How can Ireland's End-of-Waste and By-Product Regulations best support a Circular Economy?

CIRCULÉIRE Thematic Working Group Synthesis Report (2022)

Drafted by Re-Mine Limited

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eit Climate-KIC
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Authorship

This End-of-Waste and By-product's in a Circular Economy Synthesis Report provides detailed insights into the potential to maximise the use of these mechanisms as tools to deliver circular outcomes within Ireland. The report sets out the findings from the delivery of the Thematic Working Group to define opportunities to improve the regulatory framework to enable greater exploitation of End-of-Waste and By-product project opportunities. Please refer to the Policy and Industry Briefing Summary Report for an overview of key findings from this Thematic Working Group.

Author of the Synthesis Report

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Expert Industry and Non-Industry Panel Members

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CIRCULÉIRE End-of-Waste and By-Product Thematic Working Group Panel Members

Re-Mine Limited and Irish Manufacturing Research would like to thank the following Panel Members for contributing their valuable time and experience to this process, attending meetings, Ideation Workshops and reviewing the drafting of this report and submitting detailed comments.

Table 1: Industry Members

Name	Organisation
Nuria Moreno	Johnson & Johnson Vision Care
Neil Skeffington	Novelplast
Cynthia Dempsey	Novelplast
Pauric Kavanagh	KORE Insulation
Paulina Moskalewicz	KORE Insulation
Kevin Cronin	Freefoam Plastics Ltd
Patricia Hegarty	Freefoam Plastics Ltd
Sharon Barrington	IFF Plastics Ltd
John Byrne	Digital Array Control Systems Ltd
Feargal Murray	ERP Ireland
Rick Earley	Cirtex Ltd
Nicky Holmes	Brockley Group Ltd
Paddy Kane	Brockley Group Ltd
Gary Nugent	DECOTEK Automotive
Peadar Ó Dálaigh	Jiminy Eco Toys
Fergus O'Sullivan	Aryzta
John Carr	Offerre

Table 2: External Members

Name	Organisation
Joanne Rourke	Eastern-Midlands Regional Waste Management Plan Office
Sinead Ni Mhainnin	Connacht Ulster Regional Waste Office
Andrew Caldicott	DECC
Catriona Power	MTU
Caitriona Collins	EPA

Introduction

End-of-waste and by-product notifications play a key role in a circular economy. They do this by helping to establish a market for a wide range of secondary raw materials, improving resource management, encouraging symbiotic industrial practices, and preventing resources from being sent for disposal. By maintaining resource value within the economy, the successful application of end-of-waste and by-product status reduces the environmental impacts arising from linear waste disposal practices.

End-of-waste and by-product status for secondary product and raw materials present an opportunity to enhance circularity principles by enabling reduced primary resource demand / use and extending and maximising the economic life of materials.

Run over the summer of 2022, CIRCULÉIRE's End-of-Waste, By-products and Waste Licensing Pathfinders Thematic Working Group (TWG) was developed to increase Member's knowledge and understanding of the opportunities afforded by end-of-waste and by-product status in delivering a circular economy in Ireland. Through a series of workshops and interactive meetings, a key aim of this working group was to devise clear recommendations aimed at advancing the economy's transition to a circular model. The intention has been to assist in exploring and putting forward recommendations about how circular thinking can be accommodated in a world where regulation remains predominantly linear.

This report outlines the key findings of the entire process and describes the work that was undertaken throughout the process. In addition, a number of additional outputs have been delivered throughout this project which are intended to highlight the key learnings for industry and policymakers, including a:

- Worksheet that assists in developing end-of-waste and by-product decision making processes and in defining the necessary data and information needed to deliver a successful project
- Policy Briefing setting out the recommendations identified for both industry and the government/ regulators to enable enhanced utilisation of end-of-waste and By-product projects as useful tools to deliver a circular economy
- Single page infographic presenting the simplified outcomes from the project and highlighted tips for delivering successful projects.

The Framework

The importance of demonstrating real world impact from the project was of paramount concern from the outset.

A clear indicator was establishing how the Member's end-of-waste and by-products projects would relate back to stated commitments and desires to deliver an Irish circular economy as established in the governments' Circular Economy Waste Action Plan (WAPCE)[1]. This document sets out the roadmap for the development of future waste management planning and policy shifting the focus from disposal and targets and setting out a route to preserve resources through circular business processes.

The WAPCE will ultimately be followed up in the coming months by an "All of Government Circular Economy Strategy".[2] The WAPCE references the contribution of the waste producing sector to the achievement of a number of other national plans and policies including the Climate Action Plan[3] and reflects the level of ambition being shown with respect to circular principles and sustainability across the European Union through the European Green Deal[4].

Moreover, the WAPCE sets out a range of aims and targets for the State and the measures by which these will be achieved, including increased regulation and measures across various waste areas such as Circular Economy, Municipal Waste, Consumer Protection and Citizen Engagement, Plastics and Packaging, Construction and Demolition, Textiles, Green Public Procurement and Waste Enforcement.

Finally, whilst embarking on this Thematic Working Group, Irish Manufacturing Research, Re-Mine Ltd. and our panel members were cognizant of the fact that a stated commitment of the landmark Circular Economy Act, which was signed into law in July 2023, is to streamline the national processes for end-of-waste and by-products decisions, tackling the delays which can be encountered by industry, and supporting the availability of recycled secondary raw materials in the Irish market. The CIRCULÉIRE working group delivery team are therefore thankful to our national strategic partners, Irish Environmental Protection Agency (EPA) and Department of the Environment, Climate and Communications (DECC), for engaging with the Working Group so openly and proactively on this regulatory topic.

[1] A Waste Action Plan for a Circular Economy: Ireland's National Waste Policy 2020-2025 https://www.gov.ie/en/publication/4221c-waste-action-plan-for-a-circular-economy/

[2] Whole of Government Circular Economy Strategy 2022 – 2023 'Living More, Using Less' (www.gov.ie)

[3] https://www.gov.ie/en/publication/ccb2e0-the-climate-action-plan-2019/

[4] https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

The Circular Economy

The World Economic Forum reported that in 2019, over 92 billion tonnes of primary raw materials were extracted and processed, contributing to about half of global CO_2 emissions[5]. The resulting waste – including plastics, textiles, food, electronics and more – is taking its toll on the environment and human health. In addition, the extraction and processing of primary resources (e.g., mining and agriculture) accounts for circa 80% of biodiversity loss and 85% of water stress[6].

The circular economy, which promotes the elimination of waste and the continual safe use of natural resources, offers an alternative that, according to the World Economic Forum, could yield up to $4.5 trillion in global economic benefits to 2030[5].

A circular economy requires consideration of the way we design, produce, consume, and dispose of products and services. Many definitions have been developed to describe a circular economy, but the international standard was set by the European Commission in 2015[7] as an economy "where the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste minimised".

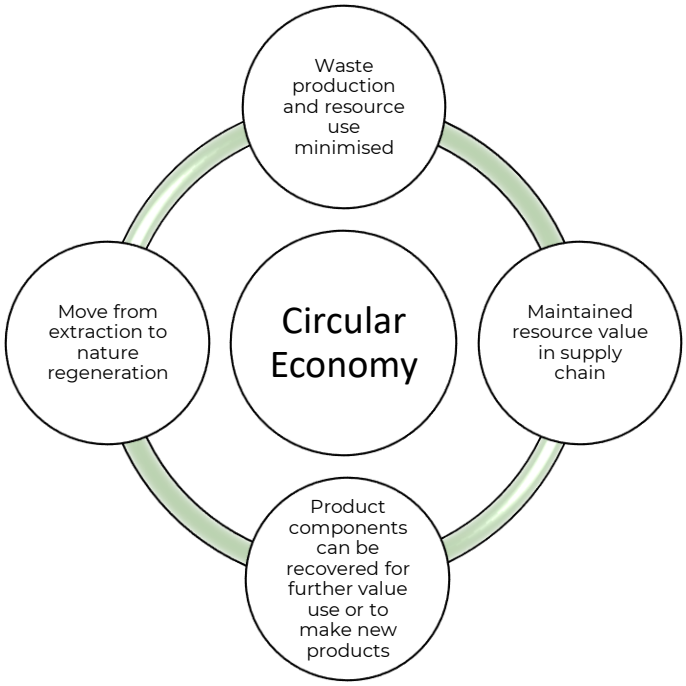


Figure 1: Circular Economy Outcomes

[5] https://www.weforum.org/communities/circular-economy-and-value-chains

[6] https://ec.europa.eu/environment/biodiversity/business/ news-and-events/news/news-130_en.htm

[7] EUROPEAN COMMISSION Brussels, 2.12.2015 COM(2015) 614 final COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

On 11 March 2020, the Commission adopted a new Circular Economy Action Plan (CEAP)[8] as part of the new Industrial Strategy[9]. The CEAP built on the success of the previous cited Action Plan[7] and the conclusions of its Implementation Report[10]. These new commitments set out intentions to:

- Refine waste policy to enable circular approaches to be adopted
- Support research and innovation in circular materials
- Support the delivery of circularity in a number of industrial key product value chains
- Create a well-functioning EU market for secondary raw materials
- Enable and encourage the design of sustainable products
- Empower the consumers and public buyers to procure circular products.

All of the priorities outlined above are relevant to Ireland's stated aim of progressing towards a circular economy, with several of direct relevance to the work of this Working Group. If circularity is not considered from the outset, it drives a series of negative impacts leading to issues such as waste production and requirements for disposal, volatile material prices through shortages in key materials, and increased greenhouse gas emissions through the need to extract further primary resources to meet consumer demand. This makes resource management both more difficult and expensive.

A circular economy will unlock significant socio-economic, environmental, and business benefits. A circular economy is restorative and regenerative by design, where the life cycle of a product has been modified from a linear take-make-dispose model to one where the product can serve a further economic purpose outside the requirements for further regulatory controls (in essence, waste is ultimately eliminated).

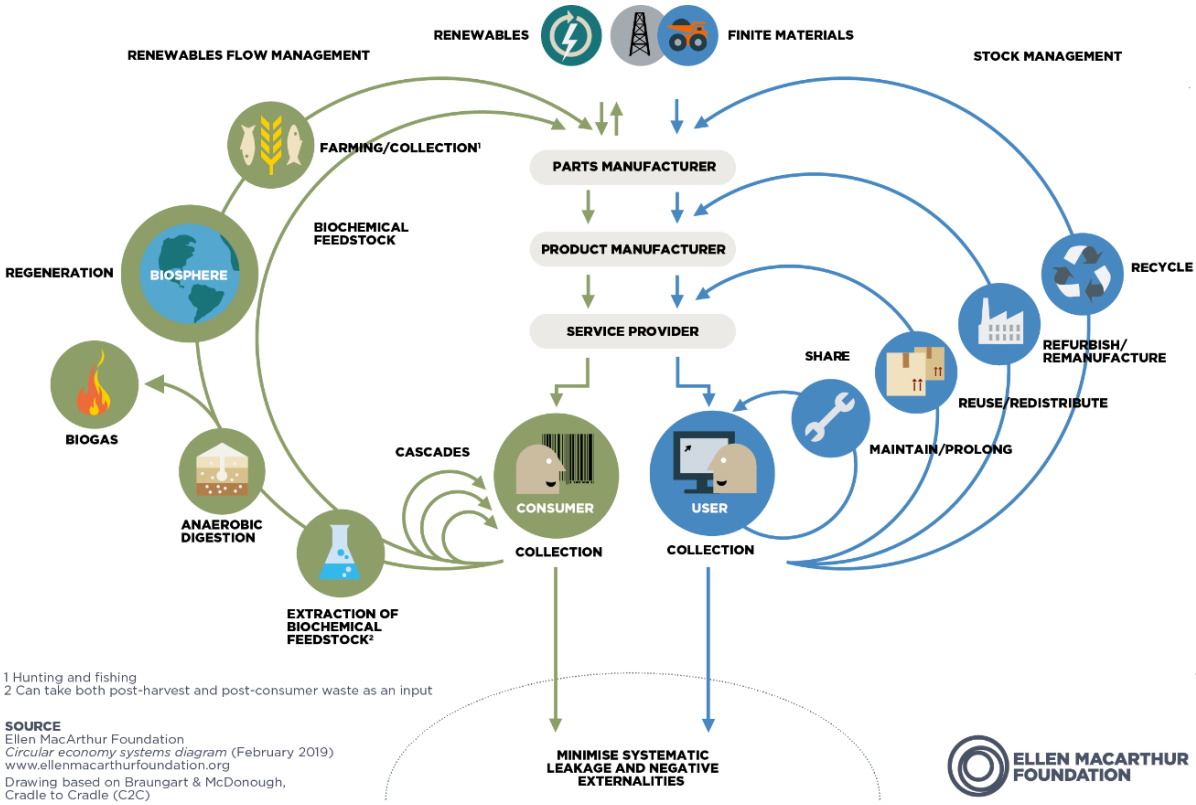
Figure 2 provides a high-level diagrammatical representation of the Circular Economy and the cyclical flows of resources. In summary, a Circular Economy decouples economic activity from the consumption of finite resources. It is a resilient system that is good for business, people, and the environment.

