SUPPLY CHAIN SUSTAINABILITY SCHOOL

Waste, Resource Efficiency and the Circular Economy Workshop – Lower Thames Crossing

9th August 2022 – 10.00am to 12 noon

SUPPLY CHAIN SUSTAINABILITY SCHOOL

Welcome & introductions

Mark Turner

Sector lead for FM and Waste & resource use

mark@actionsustainability.com

0207 697 1977

@SupplyCSSchool

Sara Craze

JACOBS

Principal Consultant - Water & Environment, Jacobs

Materials and Waste Lead on Lower Thames Crossing

Outcomes

At the end of this introductory workshop you will:

- Have an understanding of the circular economy and the drivers that influence it
- *Considered this in the context of your own standards and requirements*
- Have considered opportunities to introduce circular ways of working within your own organisation and on behalf of your clients
- Be able to explain the challenges and opportunities to your colleagues, customers and supply chain.

Please Participate!

Please use your microphones and cameras – just switch the mics off when not speaking

If you have **QUESTIONS**, feel free to shout out – we are very informal!

Also use the CHATBOX please

Join in with the various exercises on Jamboard – I'll explain this in a minute!

SLIDES will be distributed afterwards

Introductions, using Jamboard and Chat box

- We will introduce Google Jamboard shortly – you just to open this as an interactive document via your browser – use the link we sent you by email or the one we have added in the Chat function of Teams

- If you can't access Jamboard or have something else to ask, just use the Chat function. Again this is in the Teams toolbar

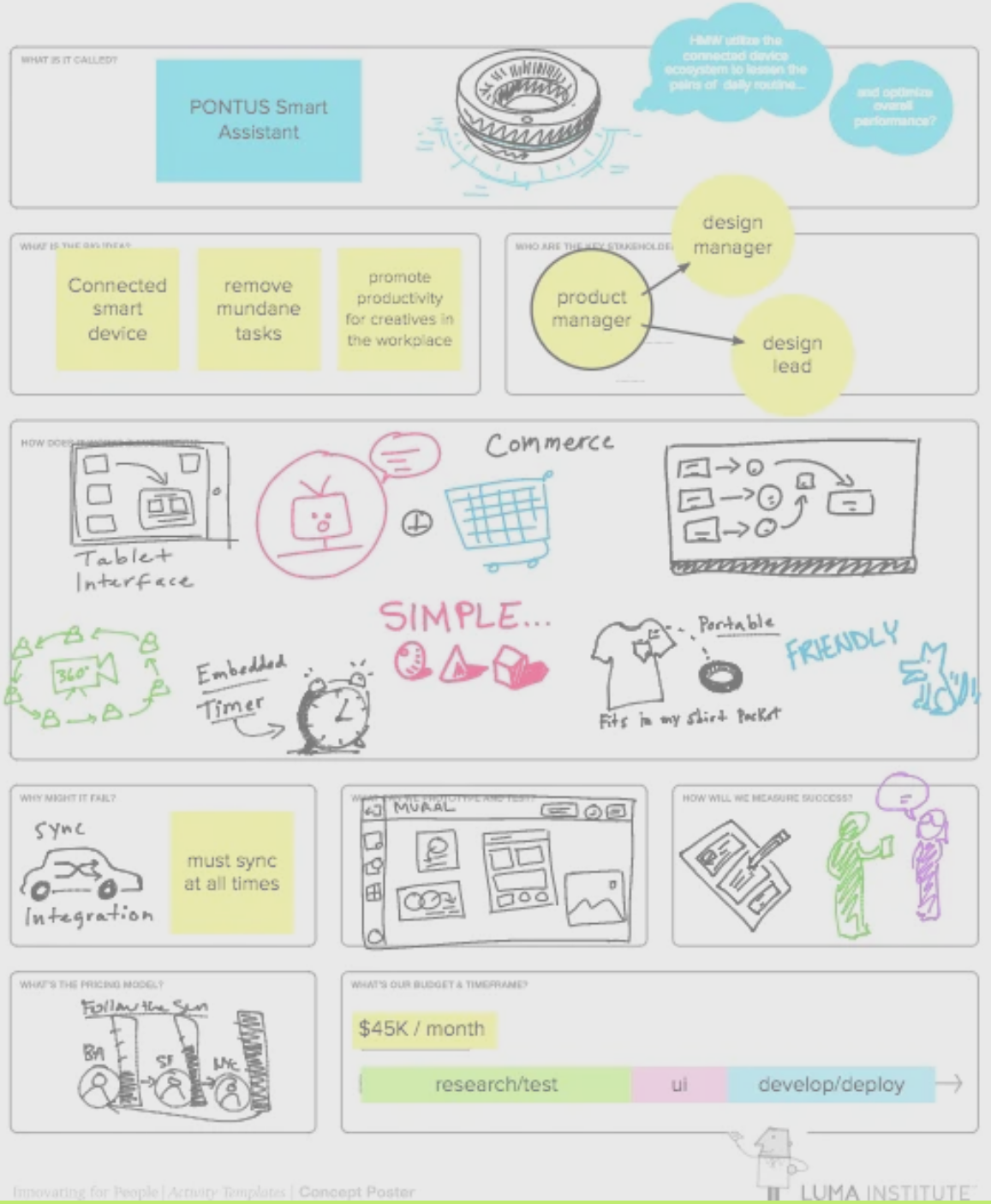
- Also use this to add other comments, keep notes of anything you think could be useful to the group, add your questions etc

- Feel free to shout out – I'm very happy to be interrupted.

https://jamboard.google.com/d/17Q-uGoZycZw5fh7XvD5KRNawy2Fyko0yyHdD-_hmc0Y/edit?usp=sharing

Jamboard

- ***FOLLOW*** the **link** we sent to your email
- ***CREATE*** a post it note, double click on an empty space and start writing
- To ***MOVE*** your post it note around, click on and drag it
- To ***DELETE*** your post it note, click on it and press the 'Delete' button on your keyboard
- PLEASE DON'T press the "clear form" button!



We need your feedback please

This link will be available on the chat:

LINK:

SUPPLY CHAIN SUSTAINABILITY SCHOOL

The School is a common approach to…

1. Assessing supply chain sustainability competence
2. Developing suppliers' sustainability knowledge

150 Partners

14,000+ companies

40,000+ individual learners

180+ Partners

14,000+ companies

40,000+ individual learners

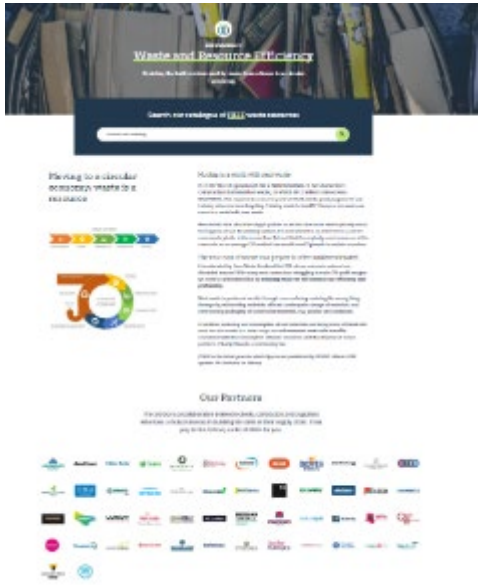
Everything is...

Confidential

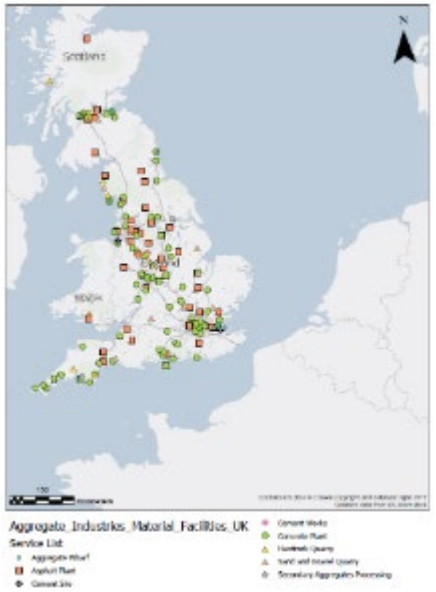
FREE

CPD Accredited

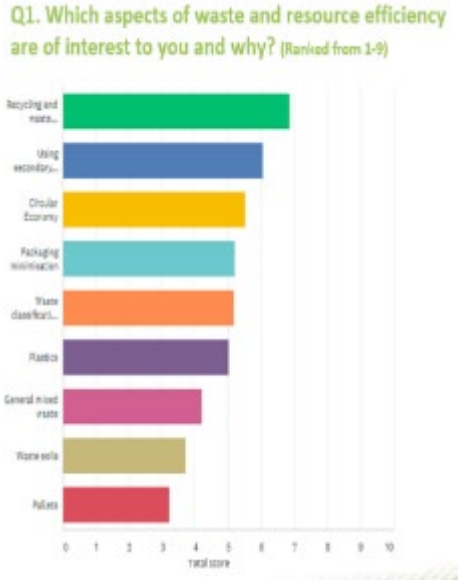
The School's Waste & Resource Use Category Group



Refreshed
-Landing page
-Resources (new and old)



