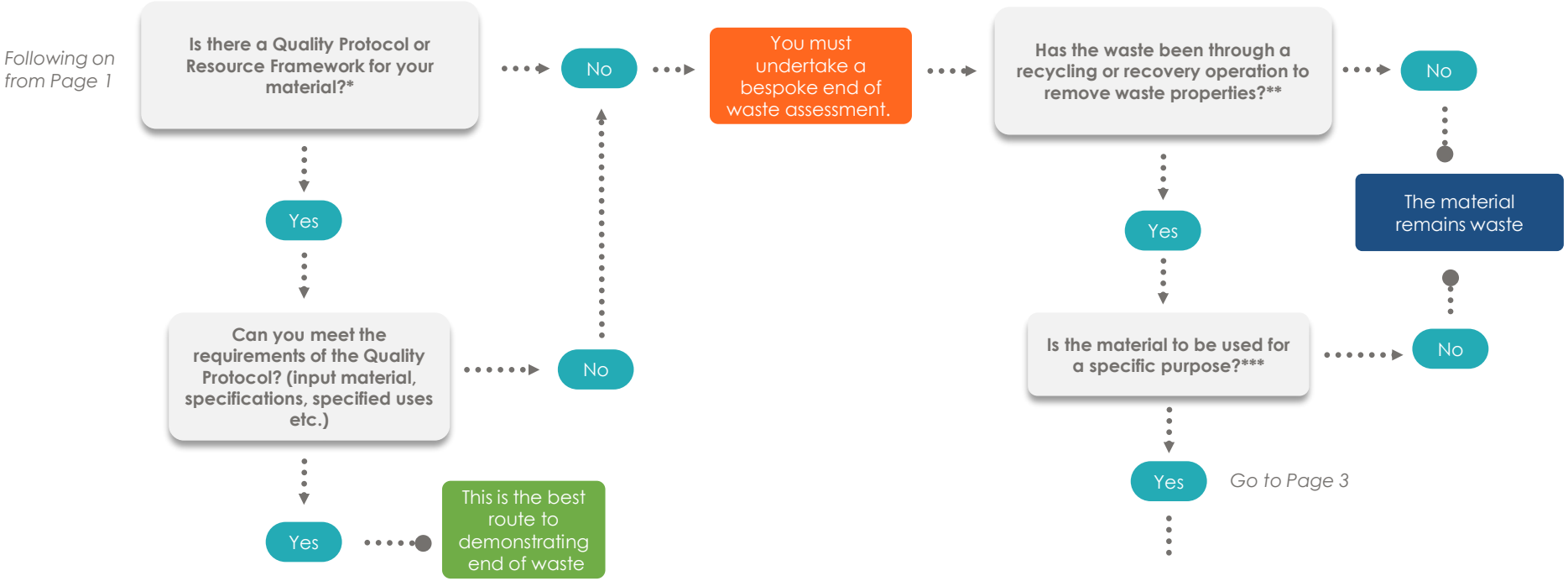
NORTHERN IRELAND FLOW CHART

End of Waste | Page 2

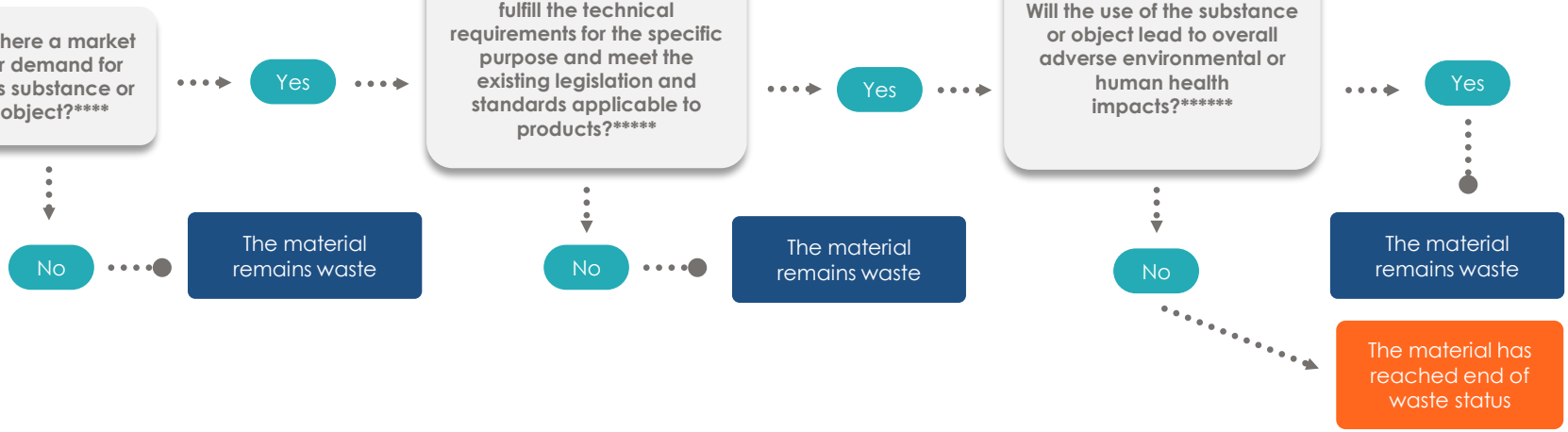


** The Quality Protocols that apply in Northern Ireland can be found here. Quality Protocols (QP) are currently under review with the aim of updating them to Resource Frameworks or withdrawing them.*

*** This can be anything from a visual check to a complex process*

**** If there is more than one use, the material is only likely to have a specific use if those uses can exist alongside each other. With multiple uses, multiple assessments should be considered*

Following on from Page 2



Go to Page 4

**** Decide if the material's use is certain i.e.:

- Consider why it will be purchased; evidence of larger and more established potential purchasers is stronger.
- Consider if it is fit for purpose and is stored and treated to keep it so.
- Consider predicted sales and if proposed sale price compares to similar products.
- Consider if there is an established market, if so its size, history, purchasing ability, and your experience of the market, to establish that it meets the market need and will sell.