[8] EUROPEAN COMMISSION Brussels, 11.3.2020 COM(2020) 98 final COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

[9] https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/european-industrial-strategy_en#lessons-learned-from-the-covid-19-crisis

[10] EUROPEAN COMMISSION Brussels, 4.3.2019 COM(2019) 190 final REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

Figure 2: The Circular Economy (from Ellen Macarthur Foundation, 2019)



The Working Group

The Working Group was established from a selected section of the CIRCULÉIRE membership where there had been demonstrable interest in exploring the use of end-of-waste and by-product determinations as tools that could enable circular outcomes for the participating companies.

These companies, outlined in Table 1 in the introductory sections of this report, represented a cross-section of different industrial and commercial sectors, alongside enabling entities such as the councils and regional waste management offices. The group also included representation from the Irish EPA and government, DECC.

Working Group Aims

1. **Increase CIRCULÉIRE's Industry Members' knowledge and understanding of the EoW, By-product and waste licensing regulatory regimes** (particularly within the context of responsible innovation and circular economy)
2. **Clarify the roles and responsibilities of key stakeholders within the wider regulatory regime**, such as local authorities, the EPA, DAFM etc.
3. **Co-produce high-quality thought leadership aimed at advancing the Irish industry's circular transition** (proposing practical, actionable recommendations as appropriate)
4. **Identify a minimum of 5-10 innovations (both at industry-specific product and policy levels) that support a circular economy** - and should demonstrate potential to reduce GHG and waste if diverted from disposal.

Working Group Approach

The approach adopted the provision of several seminars and innovation workshops together with a number of targeted interviews with CIRCULÉIRE Members who agreed to this. The key events are illustrated in Figure 3.

Figure 3: Working Group Events and Activities

Recommendations and core challenges were identified over the course of these workshops, a virtual workshop and a Policy Roundtable (to discuss a draft policy briefing) – the

outputs of which are integrated into this report.

Member Interviews

A limited number of qualitative interviews with industry members were organised by Re-Mine Limited to assess learning/other needs re: EoW & By-products and the level of understanding of the key concepts to enable targeting of the Working Group workshops and events at the right knowledge and experience level.

The interviews also established relationships between Re-Mine and the Members on a one-to-one basis and this enabled a more detailed dive into the individual challenges directly affecting them in delivering their circular projects. Moreover, the interviews established a strong basis from which to pitch the introductory events to both present the detail and key concepts that the Members would need to understand, together with the basis for 'tools' or 'artefacts' to guide end-of-waste or by-product project delivery going forwards.

Meeting 1: Welcome Session

The Welcome Session introduced the project to the Members explaining what the Working Group would deliver and outlined the structure of the events proposed. Basic concepts relating to end-of-waste and by-products and the definition of waste were introduced. Input was requested from the Members via the following questions:

- What are the biggest challenges you face in delivering end-of-waste / by-products?
- What are your main objectives from this TWG?
- What difference could end-of-waste / by-products make to your business?

The event ended with signposting to the future events.

Session 2 (Seminar): End-of-Waste and By-products 101

Session 2 went into greater detail on the key concepts to provide panel members with the key information they would need to make positive decisions and understand the detailed information and steps required to deliver a quality submission more likely to result in a successful agreement with the regulators.

To explain the process involved, and overview of the statutory bodies industry are likely to need to engage with, the workshop included detailed input from the EPA on the regulation of end-of-waste and by-products and how these would be considered and taken through the regulatory process. The process flows are included in Appendices 2 and 3 of this document, providing details on the key steps

between the submission of an end-of-waste application of a by-products notification document and a decision being granted by the EPA.

The session included and introduction to the project-specific worksheets that were developed to aid industry members in delivering their submission documents. The event ended with signposting to the Ideation Workshops.

Ideation Workshop: Day 1- "Pathfinders"

This workshop was focused on defining and identifying key pathfinder mechanisms to aid in the use of end-of-waste and by-product determinations as tools to deliver circular outcomes in Ireland. This was more broadly purposed than simply dealing with the panel members' projects but instead took the macro-position to provide a wider view of the opportunities in Ireland.

Panel members were presented with an introduction to key differentials with relevant EU and UK jurisdictions in terms of the regulation regimes for end-of-waste and by-products.

Panel members were also guided through facilitated group discussion to reflect on the priority challenges within the regulations that they consider as barriers to the successful delivery of a circular economy using end-of-waste and by-product opportunities.

Groups then worked on possible solutions (or 'pathfinders') which could include tools (apps/guidance), policy instruments, amended licensing options relating to end-of-waste and by-product determinations, etc. that could help overcome the priority challenges identified.

Ideation Workshop: Day 2 – Project Delivery

This workshop was focused on the individual company level to determine key challenges faced by them in developing their business and products along a circular model.

Industry panel members completed a series of self-reflection exercises aimed at getting them to reflect on their company's end-of-waste and by-product product opportunities.

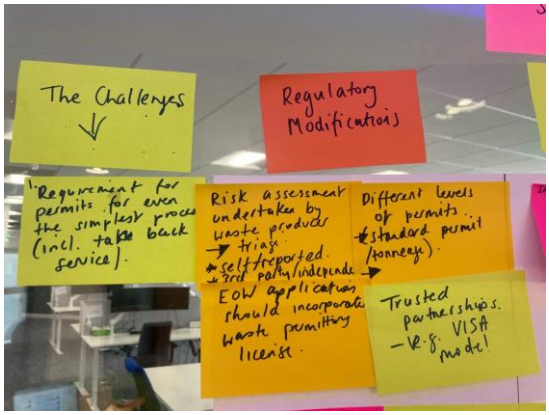


Figure 4: Example Activity from Ideation Workshop 2

The Group completed a series of workshops based around the key elements of successful end-of-waste or by-product submission delivery and

identified their own key barriers. The focus was on assisting the Members to review the key tenets of the law around end-of-waste to identify the gaps that they may have in their current submission status point. This included the introduction to risk assessment and how this forms a major part of the procedure.

The Members shared and exchanged with other participants, refining their concepts based around the learning attained about what is needed to prepare a stronger end-of-waste and by-product application.

Ideation Workshop Reflection Meeting

The Reflection Workshop was intended to further develop the challenges and recommendations that were derived from the Ideation Workshops and to determine what items would provide the opportunities for the greatest positive change and which would be deliverable under existing frameworks or with limited system change.

Output from this workshop provided the basis upon which the key policy recommendations could be established for future development.

Policy Roundtable

The Policy Roundtable provided a forum for the Working Group to review and validate the key recommendations in advance of these being presented at the open forum webinar.

The Roundtable provided stakeholders with a platform to reach consensus the framing of key challenges and recommendations to be included within the finalised Policy and Industry briefing and highlighted the opportunity to establish national-scale end-of-waste criteria for large volume waste streams -as has been developed in other relevant legislative jurisdictions – as a means to leverage end-of-waste to advance circularity in Ireland.

Public Webinar

The public webinar provided an opportunity to deliver the main findings and recommendations from the Working Group to a wider industrial and enabler-led audience. The webinar set out the findings from the workshops and events including requirements for submissions to the regulator and the key recommendations and opportunities identified through the working group activities.

It concluded with a signpost to the future for Ireland as it works towards maximising these tools to enable circularity – Ireland's unique position within Europe provides a very strong base to maximise the value that can be created through the effective utilisation of secondary resources to reduce primary resource consumption and the associated negative impacts from waste production and disposal.

Real-World Delivery from the Working Group Members

Several Members were able to provide information on their own activities and progress throughout the programme. A number of these key outcomes reflect positively on how the Members have been developing projects and activities that coincide directly with the stated aims set out in the aforementioned WAPCE. These outcomes included:

- A by-product project with the potential to remove circa 5% of Ireland's overall total hazardous waste just by enabling the positive utilisation of this material in another industrial application which normally uses a primary product of lower quality than the proposed by-product!
- Support for several plastic recovery related businesses who can utilise waste plastic and reduce their potential for disposal/loss to the wider environment linking directly to WAPCE targets.
- Enabled positive engagement between industry and regulators to progress policy proposals that will improve on the current system for all Parties and engender relationship building that enables industry to progress strong projects with support from the regulators

Figure 5: Waste Action Plan Targets for Plastic (reproduced from[1])

- Development of outputs that can aid in the delivery of submission documents and clarify waste status for all companies interested in working towards end-of-waste or by-product status.

Project Outputs

In addition to this report, key outputs from the project include the following, hyperlinked for access from the CIRCULÉIRE website:

- Recording of the Meeting 2 Seminar
- Production of worksheets to support industry in navigating the End-of-Waste and By-product regime
- Policy Briefing Report
- Public Webinar recording.

The Core Concepts

Achieving circular innovation means that industry must find new ways of working that allow for the maximum (commercially deliverable, environmentally responsible) use of secondary materials. This will reduce waste disposal and associated carbon impacts – helping meet national aspirations for the environment.

A need to improve upon Ireland's circular material reuse rate (currently 2nd lowest in EU-27) opens up the development of a circular economic approach - the EU's circular material use rate (referred to as the circularity rate) reached 12.8%. Ireland's is just 2% (Eurostat)[11].

Implementing a 5% material improvement across the economy would represent an annual €2.32bn opportunity (EPA). However – there are challenges to delivering the necessary changes. These include legislative barriers (real and perceived) that can inadvertently prevent easy wins. To establish mechanisms to improve on this we now turn to the legislative framework that Ireland's potential is framed against.

Waste Framework Directive

The **Waste Framework Directive (WFD)** is a European Union Directive which "lays down measures to protect the environment and human health by preventing or reducing the generation of waste, the adverse impacts of the generation and management of waste and by reducing overall impacts of resource use and improving the efficiency of such use, which are crucial for the transition to a circular economy and for guaranteeing the Union's long-term competitiveness"[12].

The detail of the Directive falls outside the scope of the document. However, in summary, the Directive:

- Sets the Basic Concepts for dealing with waste. It sets out the concepts and definitions related to waste management, including definitions of waste, recycling and recovery
- Lays down basic waste management principles, requiring that waste be managed without:
    - Endangering human health and harming the environment
    - Risk to water, air, soil, plants or animals

[11] https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20211125-1#:~:text=In%202020%2C%20the%20EU's,came%20from%20recycled%20waste%20materials.

[12] Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives

- Causing a nuisance through noise or odours
- Adversely affecting the countryside or places of special interest
- Defines responsibilities for dealing with waste and introduces the "polluter pays principle"[13] and "extended producer responsibility"[14]

Most importantly for this project, the directive legislates distinctions between wastes and non-wastes detailing when waste ceases to be waste (end-of-waste) and becomes a secondary raw material, and how to distinguish between waste and by-products.

The key articles concerned with the definition of waste and when it ceases to be waste are:

- **Article 5:** By-products – separate Criteria have been established which concern the position where a material can be considered a By-product. In essence the key determining factor is that the material has not been designated as a waste by virtue of intent or other circumstance
- **Article 6.1:** EU-wide end-of-waste – binding across Member States. This includes specific end-of-waste criteria already developed and EU Regulations in place for iron, steel and aluminium[15], copper[16] and glass cullet[17]. Criteria are currently under development for a number of plastic waste streams[18]
- **Article 6.2:** includes the development of national positions and bespoke cases which have been developed based on previous Case law which has now been enshrined within the Directive. The vast majority of end-of-waste cases fall under this Article.