Material Exchange Platforms Mapping
- Skanska collaboration



Surveys
-Member interest
- Partner plastic waste

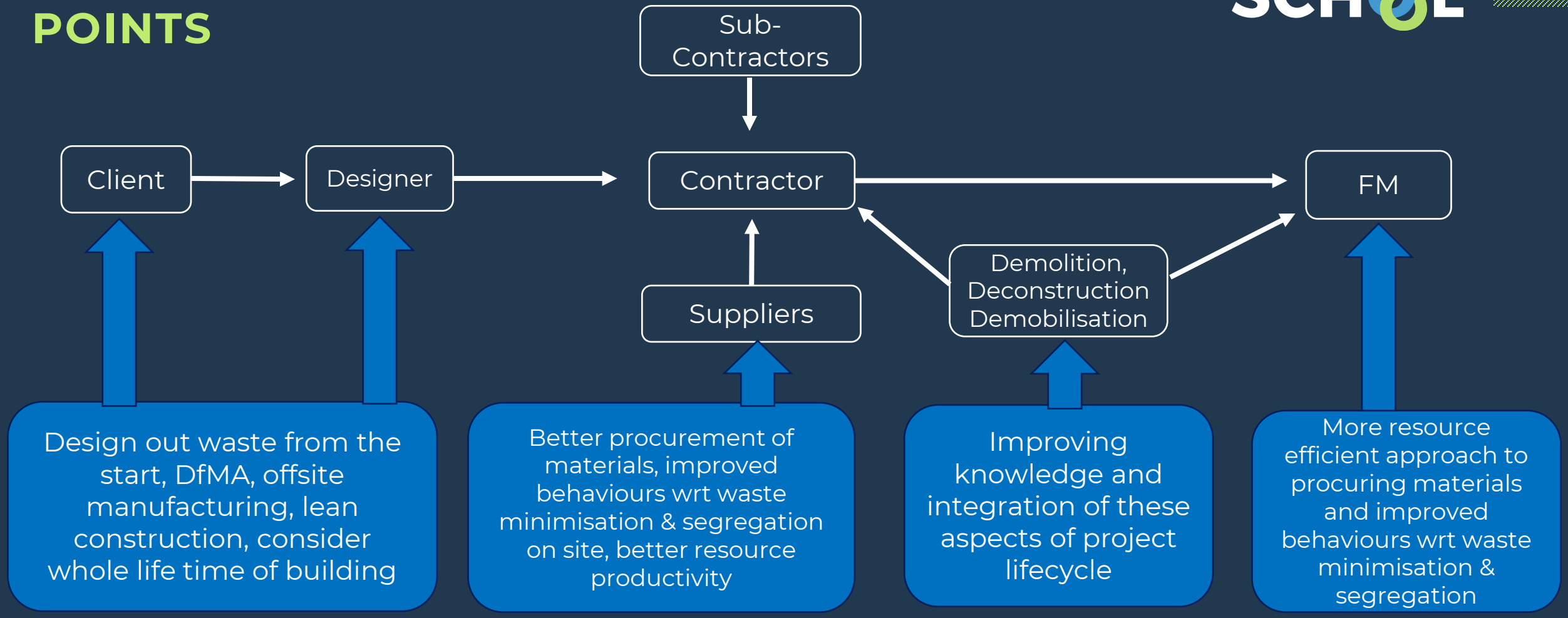
Partner case studies

Leadership group support

Our work programme

Construction project lifecycle waste*	**Developing resources to improve outcomes**
Designing out waste and design for deconstruction	Guidance and events, promoting circularity
Understanding limitations of UK waste management infrastructure	
Supporting procurement processes	Developing model tender questions and responses
Materials consolidation centres	
Plastics and aggregate reprocessing companies	Mapping and developing knowledge on how to engage
Data	material passports and waste performance reporting templates
Materials exchange platforms*	**Set up and promote a map showing where these are, how to use etc**
Zero waste to landfill	including greater input from waste management providers and demolition contractors
Embodied carbon and net zero pathways	
Packaging projects	Guidance, events, collaboration, research – Infra/Fit Out/M&E?
Social value and supporting social enterprises	Research and collaboration opportunities
Soils and aggregates	Guidance and exchange platforms
Subcontractor guidance	Site practice and site waste management tools
Informing School on policy / legislative changes *	Plastic Packaging Tax, Circular Economy, Producer Responsibility etc
Collaboration with other groups	Addressing SDGs, working with Carbon Group on scope 3 etc

Work of our Group - Intervention points



Continuous link to circular economy

Reminder:

What is waste?

…. and who is interested?

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What is Waste?

“Any substance or object that the holder discards, or intends to, or is required to discard.”

(Waste Framework Directive)

Waste? ….

Or resources?

What is a circular economy?

A circular economy is an alternative to a traditional linear economy (make, use, dispose) in which we keep resources in use for as long as possible, extract the maximum value from them whilst in use, then recover and regenerate products and materials at the end of each service life.

The Circular Economy

Ellen MacArthur Foundation

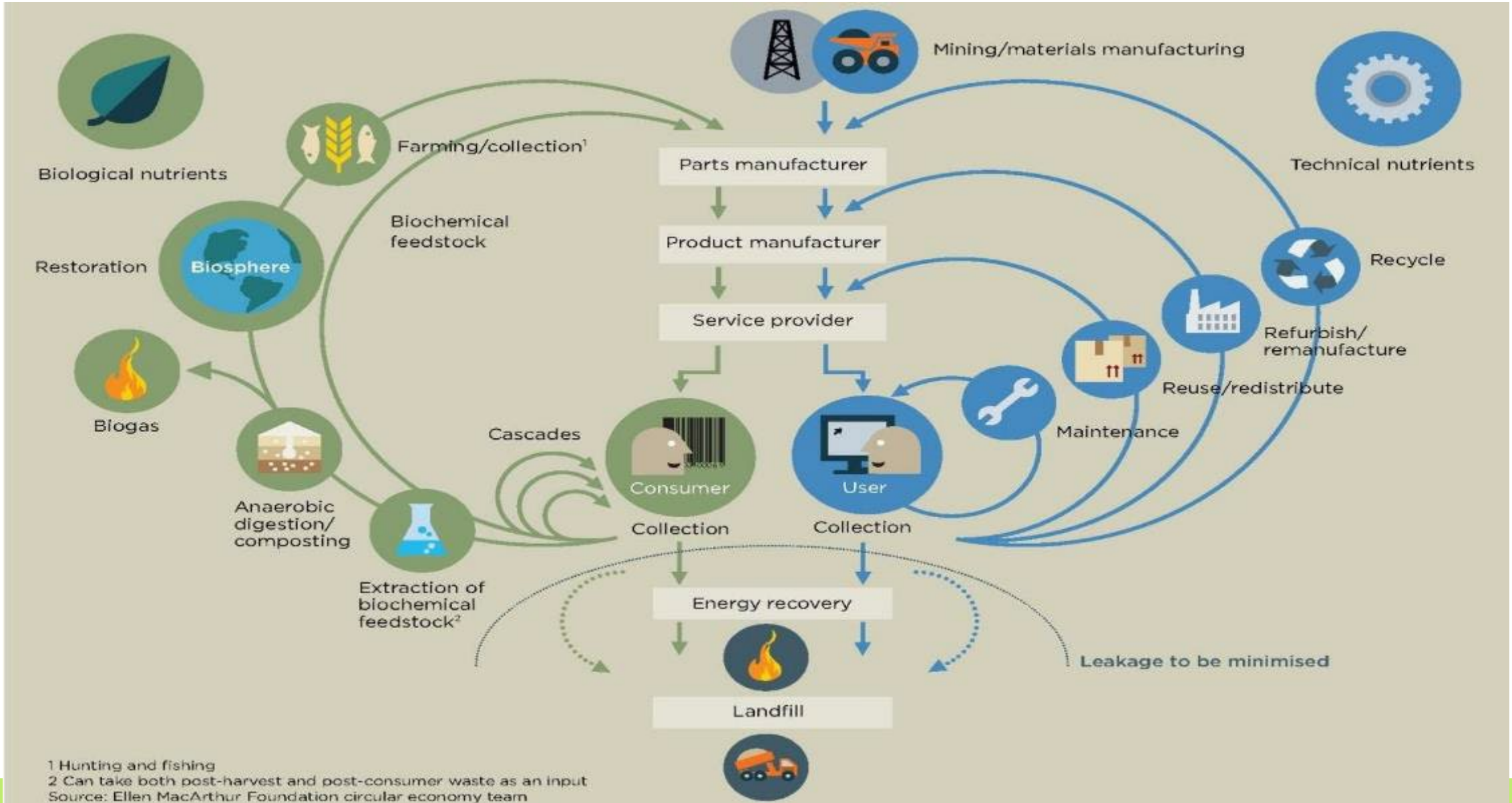
"The circular economy is based on three principles, driven by design:

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

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

Source: https://ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview

More detail


Mining/materials manufacturing
Biological nutrients
Farming/collection[1]
Technical nutrients
Parts manufacturer
Biochemical feedstock
Product manufacturer
Restoration
Biosphere
Recycle
Service provider
Refurbish/ remanufacture
Biogas
Reuse/redistribute
Maintenance
Cascades
Consumer
User
Anaerobic digestion/ composting
Collection
Collection
Extraction of biochemical feedstock[2]
Energy recovery
Leakage to be minimised
Landfill
1 Hunting and fishing
2 Can take both post-harvest and post-consumer waste as an input
Source: Ellen MacArthur Foundation circular economy team

New thinking?

.. Not entirely!

Circularity isn't just recycling...

Do you need it?

Can you fix it?

It's being more thoughtful and resource efficient

Could you design it better?

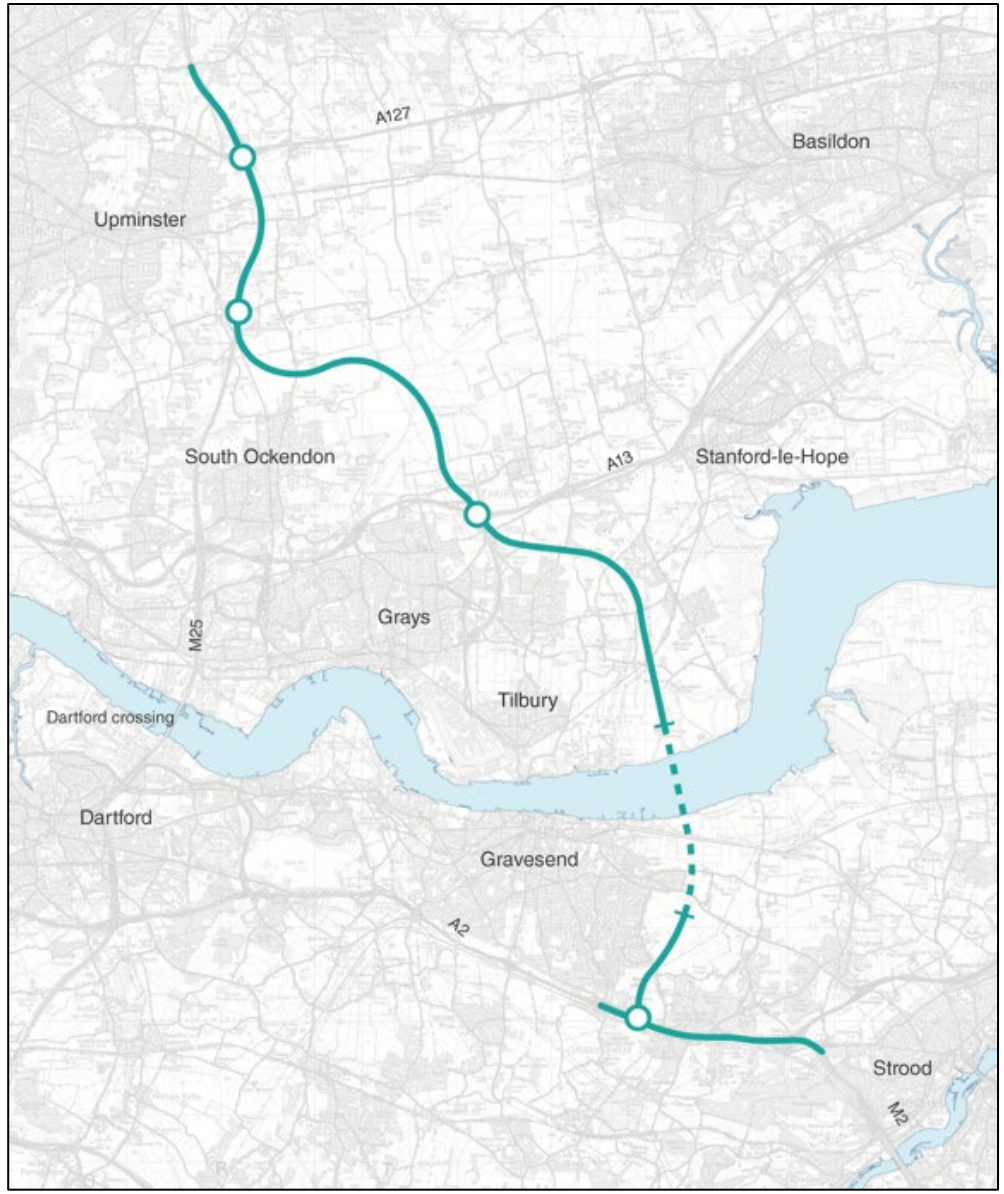
Could somebody else use it?