- Consider evidence of market, e.g., contracts or written interest (quantity, quality, price).
- Indefinite storage indicates there is not a market; short-term market may not be considered certain enough.

***** To decide if the material meets all relevant product, environmental and health protection requirements, consider if it meets all relevant technical specifications and standards and legislation. Use an analogous non-waste substance or object as a comparator. It must be a likely competitor in the market and used in the same way as the substance or material in question, including storage, transport, handling, and use. If the material has multiple uses, the comparator should have all those uses.

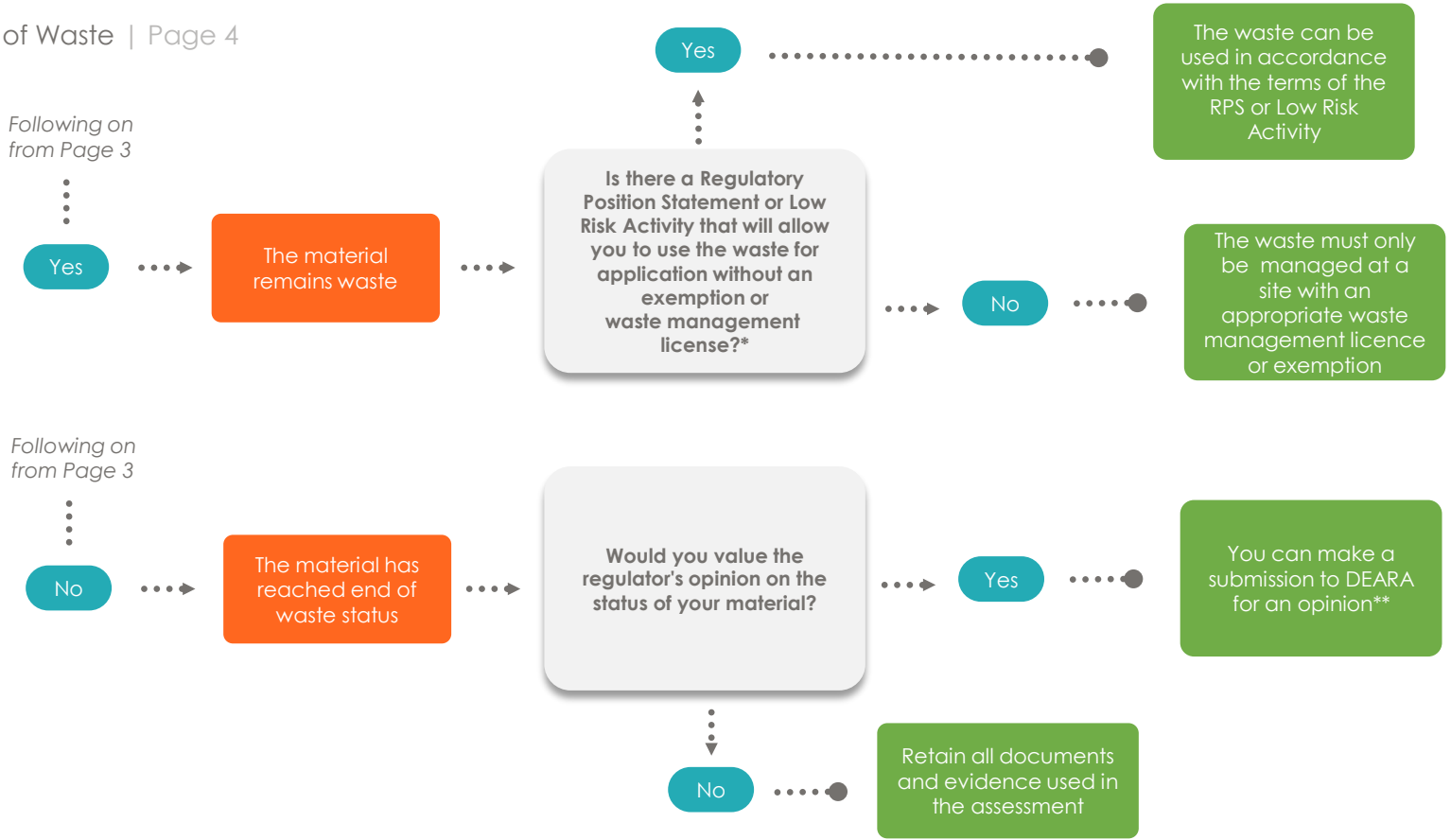
****** If there is a comparator for the substance or object – do a risk assessment using the comparator approach. This compares how the material is stored, transported, handled, and used. If there is not an appropriate non-waste comparator – do a general risk assessment of all substances of potential concern (SOPCs).