[13] https://www.era-comm.eu/Introduction_EU_Environmental_Law/EN/module_2/module_2_11.html

[14] https://ec.europa.eu/environment/archives/waste/eu_guidance/introduction.html

[15] COUNCIL REGULATION (EU) No 333/2011 of 31 March 2011 establishing criteria determining when certain types of scrap metal cease to be waste under Directive 2008/98/EC of the European Parliament and of the Council

[16] COMMISSION REGULATION (EU) No 715/2013 of 25 July 2013 establishing criteria determining when copper scrap ceases to be waste under Directive 2008/98/EC of the European Parliament and of the Council

[17] COMMISSION REGULATION (EU) No 1179/2012 of 10 December 2012 establishing criteria determining when glass cullet ceases to be waste under Directive 2008/98/EC of the European Parliament and of the Council

[18] https://environment.ec.europa.eu/news/commission-starts-develop-end-waste-criteria-plastic-waste-2022-04-05_en

Ireland's Relevant Waste Policy and Legislation

Regulator	Authorisation	Notes
EPA	• Waste Licences under Waste Management Act • Industrial Emission Licences under EPA Act	Activity description and thresholds set out in EPA Act
Local authorities	• Waste Facility Permits • Certificates of Registration	Activity description and thresholds set out in Waste Facility Permit Regulations
National Waste Collection Permit Office (NWCPO)*	Waste Collection Permits	All waste collectors (there is no de minimis)
National Transfrontier Shipment Office (NTFSO)**	TFS Notifications	All waste imports and exports must be accompanied by TFS notification

Table 1. Roles and Responsibilities of Regulators

The EPA and local authorities both have roles within the relevant regulatory framework in Ireland.

Waste disposal and recovery activities in Ireland require authorisation in accordance with the Waste Management Act 1996[19] as amended.

The EPA grants and enforces waste licenses for specified waste activities (significant disposal or recovery processes). An Industrial Emissions (IE) license may be required for more complex activities.

Local Authorities grant and enforce Waste Permits and Certificates of Registration issued to Private Operators for waste activities listed in the Third Schedule to the Waste Management (Facility Permit & Registration) Regulations

S.I. No. 821 of 2007[20] as amended (primarily smaller scale or lower risk activities).

Further details on the Irish waste regulatory regime can be viewed on the EPA website[21].

Definition of Waste

Article 3 of the Directive defines waste as *"...any substance or object which the holder discards or intends or is required to discard"*.

Whilst the wording appears relatively simple, understanding it has proven to be far from straightforward as has been demonstrated through the many national and European Court cases[22]

19 https://www.irishstatutebook.ie/eli/1996/act/10/enacted/en/html

20 https://www.irishstatutebook.ie/eli/2007/si/821/made/en/print

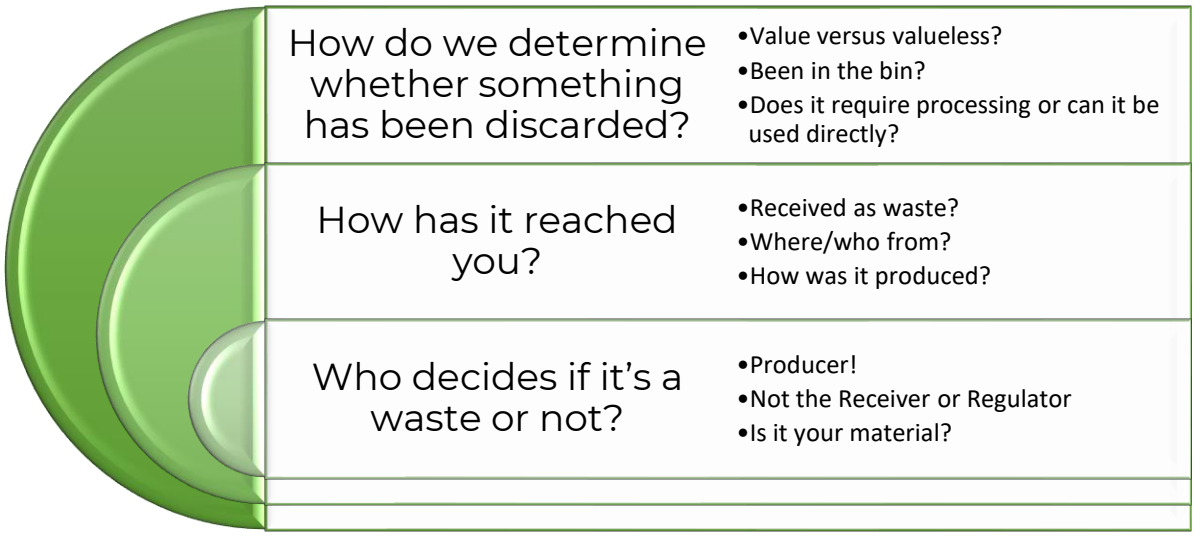
21 https://www.epa.ie/our-services/licensing/waste/waste-licensing/waste-legislation/

22 https://www.lexisnexis.co.uk/legal/guidance/meaning-of-waste-eu-cases-on-waste-01

that it has engendered. Key issues revolve around defining what constitutes 'discarding' and also what is classified as an 'intention' or 'requirement' to discard.

As such, determining whether a material or substance is a waste or not can require considerable effort. This opens up a further nest of questions that must be answered to assist in making the right determination. However, a simple starting point is – if you do not know whether a material or substance is waste or not - then it is waste until proven otherwise or it has undergone a full recovery operation.

Figure 7: Defining Waste – the Key Questions



Value Considerations

It has been argued that a material should not be considered waste where it has a commercial value. However, monetary considerations are irrelevant where a waste is concerned, and it does not matter whether you have to pay a gate fee to a waste company or be paid by a third party for the material if it has been defined as a waste.

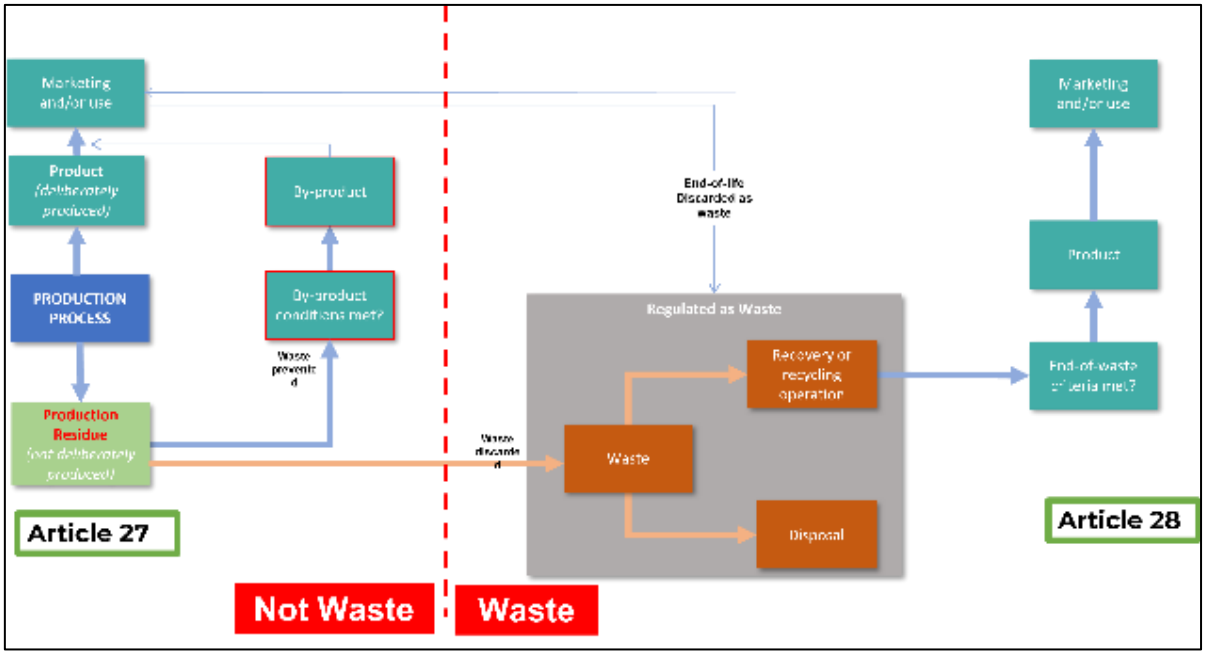
Who Decides?

One area which causes much confusion is understanding who makes the decision on whether a material or substance is a waste or not. The answer to this is not the regulators or the waste industry. The decision as to whether something will be a waste or not is made by the Producer of that waste through their actions or activities meaning that much waste production can be due to unconscious decision making and a lack of thought or consideration for the potential value of the material produced.

Defining a By-Product

The Waste Framework Directive defines by-products as: *"a substance or object, resulting from a production process, the primary aim of which is not the production of that item"*.

Figure 8: End-of-Waste and By-product Determinations



In essence this means that the material is produced as a consequence of a process. By definition, a by-product is not a waste. A by-product determination involves a reclassification of a material based upon its value characteristics.

By-products can come from a wide range of business sectors and can have very different environmental impacts. Further guidance on by-products can be found on the EPA's website[23].

The notification of a potential by-product provides an opportunity to demonstrate that:

- The material can have a further use and will not be defined as waste
- The material can be used as a secondary resource in place of and fulfilling the same role as a non-waste derived or virgin 'primary' resource
- The material can be used without causing overall adverse impacts to the environment or human health.

Producers are required to notify the EPA if they decide that their material is a by-product. By-product determinations in Ireland go onto a public register[24].

Figure 8 illustrates the routes to determining whether you may have a waste or by-product. Whilst there are significant differences between the

[23] https://www.epa.ie/our-services/licensing/waste/by-products-regulation-27/

[24] https://www.epa.ie/byproduct

definitions of waste and by-products the information requirements to enable a positive determination are very similar.

Conditions to be met for End-of-Waste Determinations

There are a number of conditions that must be met in order to deliver a successful end-of-waste position. Relevant guidance on these is provided in greater detail by the EPA[25].

- The substance or object is commonly used for specific purposes
- A market or demand exists for such a substance or object
- The substance or object fulfils the technical requirements for the specific purposes and meets the existing legislation and standards applicable to products
- Use of the substance or object will not lead to overall adverse environmental or human health impacts.

Conditions to be met for By-product Determinations

There are a number of conditions that must be met in order to deliver a successful By-products position. Relevant guidance on these is provided in greater detail by the EPA[26].

- Further use of the material is certain
- The material can be used directly without any further processing other than normal industrial practice
- The material is produced as an integral part of the production process
- Further use is lawful, in that the product, environmental and health protection requirements for the specific use and will not lead to overall adverse environmental or human health impacts.

[25] https://www.epa.ie/our-services/licensing/waste/end-of-waste-art-28/

[26] https://www.epa.ie/our-services/licensing/waste/by-products-regulation-27/

Review of Other EoW Regimes

Table 2: End-of-Waste and By-Product Implementation in Different Countries

EoW/BP	UK	Germany	Sweden	France	Ireland
WFD Implementation	Yes	Yes	Yes	Yes	Yes
National EoWs	Yes	No	Developing	Yes	No
Quality Protocols	Yes	No	Developing	No	No
Regulator Permission	Yes	No*	Yes	Yes	Yes
Case by Case	Yes	Self-certify*	Yes**	Yes	Yes
Other Implementation outside Main Regulatory Controls	Yes – exemptions that allow waste use outside EoW	No	Yes – waste use allowed in certain occasions – e.g. digestate	No	No

* However, the regulator may take retrospective action if unhappy with the outcome – less security?
** Partial self-certify – operator responsible but decision will be examined by EPA

Whilst the legal basis for end-of-waste and by-product determination for all EU Member States (and currently the UK) is enshrined within the root law of the Waste Framework Directive[27], under Articles 5 and 6, the implementation of these requirements has differed (note: even in the UK alone there are subtle (and some not so subtle) differences in how the regulations have been implemented by the four devolved administrations). Table 2 illustrates some of the different implementation routes that have been established in the EU and UK.

The level of effort placed upon end-of-waste and by-product determinations differs between all of the relevant Member States and EU level research projects have been undertaken to understand how each jurisdiction

[27] DIRECTIVE 2008/98/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 19 November 2008 - https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008L0098&from=EN

operates[28]. Some countries such as Germany and to a lesser extent Sweden have taken an approach which relies more heavily on the producer making their own decision on whether a material is waste or not (via a self-certification process). However, others including Ireland and the UK have taken a regulator led approach requiring regulatory sign off before a formal decision on product status (whether as end-of-waste or by-product) has been established.

There are pros and cons for both routes. Countries adopting a self-certified route may still require regulators to review or audit the process. This can prove to be a higher risk strategy as without formal sign off at the beginning future commercial impacts could occur where the regulator decides at a later date that they are unhappy with the self-certified outcome and require changes to be made or close the operation as non-compliant.

On the other hand, the need for formal sign off, as set out within Ireland and the UK, means that certainty can be achieved on the decision process but there can be long delays and high costs in attaining end-of-waste or by-product status. This can have a major impact upon industry's appetite for developing such projects making the benefits that they deliver difficult to achieve.