Can you retain more value?

Can you save time and money?

The UN Sustainable Development Goals

Lower Thames Crossing Project



- **Biggest road project** since the M25 opened 30 years ago
- Nearly **double road capacity** between Kent and Essex
- Will open a **quicker freight connection** between the South East and the Midlands and the North
- Relieve congestion at Dartford by **reducing vehicles using the crossing by 21%**
- Approximately **14.5 miles (23km)** of new road
- **Two 2.6-mile tunnels** crossing beneath the River Thames – the longest road tunnels in the UK
- Designated a **Pathfinder project** by the Department for Transport to explore carbon neutral construction
- **Three lanes** in both directions (apart from the southbound connection between the M25 and A13, where it would be two lanes

The LTC Approach

Be resource efficient and reflect a circular approach

National Highway's approach to material sustainability is set out in documents:

- Sustainable Development Strategy (Highways England, 2017)
- Circular Economy Approach and Routemap (Highways England, 2016)

The greatest opportunities for improving resource efficiency occur early in the civil engineering life cycle. Therefore, the design of the Project has pursued the objective of designing out material consumption.

The LTC Approach – Designing out waste

Reduction of the Project road from three lanes to two between the M25 and A13 (southbound)
Moving the South Portal approximately 350m south from the location presented at Statutory Consultation resulting in a reduced excavation for the road cutting
Retention and reuse within the Order Limits of excavated materials and treated tunnel boring machine slurry to fulfil the Project's requirements for fill and landscaping material
Trenchless methodology for some utility works instead of open trenching, resulting in less material handling
Re-route road alignment between Brentwood Road & Muckingford Road and at North Ockenden to avoid the construction of a new gas compound and associated high pressure gas networks to reduce the number of existing pylons to be diverted.
Refinement of compound locations and layouts to reduce the requirements for vegetation clearance and vegetation waste generation.

The LTC Approach – Designing out waste

- Designing infrastructure assets for durability, longevity, and adaptability that can be maintained and upgraded throughout its service life;
- Adopting procurement approaches that encourage service, performance, durability, repair and refurbishment over replacement;
- Following the hierarchy of re-use for assets, elements, products/components and materials;

The LTC Approach – Designing out waste

- Using less materials, and using materials with secondary and recycled content;
- Storing and maintaining materials for long-term re-use if short-term use not feasible; and where surplus is unavoidable, exploring re-use opportunities;
- Using recycled or secondary aggregates, as a replacement or in combination with primary aggregates, if available locally or can be sourced using low-carbon transport;
- Examining the impact of using recycled steel and deploying where it can be demonstrated to be a lower-carbon option;

Stakeholders

Who has an interest in the circular economy?

Who has influence?

More circular or less circular?

Thinking about the last year in your home life and your working environment:

- What has become MORE circular?
- What has become LESS circular?
- Does it require more thought

Anything we can learn and take on in future?

More circular
Less circular?
Needs more thought?

More circular
Less circular?
Needs more thought?

More circular
Less circular?
Needs more thought?

More circular
Less circular?
Needs more thought?

Legislative background

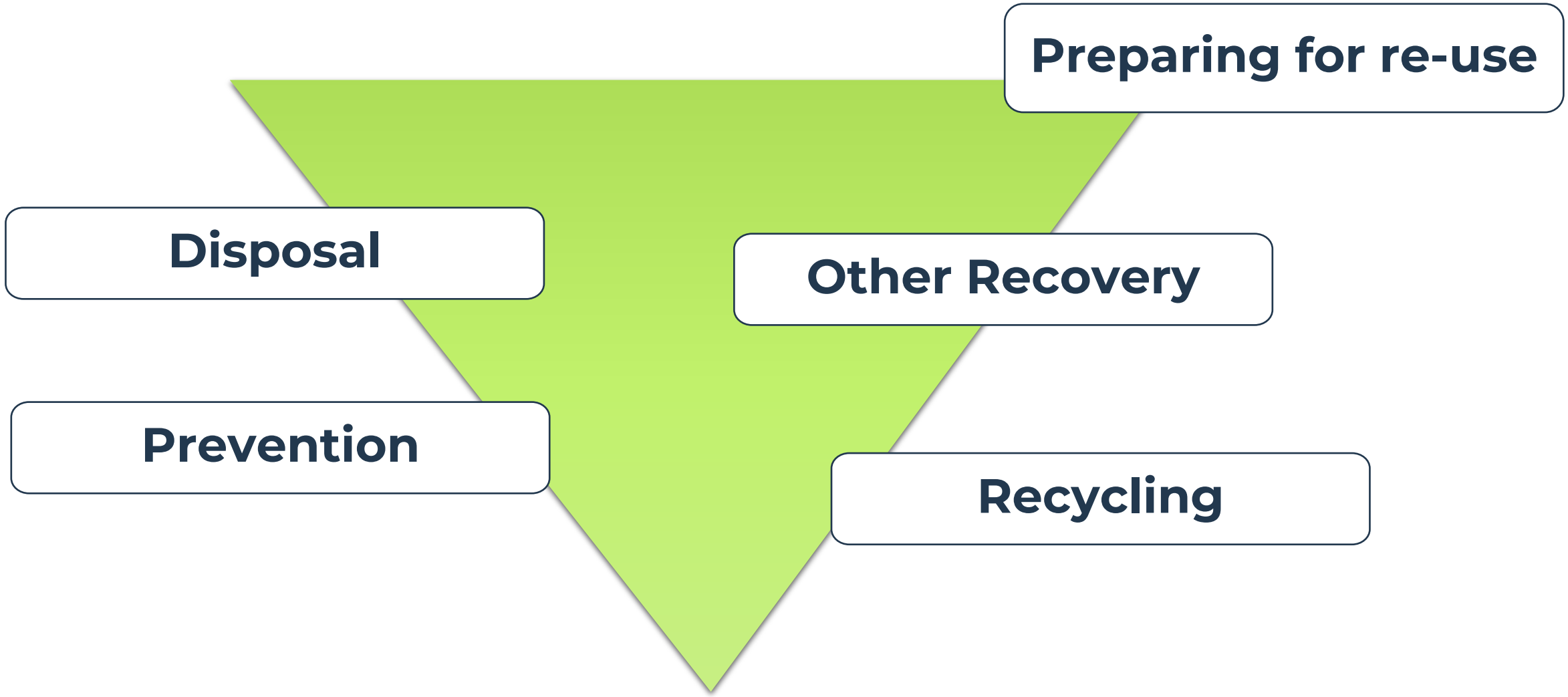
Some Relevant UK Waste Legislation

Environmental Protection Act 1990	Waste (England & Wales) Regulations 2011	Environmental Permitting (England & Wales) Regulations 2012
Waste disposal to waste management	Waste hierarchy	Permits and Exemptions for waste recovery and disposal

Relevant UK Waste Legislation cont'd

Waste Electrical and Electronic Equipment Regs 2010	Producer Responsibilities Obligations (Packaging Waste) Regs 2010	Waste (Scotland) Regs 2014
Collection, treatment, recycling and recovery of WEEE	Recover and recycle waste packaging	All organisations must recycle plastic, metal, glass, paper and card

The Waste Hierarchy



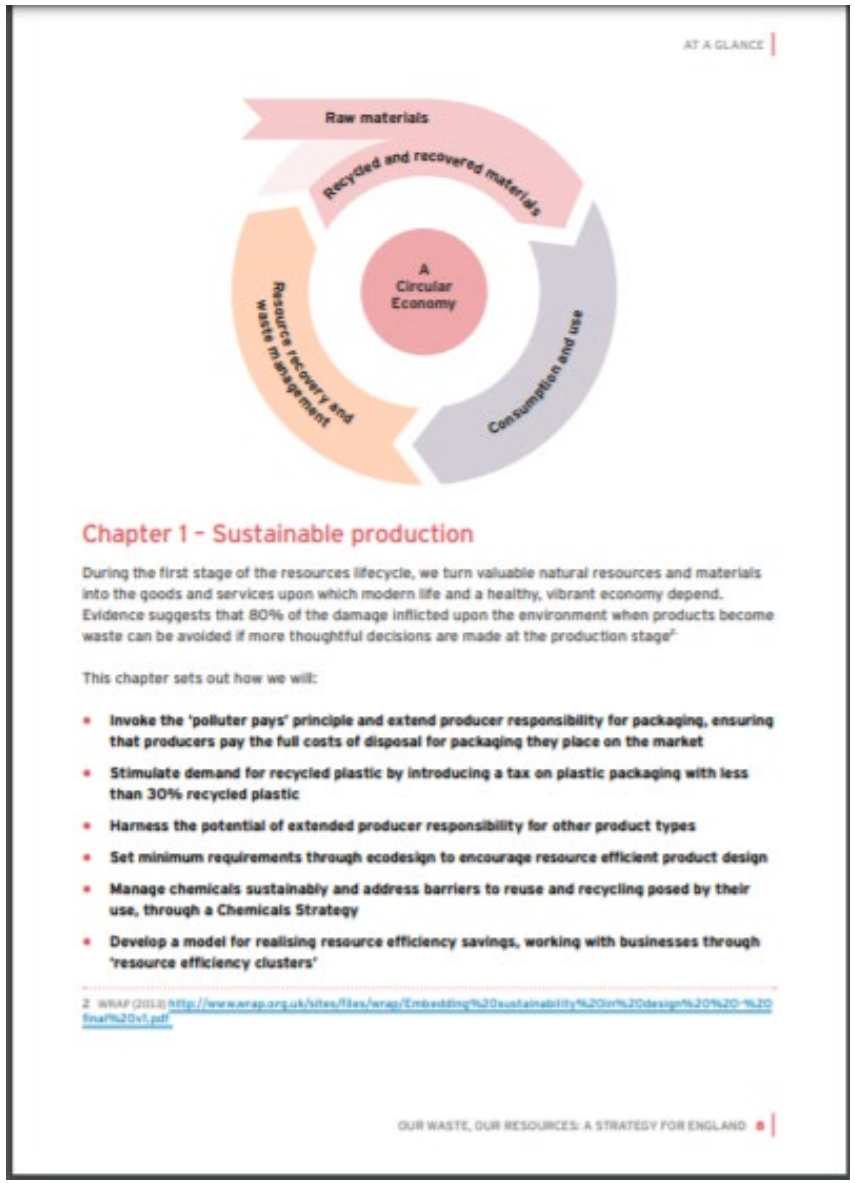
Two questions

1. Which do you think is the most sustainable option in the waste hierarchy?
   - Preparing for reuse
   - Other recovery
   - Recycling
   - Prevention
   - Disposal
2. Which do you think is the least sustainable option in the waste hierarchy?
   - Preparing for reuse
   - Other recovery
   - Recycling
   - Prevention
   - Disposal