The material must be of no greater risk to the environment or human health than the non-waste derived product. A 'reasonable worst-case scenario' approach is used. An initial assessment should include (where relevant):

- Composition – basic elements.
- Physical parameters (e.g., water content).
- Advanced analysis where needed (e.g., speciation of elements or ecotoxicology).
- Calorific value (fuels only).

Full risk assessment for SOPCs (equivalent to risk assessment when there is no comparator) if initial assessment shows they:

- Higher concentration or quantity than non-waste, including when emitted to environment.
- Lower weight-for-weight but will be higher than comparator because a larger volume of the material will be used for the same effect



** DEARA publish Regulatory Position Statements and guidance on Low Risk Activities which allow a limited number of activities to take place without an environmental permit waste management licence or exemption. These can be found here*

*** Guidance on the information required for a submission and the application form can be found here There is no charge for this service*

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Appendix 6: References

Approaches of European MS to end of waste:

- Study to assess member states (MS) practices on by-product (BP) and end-of waste (EoW). Final report, 2020, Umweltbundesamt GmbH (EAA) and ARCADIS Belgium NV (DG-Env) https://op.europa.eu/es/publication-detail/-/publication/beb56eaa-9fc0-11ea-9d2d-01aa75ed71a1/language-en/format-PDF/source-130854906
- VLAREMA 17 February 2012 https://navigator.emis.vito.be/mijn-navigator?woId=43991
- European Commission, Directorate-General for Environment, Resource efficient use of mixed wastes improving management of construction and demolition waste: final report, Publications Office, 2017, Deloitte, BRE, ICEDD, VTT, RPS and FCT of NOVA University of Lisbon https://data.europa.eu/doi/10.2779/99903
- https://www.czso.cz/csu/czso/2001-06-in_2005-komentar
- https://www.lexology.com/commentary/environment-climate-change/belgium/dla-piper-uk-llp/flanderss-new-approach-to-waste-management-setting-the-scene-in-europe#criteria
- EoWcriteria for inert aggregates in member states, Velzeboer & van Zomeren, 2017 https://publicaties.ecn.nl/PdfFetch.aspx?nr=ECN-E--17-010
- https://www.albonazionalegestoriambientali.it/Download/it/NormativaNazionale/004-DM_05.02.98.pdf
- https://www.arpa.veneto.it/temi-ambientali/rifiuti/file-e-allegati/normativa/Circolare%20n.%205205%20del%2015%20luglio%202005

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Together, we stand for a world beyond waste