Developing National Criteria for Key Waste Streams

One tool in the box to assist in reducing the overall burden of individual end-of-waste submissions on the EPA resource constraints is for the development of national criteria that can be used by all, on a level playing field basis, to deliver products from specifically defined waste streams. This opportunity could work well in an Irish context especially given the potential afforded through all-Ireland waste recovery opportunities. National criteria were first established in the UK with the development of the Quality Protocols (QP) developed and adopted for a range of different nationally significant waste streams.

UK Quality Protocols

Whilst the QP programme stopped in terms of new project developments in 2016 (primarily due to funding constraints and competing regulatory resourcing priorities) these have delivered clear benefits for these material streams in the UK as opposed to other regions. A review process is currently underway to confirm that the

[28] 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

QPs remain fit for purpose or where modifications may be required.

The QPs currently in existence include the following:

- Aggregates from inert waste
- Non-packaging Plastics
- Gypsum from waste plasterboard
- Biodiesel
- Aggregate from waste steel slag
- Flat glass
- Tyre derived rubber materials
- Anaerobic Digestate
- Compost
- Processed Fuel Oil
- Biomethane from waste
- Poultry litter ash (as fertilizer)
- PFA and FBA (from coal combustion).

The Positives of the UK QPs

- Development of level playing fields for the processing and utilisation of specific national waste streams
- Reduced regulatory burden – no requirement for regulators to complete individual assessments of end-of-waste submissions
- Clear requirements that apply to all relevant producers with specifications for product outputs included – unambiguous and simple to follow and implement.

The Negatives of the UK QPs

- The documentation (for most QPs) is very proscriptive – in some cases companies cannot meet the requirements outright without modifying their processes significantly
- QPs are based on limiting the input feedstocks (via EWC codes) that are allowed into the process rather than on the quality of the output product – this reduces opportunity
- Attaining a national standard that takes all stakeholder's requirements into account is a complex process requiring significant input.

Overall, the QPs have proven successful in the UK and enabled significant volumes of material to be recovered back to product status and used within the UK economy as opposed to primary materials, thereby significantly reducing the environmental impacts of waste disposal and primary resource extraction. They have set the standard for national criteria development and provided a template for future development in other jurisdictions enabling improvements to be made to new systems that may be developed.

Swedish National End-of-Waste Criteria

Currently end-of-waste and by-product status is dealt with in Sweden on a case-by-case basis with an element of self-certification allowed for the producers. However, Sweden is now working towards national criteria for certain waste streams as they believe national criteria will deliver greater

legal certainty and predictability and a level playing field for operators.

In 2021, the Swedish Environmental Protection Agency (EPA) was commissioned by the Swedish government to investigate the possibilities of introducing national end-of-waste criteria for several waste streams in Sweden. The EPA presented the results of its investigation at the end of 2021 in a public report called "Waste as a Resource"[29] where it concluded that due to the complex nature for operators to undertake their own assessments based on, as they perceived it, vague and onerous criteria, the introduction of national criteria would be beneficial.

The EPA recognised that the transition point between 'waste' and 'product' can be difficult to assess for some materials. This uncertainty element means that operators could come to different conclusions than regulators should they review the process. The criteria adopted by Sweden to determine whether national criteria should be adopted for a specific 'waste to product' project are set out below (subject to further research by the relevant industry bodies responsible for these waste steams as to what streams will benefit the most from national criteria):

- There are many recyclers of the waste stream in Sweden
- There is a large geographical spread of the recyclers
- Large waste stream volume
- The waste stream contributes to high environmental impact
- There is no ongoing work at EU level regarding joint EU criteria regarding the waste stream
- The recycled material is not covered by the existing product legislation or chemical legislation
- The implementation of national criteria regarding the waste stream will increase the amount recycled.

The report recommendations have been presented to the Swedish government and are currently under consideration. At this time there is no timeline or official statement as to when or whether this will go ahead[30].

Whilst the positive benefits have been acknowledged there is also acknowledgement of some fundamental negatives through implementation of a system such as that described. Key amongst these is the impact that implementation could have upon those already operating with their own bespoke end-of-waste position, especially if the national criteria turned out to be stricter than the individual agreement.

[29] Swedish Environmental Protection Agency; Avfall som Resurs; 25 November 2021

[30] https://www.lindahl.se/en/latest-news/knowledge/2022/waste-as-a-resource-is-there-a-need-for-national-end-of-waste-criteria-in-sweden/

Delivering Successful Applications

The production of documentation to deliver a successful end-of-waste or by-products project requires significant technical input and understanding of both the input feedstock materials and the final product output. The submissions will require sufficient information from which the regulator can come to an informed decision. Detailed guidance on the production of submissions for both end-of-waste[31] and by-products[32] projects can be accessed from the EPA website. As such, rather than concentrating on the detailed requirements for submission in this report we will look at the key items that require consideration.

Why Bother?

The Irish regulatory system requires submissions to be made to the EPA with respect to both end-of-waste and by-products so that the EPA can provide their opinion on whether a product point has been reached based upon the available information. There is currently no application fee for the submission of end-of-waste or by-product submission documents to the EPA.

At present there will be a significant number of projects ongoing in Ireland where end-of-waste and by-product considerations have not been taken into account and no submissions have been made.

In the main these projects will operate oblivious of the legal requirements as understanding of the requirements may not be widespread even within the waste management industry. This can prove risky both in terms of potential retrospective regulatory action and in terms of an impact upon the commercial nature of a project where the producer cannot demonstrate compliance with the legal frameworks to their ultimate product customers.

In theory a producer could take a position that they have an insurmountable end-of-waste or by-product position and decide not to consult with the EPA. However, this presents a level of uncertainty for the producer (and their wider customer base) should the regulator decide that regulatory action may be required (in the event that the project becomes known to them).

Whilst the producer may have a very strong case the impact upon their business through not taking the prescribed consultation route could prove extremely costly (both financially and on their professional reputation).

[31] https://www.epa.ie/publications/licensing--permitting/waste/end-of-waste-guidance-part-2.php

[32] https://www.epa.ie/publications/licensing--permitting/waste/draft-by-product-guidance.php

The EPA will normally try to take a positive position for existing projects already in operation that during the engagement process and provided there are no evident major risks of harm to human health or the environment within the process, they will allow activities to continue until the decision has been made. If positive, then the project continues; if negative then there is a need to reconsider the process and whether it could realistically meet end-of-waste requirements – the process would likely be stopped at this point pending future considerations.

On a risk basis it is therefore advisable to take the fully compliant route to obtain comfort on both a regulatory position and also on the commercial side through demonstrating full legal compliance to customers.

Key Consideration Factors

There are a number of aspects which impact upon the delivery of a product from waste (or alternatively as a by-product which is not considered waste in the first place). The key factors are:

- **Legal Factors:** end-of-waste and by-products have defined legal characteristics which must be demonstrable to the regulators. These are enshrined within the Waste Framework Directive and provide for the first test in a successful outcome.
- **Technical Factors:** Products must meet defined quality and performance parameters which are comparable to alternative products on the market. The ability to meet statutory international or national specifications and standards provides comfort that a product point has been achieved. However, this also needs to take into account the potential contaminants and deleterious aspects due to the potential quality of the input material and standards also apply to these aspects to protect human health and the wider environment.
- **Commercial Factors:** Developing a product which can meet the exacting standards required within a given market is an expensive undertaking. This must consider both the costs of delivering the final product (processing, etc.) and also the costs of demonstrating legal compliance through the end-of-waste or By-product submission routes. Significant technical and legal support may be required to reach a final positive position. As such, these costs must be considered within the business case and a clear commercial benefit of achieving product status must be worth the expense and effort expended.

There are a number of questions that need to be answered to assist in defining these factors – will end-of-waste or By-product classification:

- Open up a new market or regularise an existing one?
- Enhance the value of your product to increase revenue?
- Be advantageous to your customers?
- Allow a transition towards circularity for your business?

Benefits of Securing a Compliant End-of-Waste/By-products Determination

There are a number of evident advantages in seeking and obtaining an end if waste or by-products position. These range from individual company advantages through to wider macro-advantages for the broader Irish economy. Examples include:

- Reduced overall production of waste that needs to be disposed of in Ireland – conversion of a waste material into a commercial product removes it from the waste production and disposal statistics for the company as a whole reducing the overall waste burden
- Reduced requirement for primary resource extraction and utilisation – enabling the extension of a material's extended life value in the economy assists in negating the extraction and processing of comparable primary materials and products with the associated negative issues that this can produce
- Stigma of a 'waste' material removed enabling greater take up of the product in the marketplace – a compliant position allows for greater comfort and certainty for the marketable use of a product that has been manufactured from previously discarded materials
- Additional revenue potential from the non-waste material (as opposed to cost) – selling the output product as opposed to paying for it to be taken way and disposed of should have clear economic advantages
- Economic value is maintained within the economy – maintaining these materials within the economy presents clear evidence of circularity in action and enables the maximisation of resource utilisation
- Reduced administrative burdens associated with waste management – reclassification from a waste to product negates future regulatory compliance costs for storage, handling and use of previous waste materials
- Equalises secondary material/product markets with primary – compliant product status opens up the potential for secondary materials to prove equivalence in performance and impact presenting the opportunity to secure market parity in terms of final product value.

Negatives of Securing a Compliant End-of-Waste/By-products Determination

There are a number of items that mean that seeking an end-of-waste or by-products position may not necessarily be beneficial. Issues such as customer and regulatory attitudes, expense of compliance and pre-conceived ideas about certain product outcomes could impact upon the perceived return on investment for businesses' desire to engage with the process. Key items for consideration include:

- **Cost:** There may be a significant cost in demonstrating product status which will outweigh the commercial benefit of seeing the approval. Key costs that may apply include:
  - **Demonstrating Product equivalence – Analysis etc.** This relates to both the costs for demonstrating the performance characteristics of the product and the analytical evidence that may be required to demonstrate no greater harm to human health or the environment than for existing primary products
  - **Consultancy support and Legals.** Technical and legal expertise may be required to develop the overall case for an end-of-waste or by-product submission where suitable skills and experience cannot be provided in-house. The degree of support is likely to depend upon the complexity of a given project
- **Regulatory Comfort.** Regulators need to be completely satisfied that the process and procedures adopted are fit for purpose and that the final product delivered meets with suitable standards and specifications. They will also need to be satisfied that the product producer will manage their process in a compliant manner. Key considerations may include:
  - **Permitting/Licensing Compliance.** Accepting waste materials to be processed into a final product currently requires a waste management license. Operating with a license will mean that the company is operating outside the established legal requirements.
  - **Timescales.** Timescales can be long to get a determination on an end-of-waste or by-product submission. This needs to be considered within the project planning phase so that realistic expectations are in place from the outset
- **Challenging Materials.** Whilst end-of-waste and by-product status is (theoretically) open to all waste (including Hazardous wastes) to product projects there

are some materials that can prove more challenging than others. This normally relates to the demonstration point for 'Full Recovery', i.e., the point at which a final marketable product has been established. This is acutely manifested in the market when producers seek end-of-waste points for fuel products (e.g., Refuse Derived Fuel or Sustainable Recovered Fuel products) which have been derived from waste inputs.

- **Market Definition.** You cannot have a positive determination for either end-of-waste or by-product without establishing and demonstrating a real market (i.e. a customer). Negotiating a commercial position with a customer for your product pre-EPA submission can be difficult as the material is considered a waste at this point with a perceived lower value than a primary product. Finding a customer who wants the new secondary product at a price commensurate with primary materials could prove challenging.

Commercial Considerations

Reaching a product end point will undoubtedly provide a number of key benefits for the product manufacturer. However, commercial considerations will play a key part in defining the overall value of the proposition. Several issues may need to be considered in the decision making process:

- **Does the product need end-of-waste?** There may be alternative routes that can be explored where a full recovery position may not be required and where materials can be used in a positive manner whilst still falling under waste regulation requirements. These alternative options may need to be explored where commercial benefits are likely to be marginal or less pronounced
- **Product Regulation.** Ultimately the Market is the regulator as the output product must meet each customers specifications and requirements. Failure to meet these will reduce the interest in the final product and it will fail in the market if it does not perform or meet a need (same as any other product, whether primary or secondary in nature)
- **Product Evolution.** An opportunity may exist to progress the development of higher-grade products once performance is proven and additional market operators of a more conservative nature may become interested when performance can be adequately demonstrated. Is there a lower bar that can be met for establishing the end-of-waste or by-product position which could

lead to a higher value market route in the future?