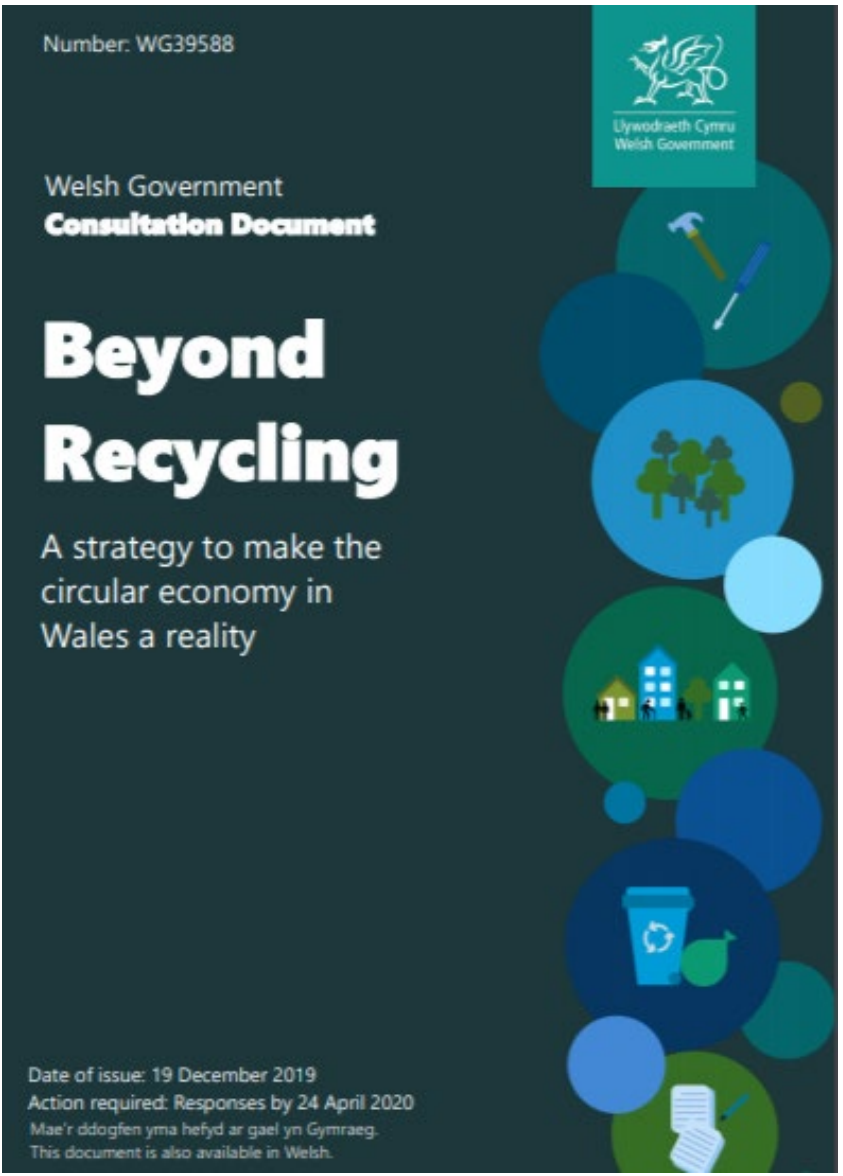
The Waste Hierarchy

Policy

Becoming mainstream?

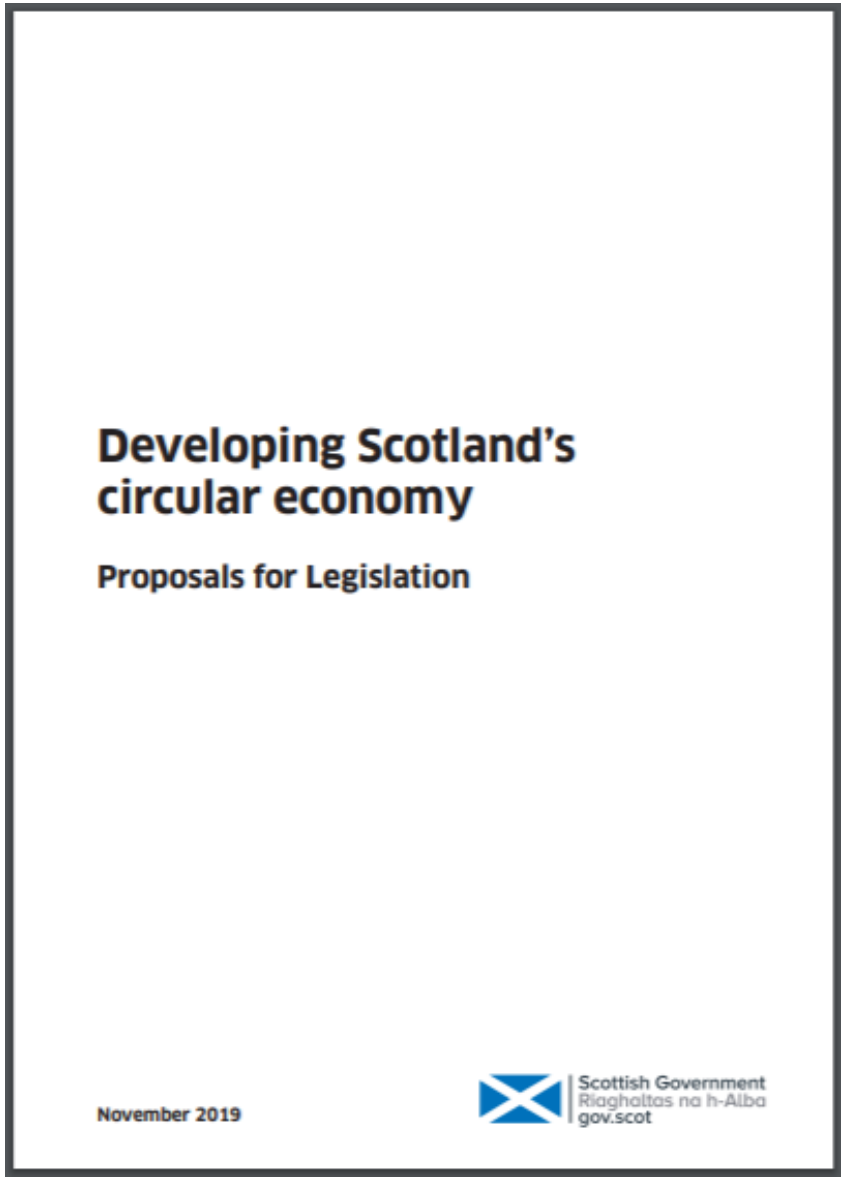


It’s not just all about England….



Source:
https://gov.wales/sites/default/files/consultations/2020-03/consultation-circular-economy-strategy_1.pdf

Source:
https://www.circularonline.co.uk/news/minister-urges-northern-ireland-businesses-to-grasp-circular-economy-momentum/



Source:
https://www.gov.scot/publications/delivering-scotlands-circular-economy-proposals-legislation/

New and future UK Waste Regulations

- THE LONDON PLAN (2019) includes requirement for all major construction projects to produce Circular Economy statements, including how the project will enable building materials, components and products to be disassembled and re-used.
- UK/EU Circular Economy Strategy
- UK ENVIRONMENT BILL (due in 2022) sets a framework for increasing recycling and includes legal powers to ban the export of plastic waste to developing countries.
- EXTENDED PRODUCER RESPONSIBILITY for packaging.

“Right to Repair”

- The UK generates around 1.5 million tonnes of electrical waste every year
- New rules for electrical products to tackle ‘premature obsolescence’ – a short lifespan deliberately built into an appliance by manufacturers which leads to unnecessary and costly replacements for the consumer
- From Summer 2021, manufacturers legally obliged to make spare parts for products available to consumers for the first time – a new legal right for repairs – so that electrical appliances can be fixed easily
- Expected to extend lifespan of products by up to 10 years
- “Grace period” for manufacturers.

Though primarily aimed towards domestic users this could maybe point the way for future policy in other areas?

https://www.gov.uk/government/news/electrical-appliances-to-be-cheaper-to-run-and-last-longer-with-new-standards

The Green Construction Board

Construction Leadership Council

The Routemap for Zero Avoidable Waste in Construction

Introduction

Waste costs the construction industry an estimated £11 billion per annum and emits 3.5 million tonnes of CO2e, yet waste can be reduced, materials used more efficiently, and buildings and structures at end of life repurposed, refurbished or dismantled to enable products and materials to be a resource for new activities.

This Routemap aims to catalyse actions by all parts of the supply chain to reduce and ultimately eliminate all avoidable waste. It adopts the interpretation of Zero Avoidable Waste in construction published by the Green Construction Board (GCB) in 2020 and adopts the principles of the waste hierarchy and life cycle assessment.

The Routemap is an interactive infographic identifying aims, actions, context and guidance. Click on an Aims button and a new page appears. Hover over Context and an explanation appears. Click Guidance and a new page links to published guidance.

It has been prepared by the GCB's Resources and Waste Task Group with the principal authors being Katherine Adams, Rob Pearce and Jane Thornback. The project received financial support from BEIS, and was in collaboration with Defra.

Click for Context

Targets and Guiding Principles

Click for Acknowledgements

08705 | Version 1.0 | June 2021

Design out waste

Aim: The use of materials is optimised in the design of the buildings and structures and waste is designed out throughout the design and construction process

2020s	2030s	2040s
• Waste reduction targets are commonplace in most construction projects. • Professional institutions develop training and CPD. • BS8895 is widely adopted throughout the design process for major projects.	• By 2030 costs are reduced by 10% through designing out waste and material optimisation.	• The amount of waste generated from new build construction is minimal.

Click for Guidance

https://www.constructionleadershipcouncil.co.uk/wp-content/uploads/2021/07/ZAW-Interactive-Routemap-FINAL.pdf

Act now

- Clients, design teams and contractors set project waste reduction targets during design and construction.
- Design teams share their learnings and best practice on designing out waste within their practices and externally through their networks.
- Design teams write up case studies on how designing out waste has been considered within the design process and what changed as a result.
- Design teams implement waste reduction practices in their design work.
- Design teams undertake material optimisation through design choices and material selection working with manufacturers.
- Professional institutions and universities and colleges include designing out waste in training, CPD and academic courses.
- If participating in environmental certification schemes, such as BREEAM, LEED etc pursue the credits that relate to waste reduction and material efficiency.
- At project level, contractors and quantity surveyors, reduce the wastage allowances that are set for materials and do not over order.
- Contractors incentivise subcontractors to reduce waste.
- Contractors and subcontractors manage materials on site carefully to avoid damage.
- Manufacturers and contractors collaborate to implement reusable packaging schemes.