- **Maximising Revenue Potential.** A waste producer may consider that an end -of-waste or by-product position could present an opportunity for additional revenue, especially if they operate in markets which are complementary to those where the newly developed product can be taken to market. This maximises resource utilisation and provides a potential commercial outlet for materials which were previously of potentially negative/low value and which were previously discarded
- **Other Regulatory Frameworks.** Establishing an end-of-waste or by-product position is a very positive means of working towards a circular economy. However, there is potential that a consequence of moving from waste to product could lead to a requirement to comply with alternative legislative requirements. For example, REACH[33] needs to be dealt with for some products. REACH is a European Regulation and is an acronym for the "Registration, Evaluation, Authorisation and Restriction of Chemicals". The overall aims of REACH as specified by Ireland's Health and Safety Authority are to:
  - Provide a high level of protection of human health and the environment from the use of chemicals
  - Allow free movement of substances on the EU market
  - Enhance innovation and the competitiveness of the EU chemicals industry
  - Reduce animal testing by promoting the use of alternative methods of assessing chemicals
  - REACH entered into force on 1st June 2007.

REACH registration and compliance can prove to be a significant additional burden and must be considered within the overall project decision-making process.

Routes to End-of-Waste and By-product

Deciding upon a route to follow depends upon where in the supply chain the interested producer falls. Opportunities exist to progress projects with the original producer of the feedstock material (whether as an end-of-waste or by-product opportunity), or somewhere else in the waste management pipeline (taking account of licensing/permitting

33 https://www.hsa.ie/eng/your_industry/chemicals/legislation_enforcement/reach/

requirements). There are three key options:

- **By-Product –** a by-product position can only be achieved by the primary producer of the feedstock material as the material will arise as a direct consequence of that entity's activities. There are specific considerations that need to be taken into account to achieve a By-product position, but the basics are similar to those for an end-of-waste position. Details of the notification process are provided in Appendix 3.
- **End-of-Waste in own right –** The main route of relevance for most operators. This enables the processing of a waste feedstock through a full recovery route to deliver a product onto the market that is equivalent to existing primary products in form, function and performance. This can include products which act as raw materials for the production of future value added products. Details of the application process are provided in Appendix 2.
- **Ingredient (raw material) into a final product (which is then EoW) –** Alternatively, the initial feedstock be taken in as an ingredient in the production of another value-added product. In this case the end-of-waste position will apply to the final product delivered and not the feedstock input. This is Industrial Symbiosis at work.

The chosen route depends upon a number of factors and is dependent upon how the product is made and to be used in the future. All have their challenges and will depend on the specific details of the case under consideration. Regulators will always prefer simple decisions. As such, the submission documentation put in place must assist in leading them to the right answer – a positive response to the submission. A key to this is demonstrating that there will be no adverse environmental/health risk from a positive decision. Trust is required on both sides of the table that the procedures developed, agreed and adopted to produce the final product will be followed so that risks can be greatly minimised.

The Process

Both end-of-waste and by-products projects share similar requirements, although there are some subtle differences. However, the substance of both outcomes is the development of a sound process that is able to demonstrate the successful delivery of a clear product – a documented manufacturing procedure. end-of-waste and by-product outcomes represent a Quality Control procedure which sets out the key processes through which a product end point can be demonstrated.

In essence this is no different from the quality procedures that may be adopted or required to deliver any other product onto the market. These controls will include:

- **Input controls –** A clear understanding of the initial waste material under consideration and identification of the issues that must be addressed in processing these into a valuable end product. This may require a defined input specification which allows control over the constituents allowed for inclusion alongside limits where the materials may prove unsuitable for inclusion.
- **Procedural controls –** Clear instructions for how the final product will be delivered including how to minimise negative process impacts. The procedures represent the quality control for delivery of the final product and should be able to show evidence of the product quality and also what happens when things go wrong.
- **Product controls on Output -** These represent the evidence of meeting specifications and standards that have been defined for the final output product. These will include any relevant national or international standards which the product may need to meet or alternatively the Customer specification that has been agreed for the final product. In certain products this could also include permissible limit values for potential elements of concern so that risks of use can be adequately managed in line with environmental and human health requirements.

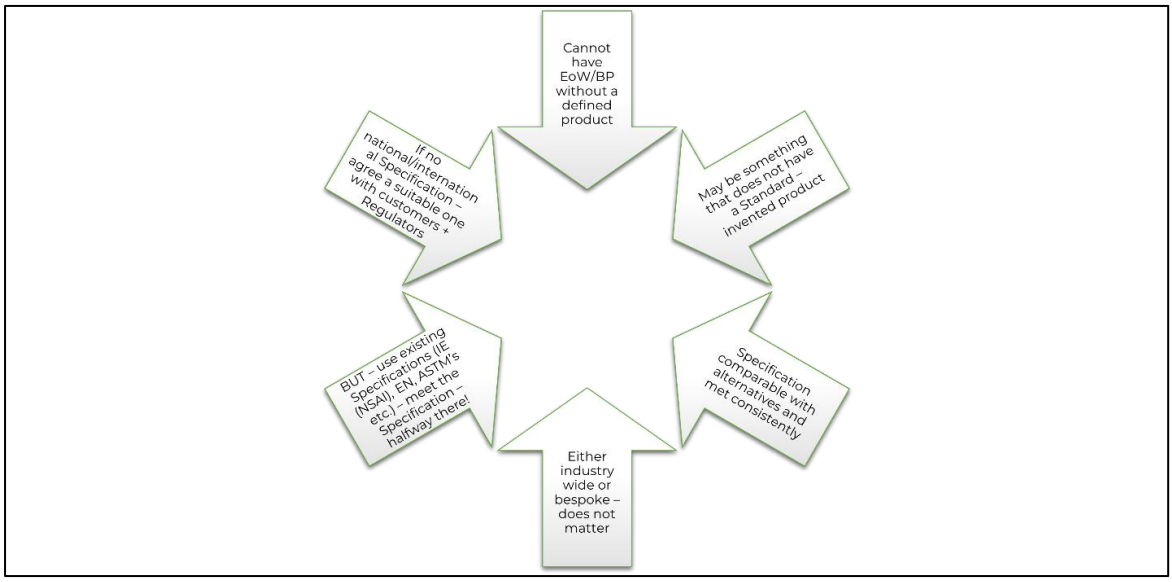
What we need to Prove to the Regulators

To meet product status, whether through the end-of-waste or By-product routes, there are certain components that need to be proven to the regulator to enable a positive product position. These include:

- **Exact product lines and their specific markets –** The final product needs to be clearly defined with associated evidence that it meets a given specification. A clear market should be addressed by the product and

evidence, through documented interest from customers, etc. can help to deal with this issue

Figure 9: Specifications/ Standards Requirements



- Health/environmental protection from product/use e.g., REACH[33], Persistent Organic Pollutants (POPS[35]).

- **Regulatory standards for products e.g. REACH –** Falling under additional regulatory frameworks through achieving Product status needs to be considered and evidence provided as to how the product will meet these, or detailed refutation as to why it will not need to take these into account. There are regulatory requirements on:
  - How waste sites must be managed (permits/licensing[21])
  - On the activities allowed on the production site (Planning[34])

- **Relevant product standards that exist or a new product? –** Whilst delivery of a product against a clearly defined specification is of benefit, end-of-waste and by-product determinations do not preclude the development of a completely new product type that meets a clear need. Demonstration as to meeting a national or international standard will enable greater confidence for the regulator. However, customer specifications and standards, specific to their own requirements, are also acceptable. These must be

[34] https://www.opr.ie/

[35] https://www.epa.ie/our-services/monitoring--assessment/waste/chemicals/pops/#:~:text=Persistent%20Organic%20Pollutants%20(POPs)%20are,in%20food%20and%20human%20tissue.

clearly defined within a submission.

- **Demonstrate product replacement on the market –** The product needs to show what primary or alternative secondary product it may be replacing on the market as this can assist in demonstrating that a market exists for similar materials. Replacement of primary materials also enables support through the associated reduction in negative impacts from primary material extraction and processing
- **Clear markets and demand for the product/s –** The markets for the delivered product need to be well defined and clearly delineated. Product status can only be demonstrated through evidence that a market will exist for the final output. Demand can be demonstrated through customer evidence as necessary.

Figure 10: Proving a Market for the Product

- **Compare product (risk basis) with existing products –** The ability to compare the output product against an existing primary or secondary product that has been established on the market assists in confirming the acceptability of the final product. Comparable performance characteristics combined with similar environmental and human health attributes (including detailed procedures regarding the analysis and testing to be used) engender greater comfort for the regulator. Primary interests relate to managing risks around:
  - Human Health Impacts
  - Environmental Impacts (from processing and use)
  - Product failure – not meeting agreed specifications.
- **Quality Procedures and Documentation in place –** A full quality procedure must be developed in parallel with the submission documentation which outlines how the product will be manufactured including the processing required, the specifications and standards that the product will meet and the procedures to adopt when things go wrong. This needs to be a working document that can be modified as the process evolves. Ability to demonstrate a fully functioning quality procedure will

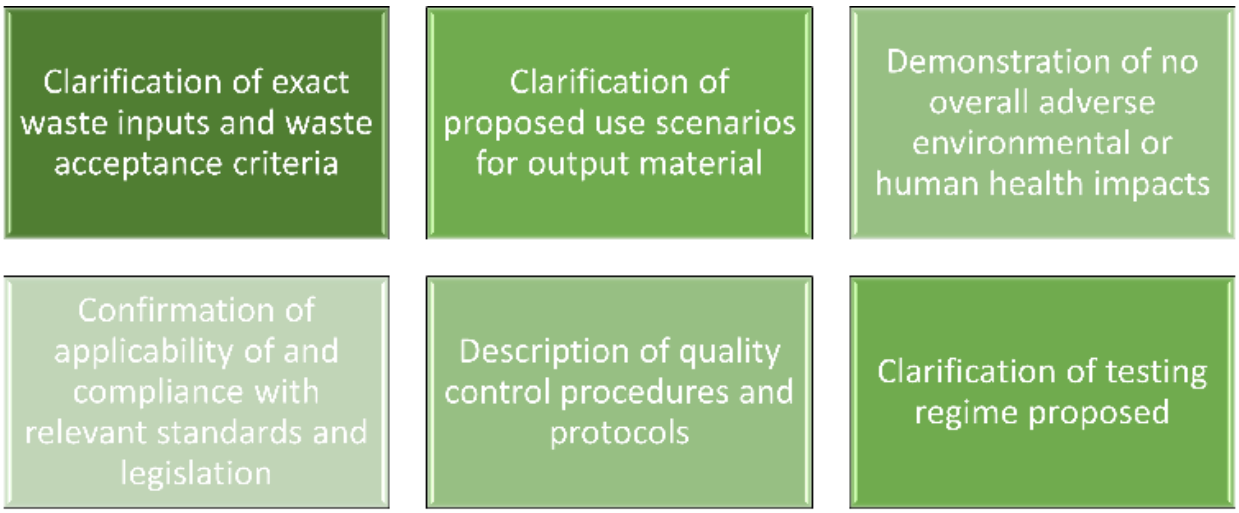
provide comfort for the regulator that the product manufacturer knows what they are doing and can be trusted to deliver in line with regulatory expectations. Strong Quality Management and Testing Protocols provide evidence of active risk mitigation.

Documentation Requirements

The main documentation required for a submission is set out in the relevant EPA guidance documents identified earlier. However, in summary the submission should include:

- Application forms for end-of-waste (online notification system for by-products). It is important not to underestimate the information requirements! Additional qualifying information can be referenced in the application form and provided as an addendum
- Documentation which sets out the case for end-of-waste
    - Legal – there are some projects where a legal opinion may be required to support the application usually were there is potential concern over the risks that the feedstock input material or final output product could present if not managed with due care
    - Technical – detailed reference to the product specifications used and completion of adequate risk assessments that provide comfort that the final product can be used in line with the expectations of existing primary products
- Standard Operating Procedures – end-of-waste and By-product projects need to be considered as a controlled manufacturing process. The controls to be used need to be documented in the submission to illustrate how the materials will be managed (including acceptance procedures for the incoming wastes) and processed and the safety mechanisms in place to reduce negative potential impacts
- Validation and External Auditing Procedures (EN ISO, etc.) – As a management process the most effective method of demonstrating compliance is to demonstrate that the procedures have been validated by third parties. end-of-waste compliance schemes may be developed in the longer term for specific waste streams, and these can be validated through the scheme. However, adding the procedures to existing ISO 9001/14001 processes for audit also provide a route for confirming process compliance
- Correspondence (negotiation) with regulators – should be documented and included within the submission so that pre-agreed issues and parameters are available during the determination process.

Figure 11: EPA Submission Wish List



The EPA's Guide to Submission

As part of the Working Group the EPA set out their thoughts on the items that were not dealt with in the necessary detail in many submissions received. These mirror the items set out above and are illustrated in Figure 11.