The School has developed new pages containing practical advice and examples based on this model -

We would love to include your own content

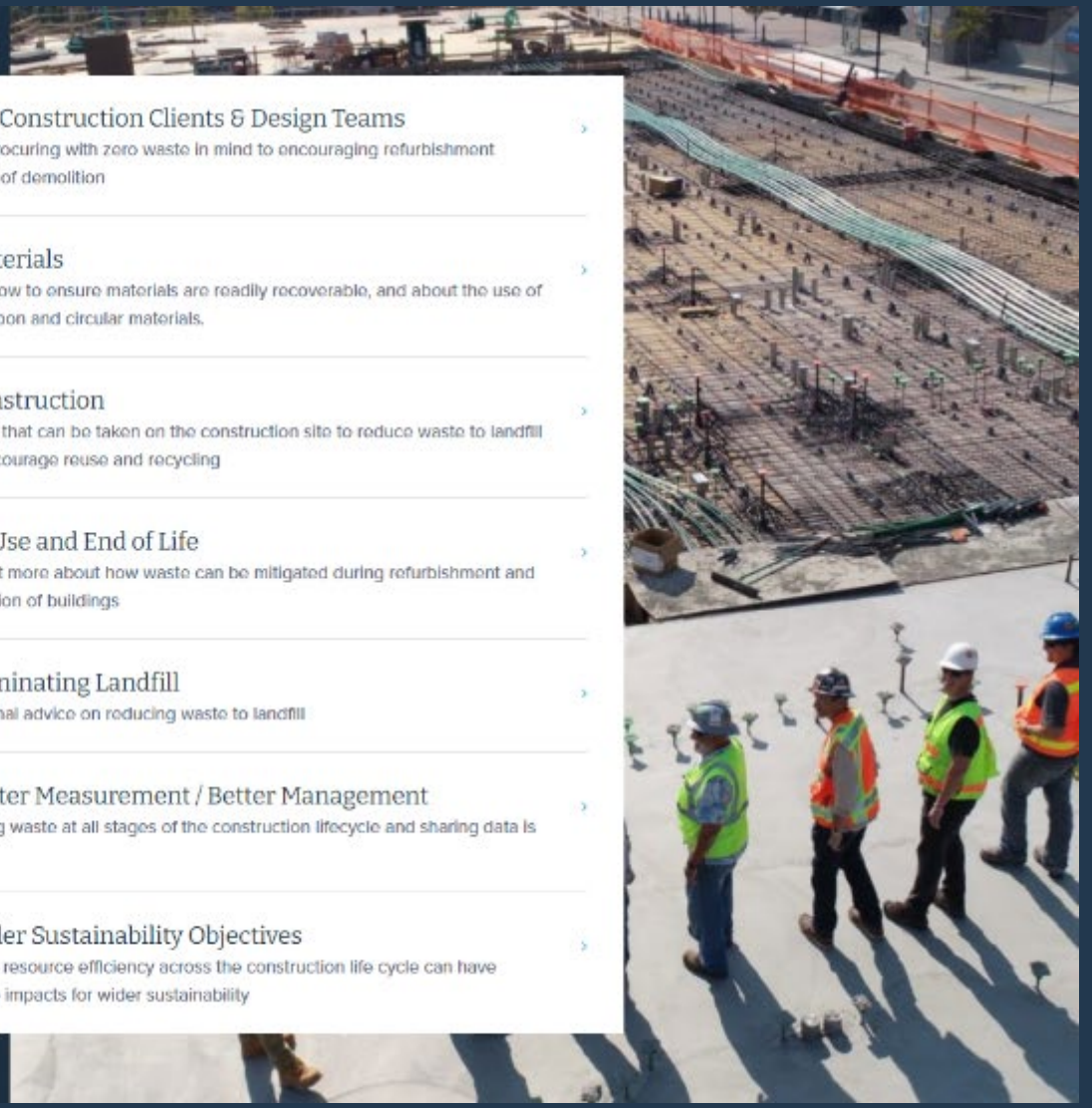
Construction lifecycle waste web feature

A practical guide to

Reducing construction lifecycle waste

These resources help users from all parts of the built environment value chain reduce construction lifecycle waste.

Explore themes and topics for practical examples, learning about the different stages and aspects of a wide variety of construction projects.



1. Pre Construction Clients & Design Teams
From procuring with zero waste in mind to encouraging refurbishment instead of demolition

2. Materials
Learn how to ensure materials are readily recoverable, and about the use of low carbon and circular materials.

3. Construction
Actions that can be taken on the construction site to reduce waste to landfill and encourage reuse and recycling

4. In Use and End of Life
Find out more about how waste can be mitigated during refurbishment and demolition of buildings

5. Eliminating Landfill
Additional advice on reducing waste to landfill

6. Better Measurement / Better Management
Tracking waste at all stages of the construction lifecycle and sharing data is vital

7. Wider Sustainability Objectives
Greater resource efficiency across the construction life cycle can have positive impacts for wider sustainability

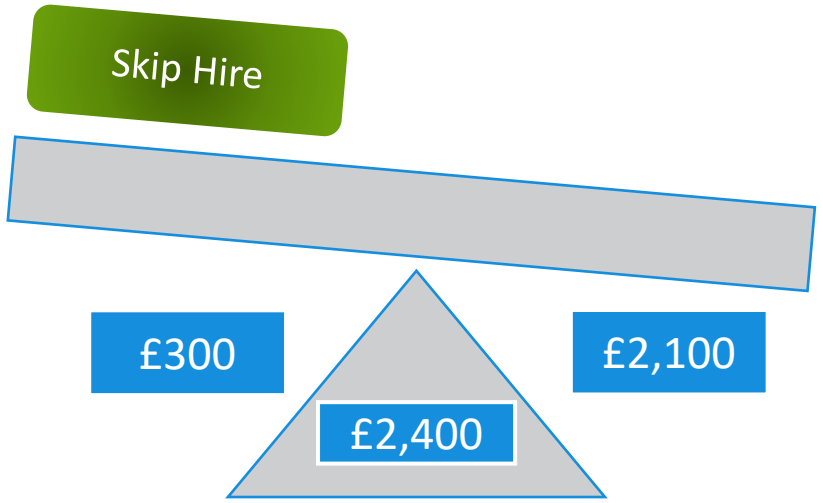
The financial case

Waste costs!

Let’s ask ourselves why?

Waste costs Cont'd

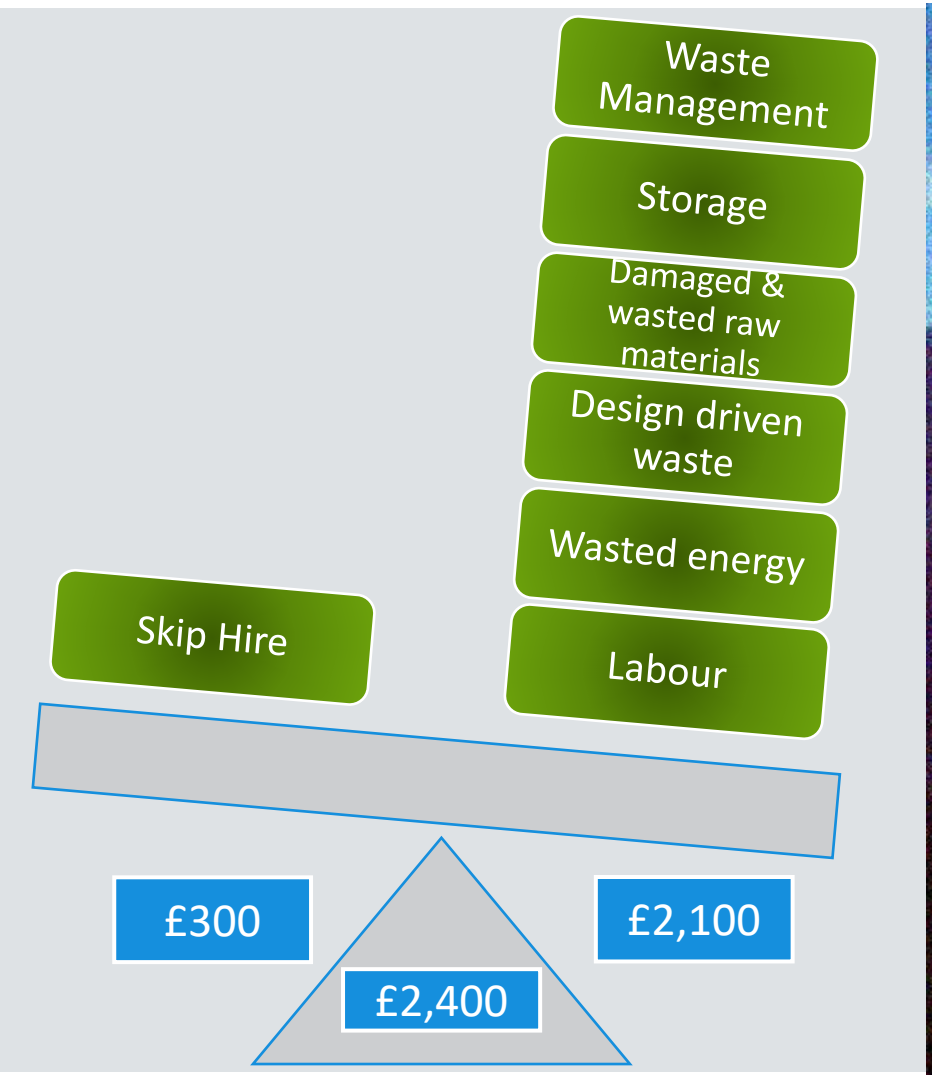
True Cost of Waste

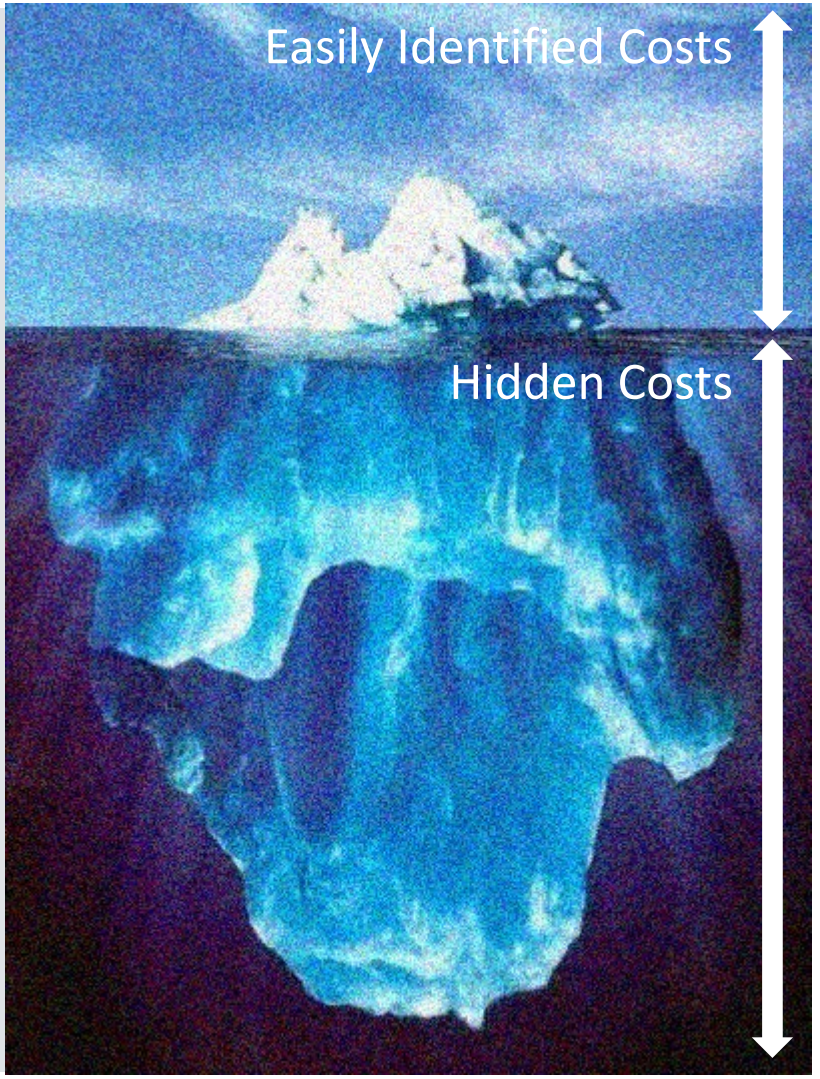


Question – put your answers on the Jamboard

What are the other contributing factors to the true cost of waste?

True Cost of Waste





We must also consider issues like business reputation and brand....

…… Supply chain security and availability of stock/raw materials ….

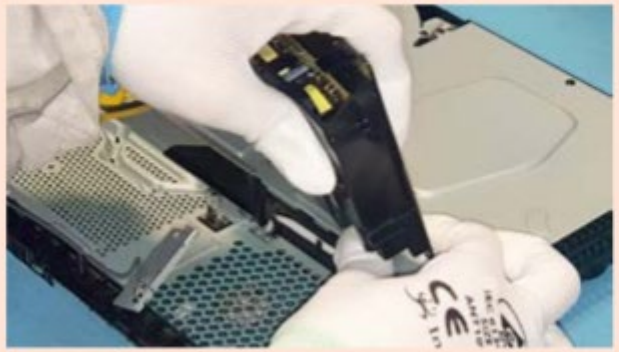
A few examples of the circular economy in action

Theory and practice

Case Study: Renal Dialysis Bottle Compacting

Barts Health NHS Trust has succeeded in reducing its waste disposal costs by £2.8million over the past four years. The dramatic savings were achieved after it focused on segregating recyclable materials from domestic waste, working in partnership with Skanska Facilities Services. Innovation was built into its contract as a tender requirement, meaning Skanska was able to focus on innovative ways to handle their waste.

Case Study: Sony Interactive Entertainment reverse logistics



For over 20 years Sony Interactive Entertainment (SIE) has provided affordable repair and reuse of PlayStation consoles outside of warranty in the UK. Up to 4000 consoles a month can be repaired, avoiding the creation of electronic waste and unnecessary consumption of virgin resources.

Source: Our Waste, our Resources: a Strategy for England – HM Govt

Plastic Packaging Tax

SOME KEY POINTS:

- A tax of £200 per tonne
- Applies from April 2022
- Applies to manufacturers and importers
- Applies to plastic packaging manufactured in or imported into the UK containing less than 30% recycled plastic
- Intended to discourage use of virgin material and help develop use of recycled content
- Expecting high annual revenues.

Question:
What percentage of plastics production is packaging?

1. 7%
2. 26%
3. 44%

Question:
What percentage of plastics waste is packaging?

1. 17%
2. 44%
3. 63%

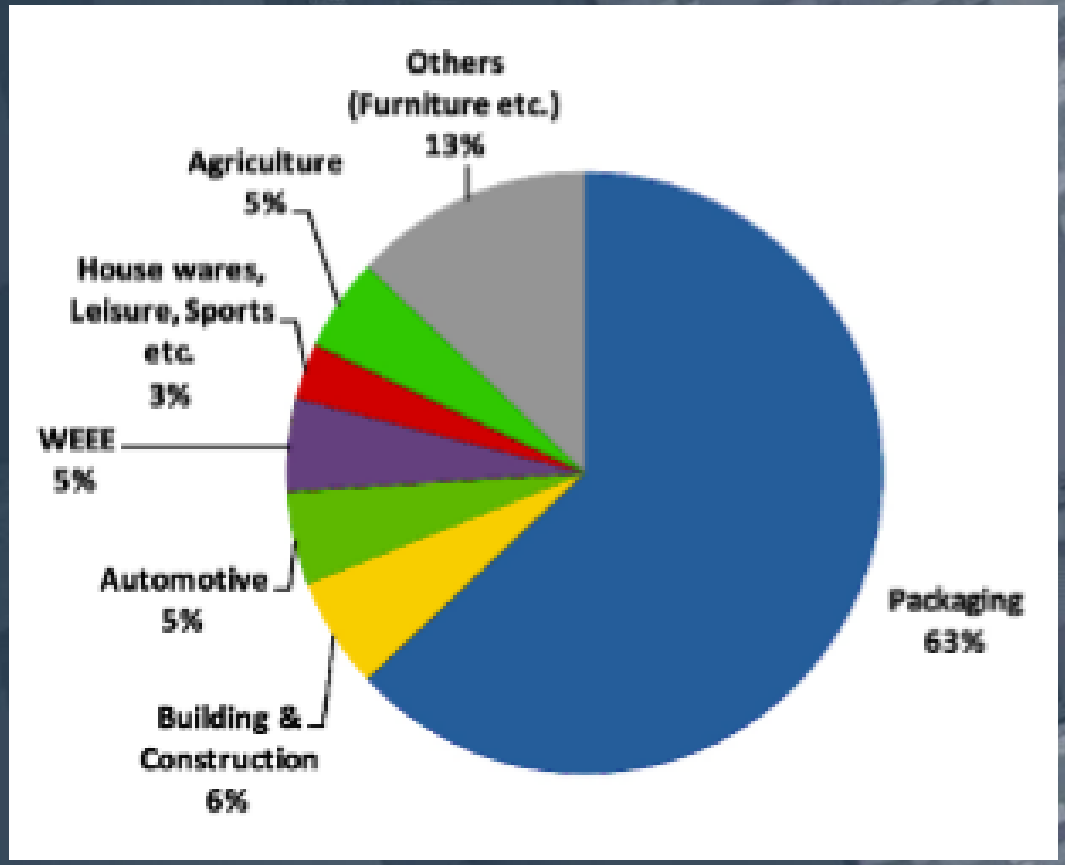
Why plastic packaging?: Sources of plastic waste

"Plastics and plastic packaging are an integral and important part of the global economy.

Plastics production has surged over the past 50 years, from 15 million tonnes in 1964 to 311 million tonnes in 2014, and is expected to double again over the next 20 years, as plastics come to serve increasingly many applications.

*Plastic packaging is and will remain the largest application; currently, packaging represents **26%** of the total volume of plastics used"*

Source:
https://www.ellenmacarthurfoundation.org/assets/downloads/EllenMacArthurFoundation_TheNewPlasticsEconomy_29-1-16.pdf



Source:
https://ec.europa.eu/environment/integration/research/newsalert/pdf/IR1_en.pdf

HMRC – useful documents

Plastic packaging tax is chargeable on plastic packaging components imported into and manufactured in the UK. If your plastic packaging component contains more plastic than any other material by weight, check if it is in scope of Plastic Packaging Tax.

Please use the further information given on pages 3-6 alongside this decision tree.

A Is your product designed to be suitable, whether used alone or in combination with other products, for a packaging function? That is to contain, protect, handle, deliver or present goods at any stage in the supply chain from the packaging manufacturer, to the user or consumer.

- No → **B** Is your product designed to provide a single use packaging function for the containment of a commodity or waste by a user or consumer?
  - Yes → **Outcome: H** Your packaging component is in scope of the tax. 'Check if you need to register and are liable for Plastic Packaging Tax' to determine if you are the business liable to register for PPT.
  - No → **Outcome:** Your product is not in scope of the tax.
- Yes → **C** Is your packaging designed to be filled at the time of sale of the goods contained in the packaging to a user or consumer, where the packaging function is secondary to the storage function?
  - No → **D** Is your packaging designed to be an integral part of the goods, without which the goods couldn't be used or consumed?
    - No → **E** Is your packaging primarily designed to be re-used for the presentation of goods to the user or consumer?
      - No → **F** Is your packaging used as transport packaging on imported goods?
        - No → **G** Is your packaging used in aircraft, ships or railway stores for international journeys, or as road, rail, ship and air containers?
          - No → **Outcome: H** Your packaging component is in scope of the tax. 'Check if you need to register and are liable for Plastic Packaging Tax' to determine if you are the business liable to register for PPT.
          - Yes → **Outcome:** Your product is not in scope of the tax.
        - Yes → **Outcome:** Your product is not in scope of the tax.
      - Yes → **Outcome:** Your product is not in scope of the tax.
    - Yes → **Outcome:** Your product is not in scope of the tax.
  - Yes → **Outcome:** Your product is not in scope of the tax.

Source: HMRC

Some key points –

“Are you going to manufacture in the UK or import into the UK 10 tonnes or more of plastic packaging components in the next 30 days?”