The key takeaway here is that a submission must contain as much detail as possible to enable an appropriate determination to be made by the regulator. The items of interest for the EPA relate to the proposed use and quality of the final product as this enables any concerns regarding the product's release into the environment to be properly understood in advance of its free use as a product.

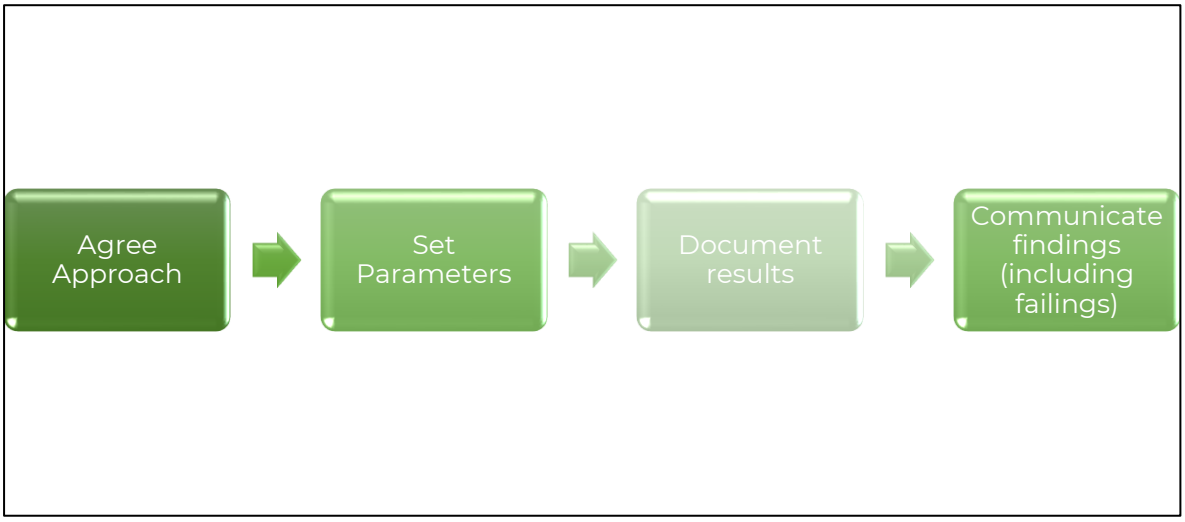
Summarising the Requirements

Attaining product status through the End-of-Waste and By-product routes can prove challenging, especially when there is lack of clarity around the key issues that need to be dealt with. The following summarises the key items that need to be considered:

- **Replacement:** Ultimately, we are replacing a virgin/alternative product with the associated benefits of reducing virgin product impact (e.g., lower carbon emissions, other environmental impacts, etc.). The alternatives need to be established so that a clearly defined product position can be proposed
- **Comparator and Existing Products:** The Waste Framework Directive does not require a Comparator (this was established

under UK Case Law[36]). However, it helps in defining the governing product standard and application. Ability to demonstrate that the product output is analogous to existing products on the market can assist the overall decision process and make it easier for the regulator to understand the proposition enhancing the potential for a positive result

- **Figure 12: Managing the Process**



- **Specifications:** The producer will wish to demonstrate that their output product can be produced consistently and deliberately to customer specification. A clear product specification is needed to provide the routemap to the finished product. In parallel, a quality control system expects failures – how these are managed must also be included within the product specification (no failures can present a red flag to the regulator)
- **Impacts:** Demonstrate that the product has no overall adverse impact on the environment and human health - comparison with existing virgin/alternative competitors on the market can prove useful here
- **Risk:** Ultimately the regulators adopt a Risk Based approach. Demonstrating how you manage out the risks that exist to ensure limited potential impact will provide additional comfort for the regulator. Adopting existing risk structures when analogous to existing products will prove helpful. However, the EPA are equally accepting of good quality and well-defined bespoke risk assessments for a specific product.

36 https://www.casemine.com/judgement/uk/5a8ff7ab60d03e7f57eb10b1

Application Dos and Don'ts

There are several factors that can impact upon the submission of a successful document to the regulators. These range from simple quality of workmanship issues to the ability to clearly articulate how the final product will meet the tenets of either an end-of-waste or by-product determination. Figure 13 highlights some high-level items to consider when delivering the submission documentation.

Figure 13: Submission Dos and Don'ts

It can be an uphill battle to achieve End-of-Waste/By-product submission success. It is important to take account of all of the relevant End-of-Waste/By-product conditional requirements to ensure compliance. We need to be clear from the outset what we are trying to do (& why!). It is important to start from the point of considering the position as a product manufacturer rather than a waste producer.

Building a strong relationship with the regulator can provide a distinct advantage – and demonstrating competence is key. We ultimately wish to demonstrate to the regulator that the product delivered and the mechanisms to achieve it are not going to rebound negatively on regulator if they provide a positive decision – they are taking a risk and providing them with the knowledge and evidence to agree is paramount – it is much easier for them to say no than yes!

Challenges to Using End-of-Waste and By-products as Tools in Circular Economy Delivery

A significant element of the Working Group was in establishing and identifying the key challenges that Members were either experiencing or perceiving as having the potential to impact upon their projects or the delivery of end-of-waste and by-product projects in general.

The challenges identified within the project were ascertained through both the individual company interviews and the series of workshops. The following illustrates the main areas of concern that were identified by the Working Group.

The Key Challenges Identified

The challenges faced by the TWG Members ranged widely and highlighted the individual and waste and/or material-stream specific nature of end-of-waste and by-product projects, citing regulatory, waste system and complexity as key barriers. The core challenges were identified through a series of workshops and targeted interviews with TWG Members to allow them to speak candidly about the challenges encountered. Some of the key TWG specific challenges included:

- **Regulatory Complexity:** The need for end-of-waste and by-product related projects to fall within the same regulatory regime as waste management licensing for disposal was a key item that was highlighted by many of the TWG participants. Industry Members queried the current requirement to go through a full licensing process for low risk, small waste volume projects, and called for alternative protocols that maintain regulators' control but account for the lower risk nature of certain projects. Additional concerns were highlighted by companies about the requirement to have a full waste transport license for collecting leftover product or offcuts from customers. Waste transport licenses are comparatively very expensive in Ireland, compared with the UK. This drives up cost and contributes to disposal of useable or recoverable materials and can make take-back schemes and closed loop recycling systems untenable for small, independent operators.
- **Lack of Consideration for Trials/Pilots:** The TWG Members were aware of the need to prove the processes, procedures and final quality of their products. At present there is no clear process in Ireland that allows for such pilots/trials to occur without either going through

the full licensing process (which is commercially premature) or partnering with existing license holders who may not have strong interests in the outcome, or which drives up costs. This negates the necessary investment in circularity-led projects that are designed to utilise these materials.

- **Design of Existing Market Mechanisms:** Ireland has introduced the Extended Producer Responsibility (EPR) model for dealing with several key waste streams, based on the 'producer pays' principle where producers have responsibility to finance the collection and waste management of the products that they put onto the market at their end of life. Whilst this has been seen as a largely successful and positive step, the structure can work against some, particularly smaller, Irish-based end-of-waste and by-product companies as lowest cost (rather than local and more circular) options are better compensated for, with the most significant financial incentives found at the collection rather than recovery point. Our engagement highlighted that in certain EPR schemes, such as plastic packaging, smaller operators who do not meet the current threshold in terms of minimum volumes of packaging processed are excluded from membership from some schemes. This model may favour incumbent waste collectors over smaller recovery operators and may also impact upon local feedstock availability.
- **Limited in-house knowledge and understanding:** Many of the companies participating in the TWG, acknowledged that they have limited knowledge and experience of navigating the end-of-waste and by-products regulatory regime, and that the costs of accessing professional expertise externally can be high. There was a call for greater training and guidance on the processes relating to end-of-waste and by-products for both practitioners and the regulators (and supporting organisations, including local and national government representatives and supply chain customers) to ensure that all parties were working from the same requirements and assumptions during the determination of a successful position. Training on both the basis of end-of-waste and by-product status (including the definition of waste) alongside more targeted training on the detailed requirements of a successful submission document were highlighted as being sought after by participating companies during the project.

- **Fear of reproach and timelines pertaining to regulatory engagement:** While many companies noted that having access to sound technical advice from regulators would be helpful, some expressed concerns that engaging with the regulators too early in the process could negatively impact upon the overall success of their applications. Concerns were raised due to the high financial costs of engagement with respect to licensing and end-of-easte/ by-product certification etc., and the associated economic costs that businesses seeking to be compliant with these regulations must shoulder. Linear businesses - who can access cheaper virgin materials and avoid the high costs of seeking to reach End-of-Waste / By-product certification – can thus outcompete circular businesses and products in terms of their ability to offer lower prices. There was also a degree of concern over the timescales involved in receiving acknowledgement of submission receipt from the EPA, and also in the time it can take to reach a successful end-of-waste or By-product conclusion with the EPA. Meanwhile, some companies acknowledged experiencing inconsistencies in the level of support and engagement received from Local Authorities around waste licensing applications for circular ventures, depending on which part of the country they are operating in – and the openness of a given Local Authority to understanding and supporting circular economy objectives. These issues impact upon the commercial reality for developing circular outcomes within the existing regulatory frameworks.
- **Customer perceptions of secondary /recovered materials or products:** Some industry members acknowledged the challenges associated with marketing secondary products, which could impact upon the perceived market value of the final products (especially prevalent during the submission process where demonstration of the market sometimes necessitates commercial discussions with customers very early on in the process to evidence real commercial value). Companies acknowledged that former waste materials can be considered by prospective customers as lower quality than virgin products (whether by reality or for the purposes of commercial negotiations). This may dissuade some companies from advancing End-of-Waste and By-Product product opportunities. Consideration must be given to how companies can be better supported to effectively market and build

consumer trust in these products (potentially including the public sector taking the lead as a market maker / launch customer where relevant), and to ensure consumers are made aware of the wider environmental benefits that they confer in terms of waste reduction, emissions reductions, biodiversity, etc., on the Irish economy.

Proposed Solutions to the Challenges Identified

Based on the Thematic Working Group Ideation Workshops, a number of potential proposals were identified by CIRCULÉIRE's multi-sectoral panel members which would play a critical role in advancing the national End-of-Waste and By-product regime for a circular economy in Ireland. These include:

What should Irish Businesses do?

1. **Delivering Quality Products:** Set up full quality-controlled procedures for the relevant end-of-waste / by-product process utilising factory control systems in the processing of the end-of-waste and By-product products to demonstrate that the manufacturing process is analogous with virgin processes and finished products. Quality management systems such as IS0 14001 are commonly used to demonstrate processing is being done in adherence with circularity principles and best practices. Define a robust testing regime to demonstrate both physical performance and environmental/health compliance to allay regulators' concerns about how potential (or perceived) safety or environmental risks will be handled. Clarify whether the new product will be compared against an existing (virgin or secondary) product already on the market by way of performance and environmental/ health impact or develop a bespoke risk assessment that demonstrates that the product is compatible with market and regulatory requirements.
2. **Product Compliance:** Irish businesses can increase consumer and regulators' confidence and understanding of their final products by ensuring they are delivered in line with the necessary international, national or customer-specific product specifications and standards (such as Environmental Product Declarations and National Standards Authority of Ireland's product standards), highlighting the confirmed environmental and other benefits of circular products in comparison with virgin.
3. **Creating Brand Trust:** Consider how Life Cycle Assessments and circular end of life strategies (such as design for reuse or recyclability), can help you gain support/trust from customers and specifiers for the delivered products through presenting the additional benefits of the products in terms of circular economy impact and reduced waste/GHG emissions, including at your own product's end of use

phase. Performance in line with alternative virgin products must be taken as a given.