“If yes, you will need to notify HMRC you are liable to register for Plastic Packaging Tax by the first day of the subsequent month from when your business met this test”

“If you or your suppliers manufactured or imported into the UK 10 tonnes or more of plastic packaging components in the last 12 months you need to register within the next 30 days from when your/their business met this test”

https://www.gov.uk/guidance/completing-your-plastic-packaging-tax-return

Source: HMRC

School Members

Protec - Proplex

Source: Protec

Circular Case Study:

‘Upcycling’ Cheshire Police HQ

Whitecroft lighting

2,000Kg Raw Material Saved

23W energy saved per fitting

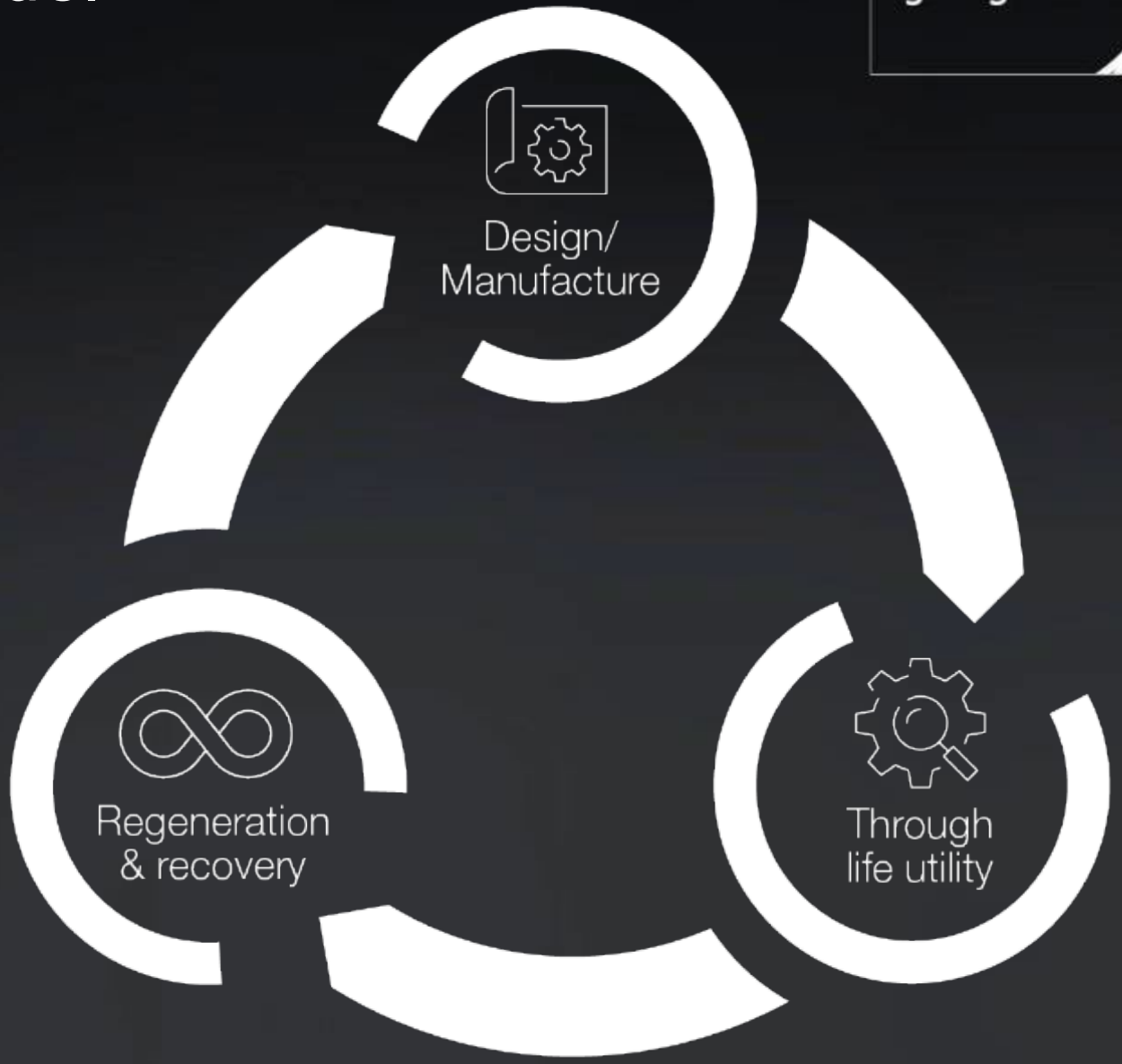
1.5 tonnes packaging reduction

£30 Cheaper to re-use

A New Circular Business Model

Whitecroft Vitality

- Circular Design and Manufacture
- Highest Through Life Utility
- Regeneration and Recovery



Circular Economy and Sustainability Plans

Organisation	Aims/Objectives/Policy
Environment Agency	**2030 Goals** - *Optimising our use of resources*
Network Rail	**Minimal waste and the use of materials –** *We will reuse, repurpose or redeploy all surplus resources, minimise use of resources, design out waste and embed waste life cycle/circular economy thinking into the rail industry by 2035*
National Highways	**Manufactured capital – Circular economy –** *We will push towards a 'circular' approach to our management of resources: minimising our demand for primary resources extracted from the ground, and maximise the reuse of the resources already in use on the network. Reutilising them in as high a value function as possible*
Palace of Westminster	**Circular Economy Policy** – *sets out the Programme's ambition to embed the principles of a circular economy into the Restoration and Renewal Programme*
HS2	**Circular Economy Principles** – *keep resources in use for as long as possible; recover and regenerate resources at the end of each use; keep resources at their highest quality and value at all times*
Anglian Water	**Our Goals** - *zero waste. Get it right first time, every time; to deliver a 70% reduction in capital (embodied) carbon by 2030 from a 2010 baseline*
Expo 2020 Dubai	**Programme wide Sustainability Strategy** – *Minimise depletion of natural resources; Promote use of sustainable materials; Reduce wastes and minimise quantity of waste to landfill*

Environment Agency

- In 2020, we started to explore with EA how eMission 2030 Goals ‘Optimising our use of resources” and “Responding to the climate emergency” could be assisted by adopting a circular economy approach
- A collaborative workshop approach was devised working with EA and Contractor (BAM) to:
  - Brainstorm CE aims relevant to Collaborative Delivery Teams -C projects
  - Apply aims to specific EA projects across the region (Upper Thames, North London and Eastern England) and consider which business models (loosely based on CEEQUAL criteria) could enable aims to be realised
  - Exercise was recorded and presented at EA Carbon Expo 2020 and can be replicated
  - Collaborative Delivery Teams -C Hub currently working to implement actions from the workshop and to confirm/assure that approaches to each of the relevant CEEQUAL criteria is being implemented.

Theme	Initial summary aims brainstormed
Materials	– Share materials and assets – Incorporate circular economy into Procurement – e.g. leasing materials – Link elimination of waste from projects to carbon hierarchy and emissions – Whole Life Assessment – R&D, innovation and demonstrate compatibility with standards
Water	– Capture and reuse rainfall for local irrigation, groundwater replenishment
Energy	– Utilise micro-energy generation on sites – Share construction equipment to increase energy efficiency
Regeneration	– Use renewable materials from schemes delivering compensatory habitat – Further collaborate with communities and organisations to raise circular economic awareness in management of habitats (e.g. wetlands)
Programme-wide Considerations	– Emphasise hub level planning of circular initiatives – Analyse material needs, surpluses and timings and the potential to influence timing of works to optimise materials use/waste generation. – Consider materials logistics strategy identifying location for temporary stockpiling materials, assets and waste from projects. Engage with other sectors and other Hubs to utilise opportunities for sharing and reuse. – Strategic approach to habitat creation.

United Utilities

- UU had overall ambition to adopt a principle of CE for the organization
- Jacobs undertook a systematic engagement process with UU teams overseen by a steering group to identify a vision and principles for CE relevant to UU
- This was then developed into a series of management and technical actions that would form the basis for a CE Routemap for the business
- As follow up, Jacobs are currently working on a specific project aimed at demonstrating and integrating Industrial Symbiosis into the organization.

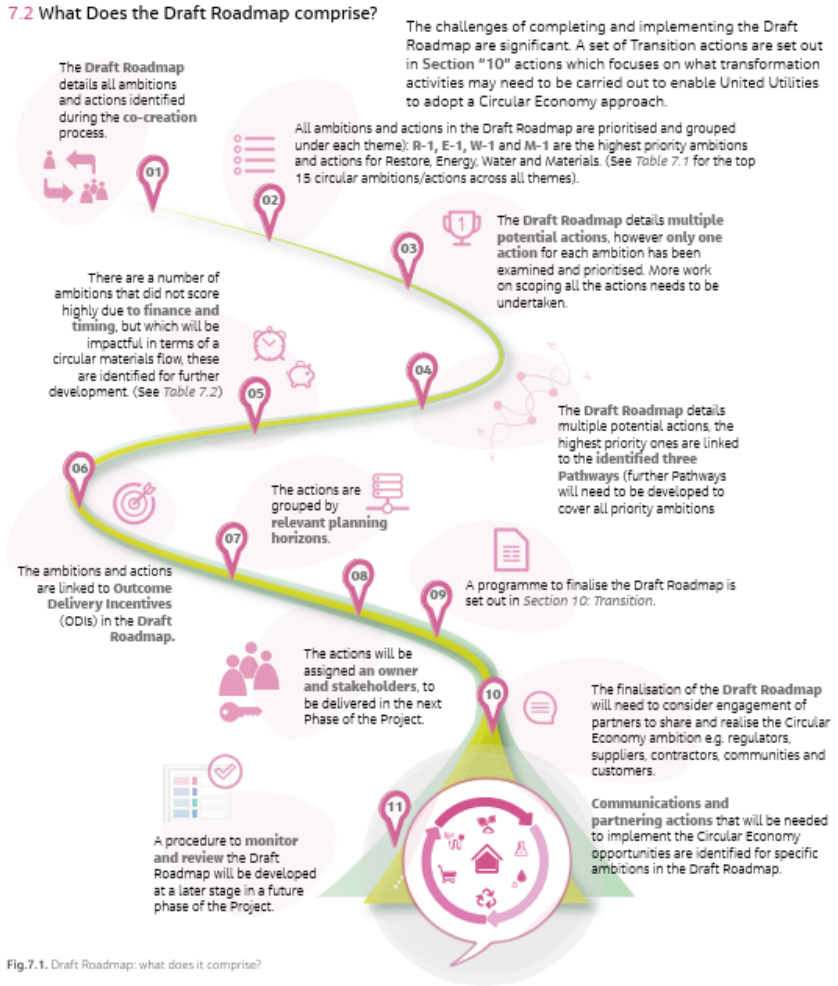


Fig.7.1. Draft Roadmap: what does it comprise?