4. **Develop Circular Delivery Models and Strategies:** Some circular business models will, in certain circumstances, negate the need for end-of-waste/by-product altogether and these routes must be explored to negate any 'grey areas' in interpretation. Key examples include leasing models/product-service models and circular procurement. For example, a scenario exists where supply chain agreements can be re-negotiated to allow product offcuts to be returned to producers by customers (before they are deemed waste), which could negate the classification of the material as waste. Alternatively, these offcuts could be classified as 'by-product' under clear circumstances again enabling them to negate their classification as waste at this point. Such models would support easier resource re-utilisation and prevent the product/material from becoming waste in the first place, by explicitly supporting the producers' intention to reuse components or products and allowing them to maintain control over the product through to end of use – extending the parameters over when the material would actually be classified as waste. However, the existence of such circular design routes will need to be codified to ensure wider industry uptake.
5. **Regulatory Engagement:** There is value in proactively engaging with the EPA and other relevant bodies (Local Authorities, etc.) to clarify the circular outcomes expected through the development of an end-of-waste or by-product project. Industry should work together in enabling the development of focused fora (e.g., the Bio Composters groups and even CIRCULÉIRE) to identify common sectoral challenges and ensure that regulators and key decision makers understand the circularity objectives and regulatory and/or other challenges facing particular industries are addressed.
6. **Change the Narrative:** develop new language around circular economy enabling projects which plays on the positive aspects (reduced GHG emissions; resource recovery, demonstrated through Life Cycle Assessments or similar processes) and negates the focus on the raw material inputs as former wastes. This will assist in mainstreaming the use of such products and enable greater customer recognition and trust in such products.

What should Government and key Regulators do?

1. **Incentivise Circular Outcomes:** More must be done to ensure waste regulations incentivise safe and responsible circular innovation outcomes, while ensuring the linear risks associated with virgin products/materials are factored into decisions to grant End-of-Waste and By-product notifications (and as reinforced in the Climate Action Plan 2021). Meanwhile, efforts should be made to incentivise projects that are focused on delivering circular outcomes higher up the waste hierarchy, and which aim to circularise the local and national economy, promoting reuse and recycling locally over disposal or export. This may require a review of the focus of some existing EPR schemes with a need to determine how these can be used to maximise the management of locally sourced feedstocks for end-of-waste and by-product related projects and enable appropriate cascade of funding to projects that deliver demonstrable circular outcomes for the Irish economy using end-of-waste and by-product processes. This could be done through establishing a link with the waste hierarchy as a mechanism for delivering circular outcomes in Ireland. In addition, consideration needs to be given to how simplified and proportionate regulatory processes can be introduced for low-risk circular-based projects and material streams, to reduce overall implementation costs and enable greater innovation in developing new products and secondary raw materials from former waste streams,
2. **Business/Regulator Working Groups:** Business and regulators to work together on nationally significant waste streams (whether by volume, positive impact or potential material value) to define national resource protocols that level the industrial paying field and allow operators to work towards nationally recognised end-of-waste or by-product standards where products are delivered from the specific identified waste streams. This has been demonstrated as a route elsewhere and will greatly reduce time demand upon regulatory resources.
3. **Develop Resource Protocols:** Following the precedent established in the UK and Sweden (expected in the near future), develop national standards for certain low-risk high-volume waste streams that have demonstrable ability to meet end-of-waste requirements when dealt with under clear processing requirements to nationally

recognised specifications and standards (e.g., plastics, construction materials, composts, end of life tyres, etc.). This will provide for a level playing field throughout the relevant industries and also reduce the day-to-day burden on the EPA in dealing with end-of-waste and by-product submissions – if the companies can demonstrate compliance with the given standard, then they can deliver product without further EPA involvement. Compliance can be demonstrated through audit of the commercial process either by the regulator (or appointed representative) on an agreed basis (e.g., annually) or through existing quality control systems audits (e.g., EN ISO 9001, EN ISO 14001). These protocols should be linked with national accreditation bodies who manage the compliance of the industry as a whole, thereby maintaining high delivery standards with negligible potential for significant environmental or health impact.

4. **Accredit and undertake Impact Reporting on Real Environmental Improvements:** When making assessments of end-of-waste and by-product applications take greater account of the broader LCA benefits that are deliverable through an end-of-waste product when compared against a virgin product. Whilst a comparison on potential contamination levels is important, when compared against a virgin comparator, the wider environmental benefits including reduced waste disposal, lower GHG emissions and reduced primary resource use impacts should also be taken into account and given greater weighting in the decision process. There would also be benefit in providing evidence of accountability in driving Ireland towards a Circular Economy and the EPA could play their part through the provision of Impact Reports on Circular Economy and end-of-waste/by-product outcomes in terms of volumes of waste recovered/GHGs saved, and the number of circular economy projects with economic value to Ireland PLC unlocked per annum.
5. **Positive Procurement:** Building on the Government's commitment to implement green public procurement (GPP, subject to an updated policy to be published later in 2022[37]) in all tenders using public funds by 2023, the public sector is in an ideal position to specify circular economy products in their projects as a market enabler to assist the growth of the industry

[37] https://www.gov.ie/en/publication/69c0b-green-public-procurement/

and ensure that the benefits of end-of-waste and by-product-led products are accounted for in benefiting Ireland PLC. This opens up product markets and also demonstrates commitment to the stated aims of driving a circular economy and enabling consideration of GHG savings and reduced primary resource use as being equivalent to cost in public procurement contracts. These circular value factors must be taken into account alongside cost when determining the overall benefits of a public tender, with end-of-waste and by-product led products demonstrating clear positive benefits in this regard and presenting the opportunity for the public sector acting as a positive "market maker" or "launch customer".

6. **Regulatory Modifications:** Consideration should be given to how end-of-waste and by-product projects can be regulated to maximise the circular economy opportunity. Options could include developing a:
    - Clarification of the roles played by both the EPA and County Councils in driving end-of-waste, by-product and waste licensing decisions; offering mandatory training to Local Authorities to ensure they understand the strategic role they play in realising a circular economy;
    - Regulatory "Sandbox" such as that used by the UK Financial Conduct Authority (FCA)[38] to enable trials and pilot process experiments to be undertaken and feasibility to be established prior to requiring full waste licensing;
    - Simplified regulatory regime that takes account of low-risk waste streams being used to deliver products (exemptions);
    - Regulatory Position Statement (RPS) type route for low-risk waste streams to simplify the process, or undertake trial work, where a written agreement is established between the producer and the EPA for the use and processing of the original waste into a delivered product via an identified process, but a full licence would not be required. A good example is provided by the English Environment Agency's regulation of innovative waste processing trials which could work in Ireland in line with the findings of this project[39]

[38] https://www.fca.org.uk/firms/innovation/regulatory-sandbox

[39] https://assets.publishing.service.gov.uk/government/uploa

7. **Reassess the Waste Transportation Licensing System:** The current need for a waste transport licence for all waste collections irrespective of size or circularity of process is a significant burden on developing end-of-waste and by-product related projects, especially where the opportunity exists for take back of unused product or offcuts from customers. Under the current regime producers can collect small amounts of their former product on a reverse logistics basis – however, this must then go to a licensed facility and not back to their site if not licensed to accept the materials when defined as waste. Alternative fee structures should be considered for low-risk projects that can demonstrate circularity. In Northern Ireland the fees for a national waste carrier's licence are circa £155 for the first year; £77 per annum thereafter; in Ireland it would cost €5000 under a waste collection permit that allows full national collection (valid for 5 years - €1000 per annum, irrespective of company size). This is considered a significant barrier to circularity for some commercial operators.
8. **Supporting Pilots and Research:** Efforts should be made to reduce the regulatory burden on pilot and research projects as they define the processing and systems needed to deliver an end-of-waste or By-product outcome using Irish wastes and materials. In addition to the proposal for regulatory sandboxes above to support safe circular experimentation, this could be done through defining a specific R&D based control regime (such as that highlighted above in the RPS for Innovative Trials in England) that is time bound, utilises low waste tonnage and with a clearly defined proposal to enable the necessary work to be done outside the existing waste licensing regime. Additional financial support should also be considered for such projects given the stated aim to transition to a circular economy in Ireland. This could be enabled through a "Greenstart Plus" type Innovation voucher to pay for feasibility work and to acquire End-of-Waste / By-Product professional support advisers where necessary.
9. **Improve Engagement and Communication:** The current EPA resource constraints mean that industry panel members noted considerable delays receiving acknowledgement of end-of-waste submissions and also in getting to the end point (by-product applications are dealt with in a

ds/system/uploads/attachment_data/file/488868/LIT_9926.pdf

different way due to the volume of submissions and new online portal). The overall system could be improved to be more user-centred by developing systems that provide greater clarity to industry on what the expectations are related to the regulatory requirements for end-of-waste or by-product projects and also to provide updates on where a particular submission is in the process. This could include the use of a 'progress bar' linked to the EPA application number to communicate status. Further provision of a help-desk contact who can provide progress updates would also be beneficial to provide reassurances to industry on how ongoing applications are progressing.

10. **Regulatory Training and Development:** Develop tailored circular economy training materials/resources for regulatory and key personnel related to end-of-waste and by-products so that all potentially relevant staff understand the process, and role in achieving a circular economy and are able to guide/work with industry in implementing circular economy projects. This could include web enabled training tools alongside bespoke training focussed on developing knowledge and understanding around this area of the law, and which increases awareness of the role end-of-waste and by-products can play in waste prevention and supporting strategic circular outcomes.
11. **Industry Training and Helpdesk Function:** Additional training should be developed to inform industry on the opportunities and requirements for delivering end-of-waste and by-product outcomes and could be linked with existing waste legislation training initiatives. This should be supported by a number of searchable FAQs on the EPA website that cover commonly asked queries together with a Help desk function (which could be designed in line with that currently provided for the Irish Biocidal Product Compliance system). This should act as first port of call to assist queries and guide customers to ensure there is appropriate engagement throughout the relevant end-of-waste or by-product process.
12. **Improve Guidance Resources and Tools:** Develop further tools that enable a simplification of the end-of-waste submission process as this has proven to be challenging for some TWG industry members. This could include web enabled tools to support End-of-waste and by-product decision processes and the development of the submission documentation to the standards necessary for a successful project

with some pre-population for standard wording and information. This could also include a video tutorial/application walk through to explain the application process in detail and provide assistance on where to look for relevant support documentation with respect to environmental assessments, product specifications and relevant product comparators.

13. **Supply Chain Traceability:** Digital tracking systems could be developed and deployed nationwide on many single source materials that could be subject to circular recovery systems enabling greater traceability and transparency over resource use and supply chain management. Policy making stakeholders, local authorities, regulatory bodies and company representatives should take a lead on this to provide date availability and visibility to enable the creation of secondary raw material markets in Ireland. This would provide greater clarity on the materials themselves on a mass balance basis and allow an understanding of what is being recovered versus being lost to the Irish economy. Publicly available data and information on materials will also provide an avenue to increase market knowledge on the recoverable materials in circulation within Ireland and, in turn, incentivise their recovery as further material value is created. Digital systems are already on the market today that could enable this.

Conclusions and Final Reflections

Developing a Circular Economy in Ireland will necessitate change in the market, both in the behaviours of industry in determining opportunities to maximise the use of existing resources and for government and the regulators in refining the regulatory regime so that it provides an enabling function for this necessary change. Delivery of the national stated aim for circularity will require real effort from all sides. If not, the hopes and intentions are doomed to failure.

Taking the findings of this Thematic Working Group, it is evident that a real opportunity exists to utilise end-of-waste and by-product determinations as tools in the development of a circular economy in Ireland. However, there are several priority challenges that will need to be dealt with to make this a more user-friendly process.

Education and Guidance

Education is seen as fundamental to enabling the development of knowledge and understanding of the processes across industry and with the relevant regulatory bodies. This project has started the process of providing guidance to the relevant Parties and also bringing together industry and regulators to learn from each other and gain empathy for their relevant positions.

The worksheets delivered through the project and included as Appendix 4 provide additional assistance in refining the thought processes around the definition of waste and when a project could be considered as a candidate for end-of-waste or by-product development.

Flexible Regulation

Given the stated commitment to streamline end-of-waste and by-product processes through the Circular Economy Act, there is a need to consider the current regulatory frameworks to see if these can be simplified for low-risk projects which can demonstrate an end-of-waste or by-product position. Other jurisdictions have developed different positions for handling low risk and/or low volume waste materials and modifying the Irish frameworks to bring in such routes would be of great benefit.

Focusing regulatory development on controlling lower quality waste management options whilst supporting end-of-waste and by-product positions would provide the springboard to maximise the use of these tools. Requiring small circular focused companies to comply with the same legislative requirement and burdens that a major waste company must do seems to be excessive and

open to positive modification. Cost considerations also need to be taken into account as full compliance with existing waste regulatory requirements is significant and puts off positive developments. Levelling the playing field should not constitute pricing new circular business models out of the market, especially when they may have significant other development ad proof of concept costs to contend with as well.

There needs to be consideration as to how the regulatory process can be improved to speed up the submission determination process. This is a symptom of both a requirement for additional resourcing within the EPA and the quality and quantity of submissions that the EPA receive for assessment. Opportunity may exist for the provision of an initial triage system that can filter out the submissions that are ready for assessment and those that require additional information prior to the formal assessment process. Industry would benefit from knowing that their project is in consideration and would be happy to know early in the process if they need to do further work. This may have the added benefit of reducing the burden of regulators having to review and handle lower quality submissions.

Incentives

Consideration needs to be given to the current opportunities to incentivise circular projects that utilise end-of-waste and by-product determinations. The existing producer responsibility provisions extant in Ireland take no current account of on-Island opportunities and instead may inadvertently incentivise lower quality export-based disposal and recovery operations resulting in these resources being lost from the Irish economy. This is something that should prove relatively simple to modify and would have a significant effect on the market and accessibility to product feedstock.

There is also a need to determine whether some form of funding mechanism could be defined for circular-focused business opportunities to assist in progressing them to full operation. This could be modelled on existing regimes such as the Greenstart Plus funding programme or an Innovation Voucher-type process.

Focus on the Product

Industry needs to remember that an end-of-waste and by-product position places them firmly in the product manufacturing camp and not in the waste management industry per se. Maintaining the focus on the quality of the products that can be delivered and ensuring that a proper manufacturing process is in place will assist in providing comfort to the regulators that the producer of the new product is serious about what

they are doing and not trying to find a ruse to get away from proper waste disposal requirements.

On the government side, there should be consideration of secondary / end-of-waste and by-product End-of-Waste led products becoming part of the overall procurement policy and be looked for during procurement processes (notwithstanding the need to meet competitive pricing criteria), such as specifying that recycled aggregates or concrete be used when tendering for the design and construction of Public Sector office buildings.[40] This will assist in maintaining the businesses that produce these products and also help to maintain production and quality standards through the desire for the producer to maintain public sector customer relationships.

Enable Research and Development

The current system does not provide for nurturing the new circular economy using these specific tools. Consideration needs to be given to processes that will allow the necessary development work to occur outside the current waste regulation regime as the requirements are not flexible enough to enable such development works. Sandbox type options could be considered alongside expanded waste exemptions or Regulatory Position Statements that enable low level regulation of activities prior to them becoming commercial.

Public/Private Sector Collaboration

Industry and relevant public sector bodies should come together in fora that focus on enabling the development of nationally significant positions for major waste streams. This would assist in developing mutually beneficial industry/regulator relationships and also move forward on the development of positions for high-volume waste streams that have product delivery potential. This would allow the progression of circular models and reduce the volumes of waste that are currently disposed of or recovered elsewhere.

Develop Quality Submission Documents

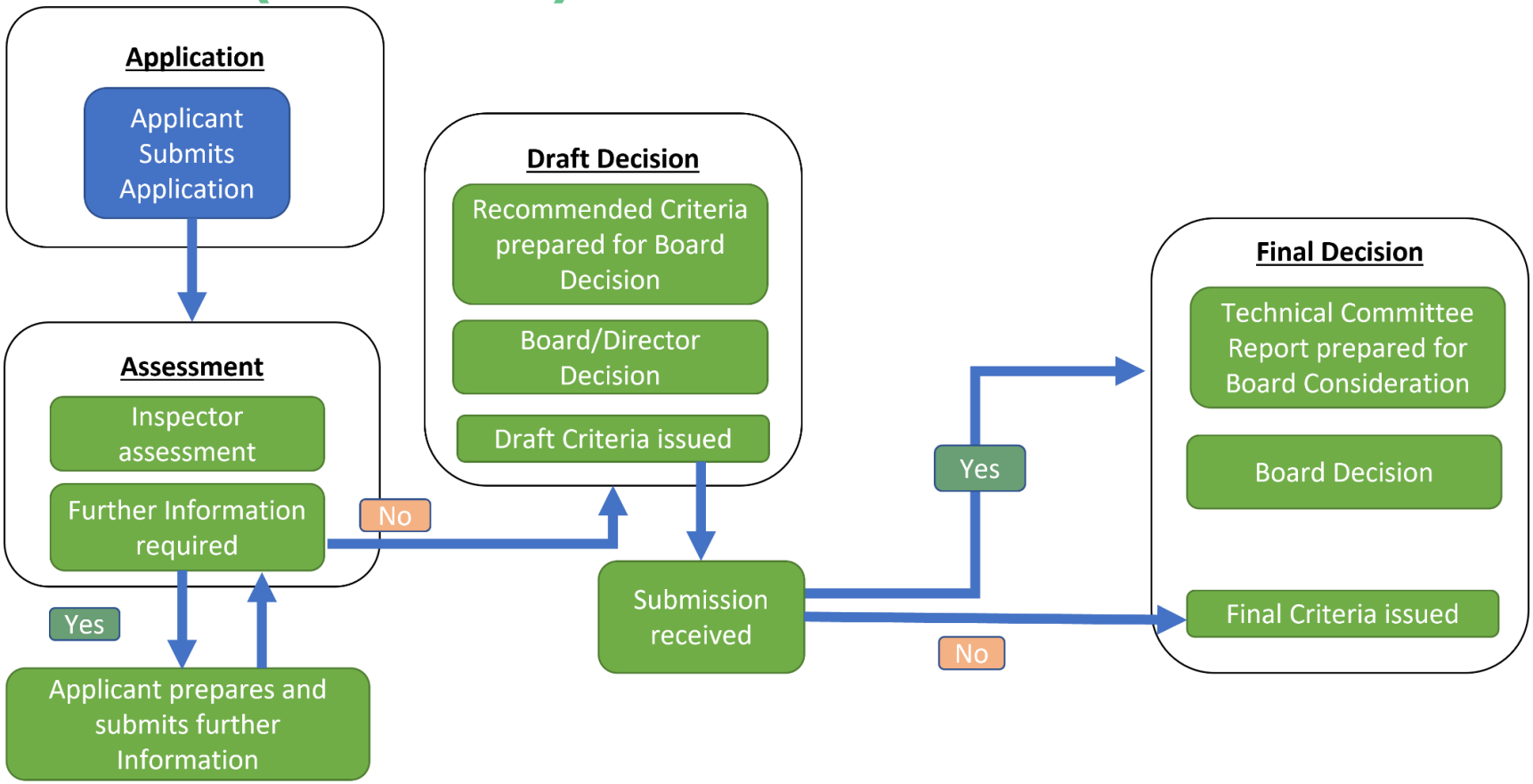
Finally, industry must work to understand the regulator's requirements with respect to the quality of data that they require to enable a positive end-of-waste or by-product position. Provision of well-developed documentation makes the regulator's job easier in undertaking the formal assessment.

[40] GPP-Guidance-for-the-Irish-Public-Sector.pdf (epa.ie)

Appendix 1 – Contacts and Further Information

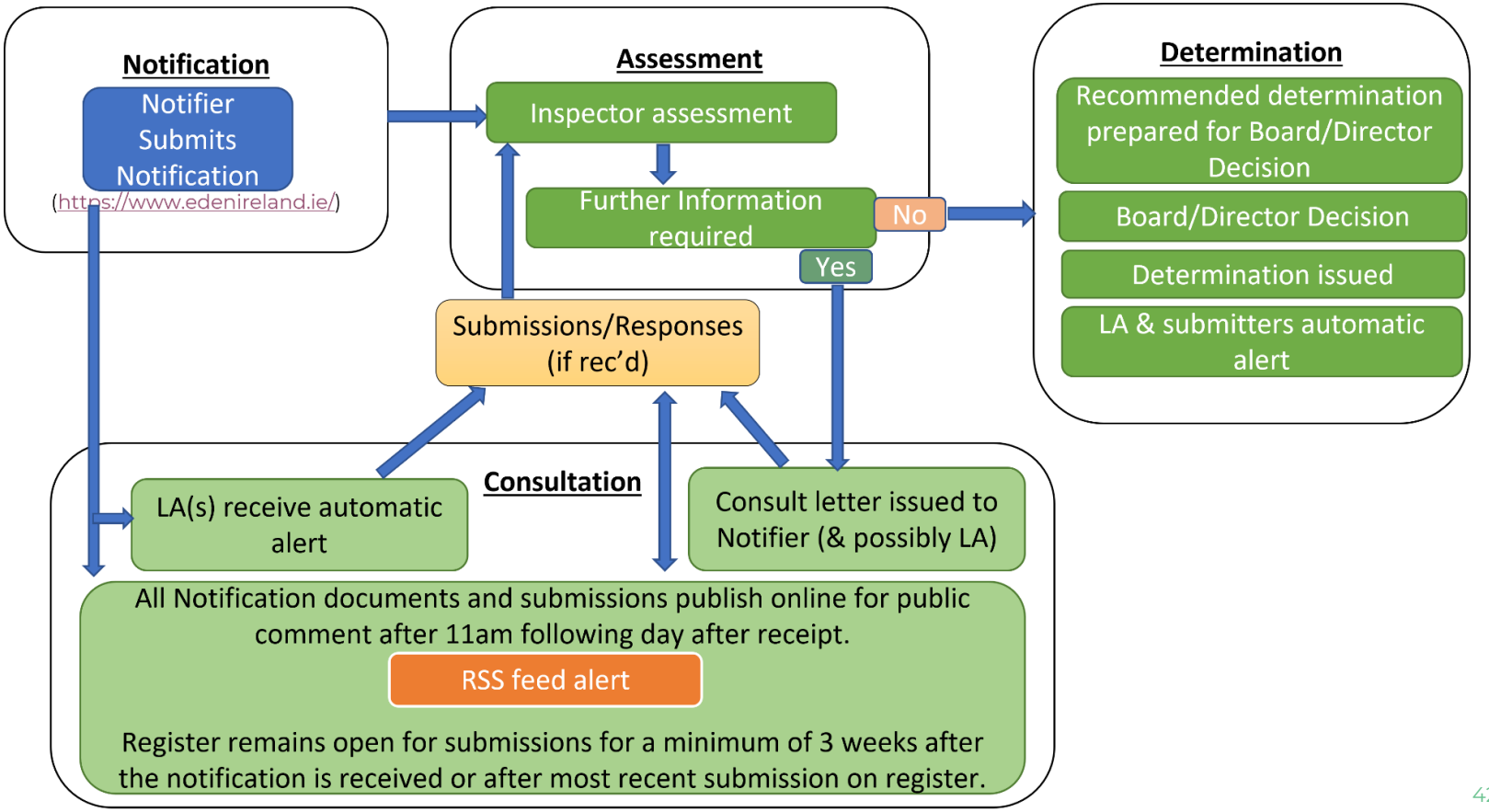
	Email address	More information
By-products	By-product@epa.ie	https://www.epa.ie/our-services/licensing/waste/by-products-regulation-27/
End-of-waste	article28@epa.ie	http://www.epa.ie/waste/wastereg/art28/
Waste Licensing	licensing@epa.ie	https://www.epa.ie/our-services/licensing/waste/waste-licensing/
Industrial Emissions Licensing	licensing@epa.ie	https://www.epa.ie/our-services/licensing/industrial/industrial-emissions-licensing-ied/
Waste Collection	contactus@nwcpo.ie	www.nwcpo.ie
Waste export/import	nationaltfs@dublincity.ie	https://www.dublincity.ie/residential/environment/national-tfs-office

Appendix 2: Application to Decision Process - End-of-Waste[41] (from EPA)



[41] https://www.epa.ie/our-services/licensing/waste/end-of-waste-art-28/preparing-an-end-of-waste-application/#d.en.84378

Appendix 3: Notification to Decision Process - By-Product Submissions (from EPA)



[42] https://www.epa.ie/our-services/licensing/waste/by-products-regulation-27/how-to-prepare-and-submit-a-by-product-notification/#d.en.84239

About CIRCULÉIRE

CIRCULÉIRE, the National Platform for Circular Manufacturing seeks to accelerate Ireland's transition towards a net-zero carbon circular economy.

A key objective of the programme is to demystify, de-risk and deliver circular business model innovation for Irish industry.

An End-of-Waste, By-products and Waste Licensing Pathfinders Thematic Working Group was established with expert panel representing industry and research in Ireland. The objectives of the working group were to devise clear recommendations aimed at advancing the economy's transition to a circular model. The intention is to assist in refining how circular thinking can be accommodated in a world where regulation remains linear.

Want to learn more about CIRCULÉIRE? Look at www.Circuléire.ie **or contact** Circuléire@imr.ie

About RE-MINE Ltd

Re-Mine works in partnership with both waste producers and the waste management industry to deliver products from waste.

We are a project development and delivery company with a background in delivering value recovery from waste for industry and the waste management sector.

Our mission is to eliminate waste at its point of production and deliver real economic, social and environmental value through the creation of products from recovered resources.

Want to learn more about RE-MINE Ltd? See https://www.re-mine.co.uk/ **or contact** karl.hylands@re-mine.co.uk

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