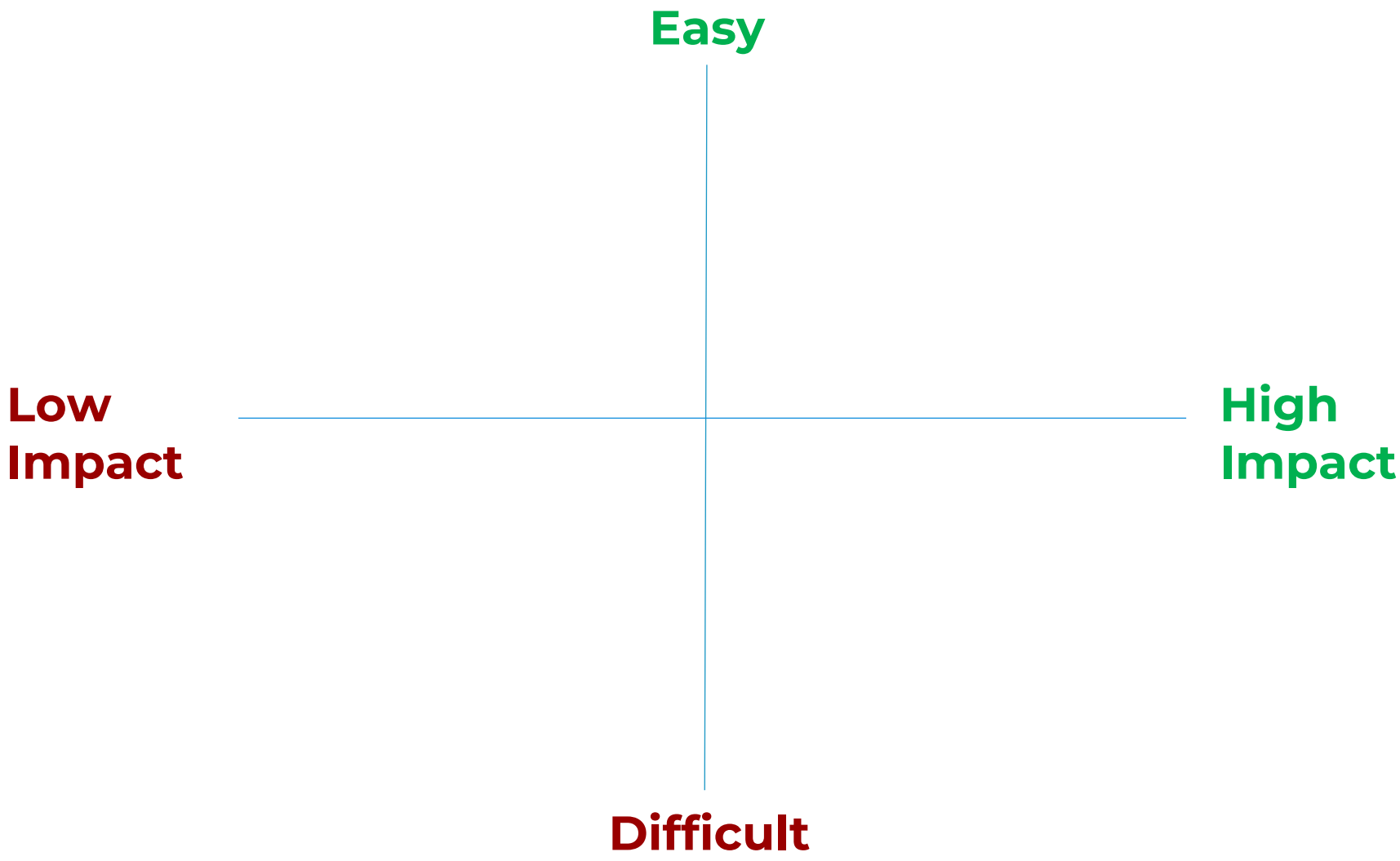
Can you think of any good current examples of circularity in your work?

What's not going so well? Why??

What could you introduce?
What would it take to get there?

Ease and Impact grid – next steps

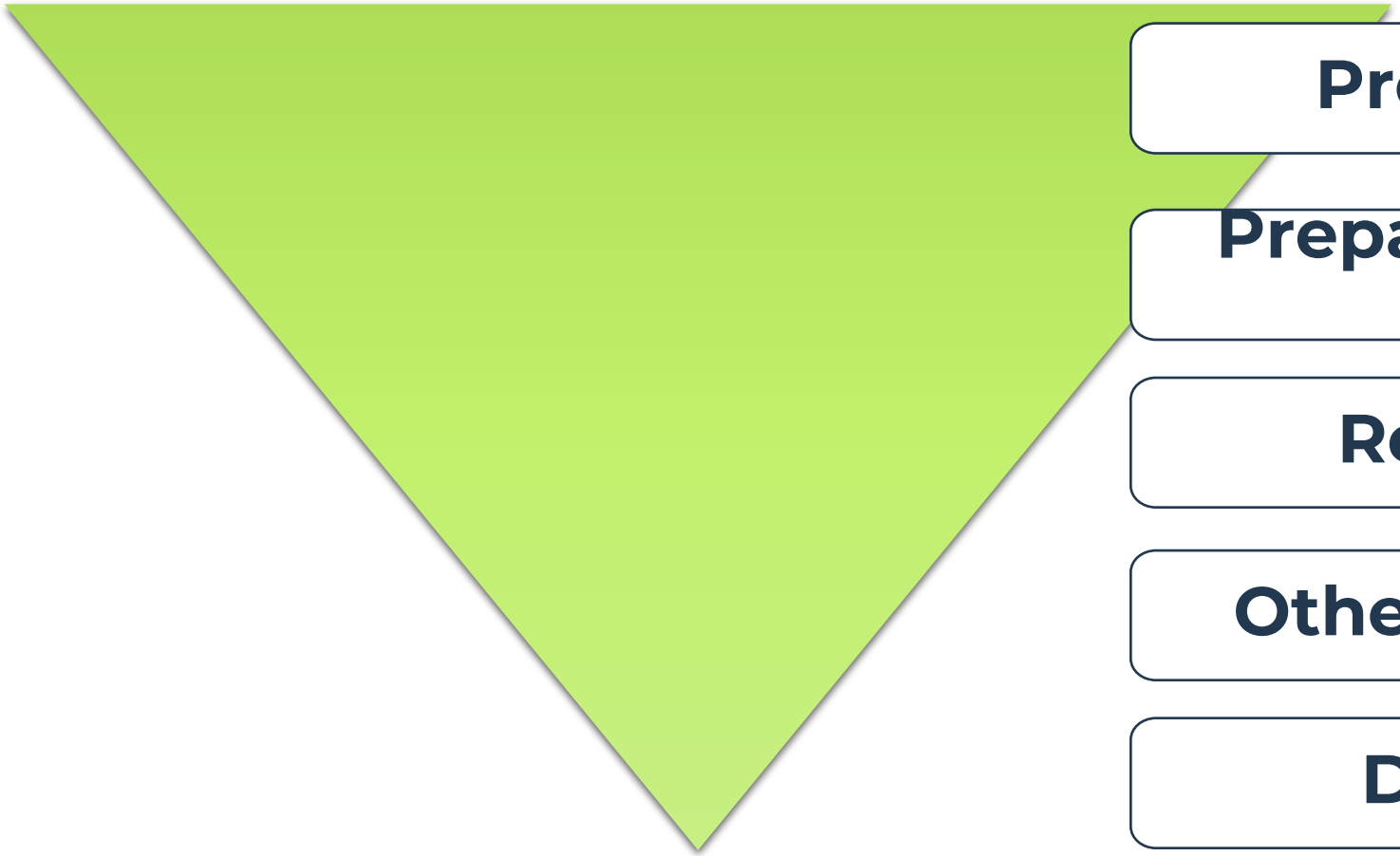
How to best focus your effort for 22/23.



Where is it all going?
Further developing our approach to circularity

The Traditional Waste Hierarchy

REMEMBER _ You are legally obliged to consider this!

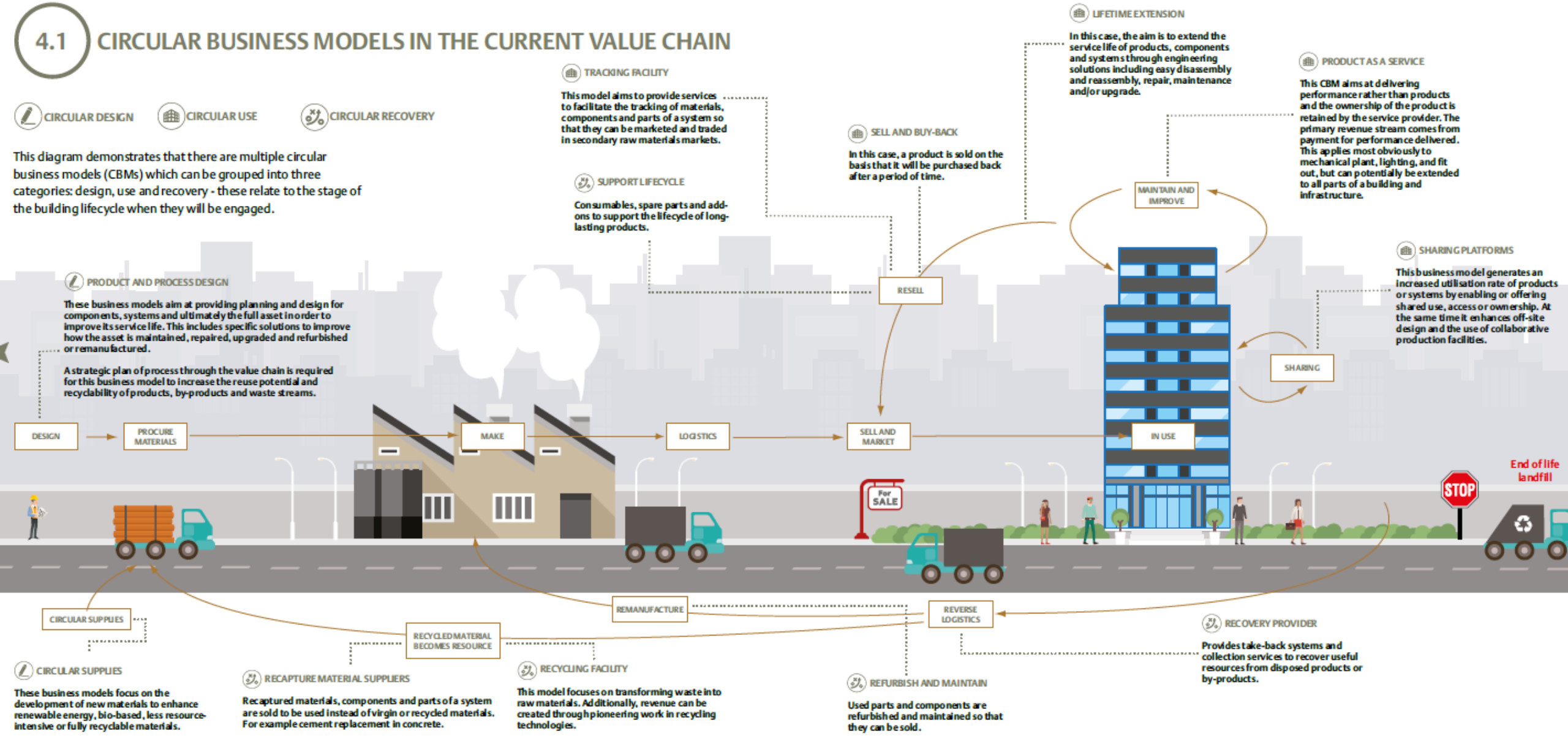


- Prevention
- Preparing for re-use
- Recycling
- Other Recovery
- Disposal

4.1 CIRCULAR BUSINESS MODELS IN THE CURRENT VALUE CHAIN

CIRCULAR DESIGN CIRCULAR USE CIRCULAR RECOVERY

This diagram demonstrates that there are multiple circular business models (CBMs) which can be grouped into three categories: design, use and recovery - these relate to the stage of the building lifecycle when they will be engaged.



https://www.ellenmacarthurfoundation.org/assets/downloads/ce100/CE100-CoPro-BE_Business-Models-Interactive.pdf

Source: Circular Business Models in the Built Environme
Ellen MacArthur foundation

RRENT VALUE CHAIN

TRACKING FACILITY

This model aims to provide services to facilitate the tracking of materials, components and parts of a system so that they can be marketed and traded in secondary raw materials markets.

SUPPORT LIFECYCLE

Consumables, spare parts and add-ons to support the lifecycle of long-lasting products.

SELL AND BUY-BACK

In this case, a product is sold on the basis that it will be purchased back after a period of time.

LIFETIME EXTENSION

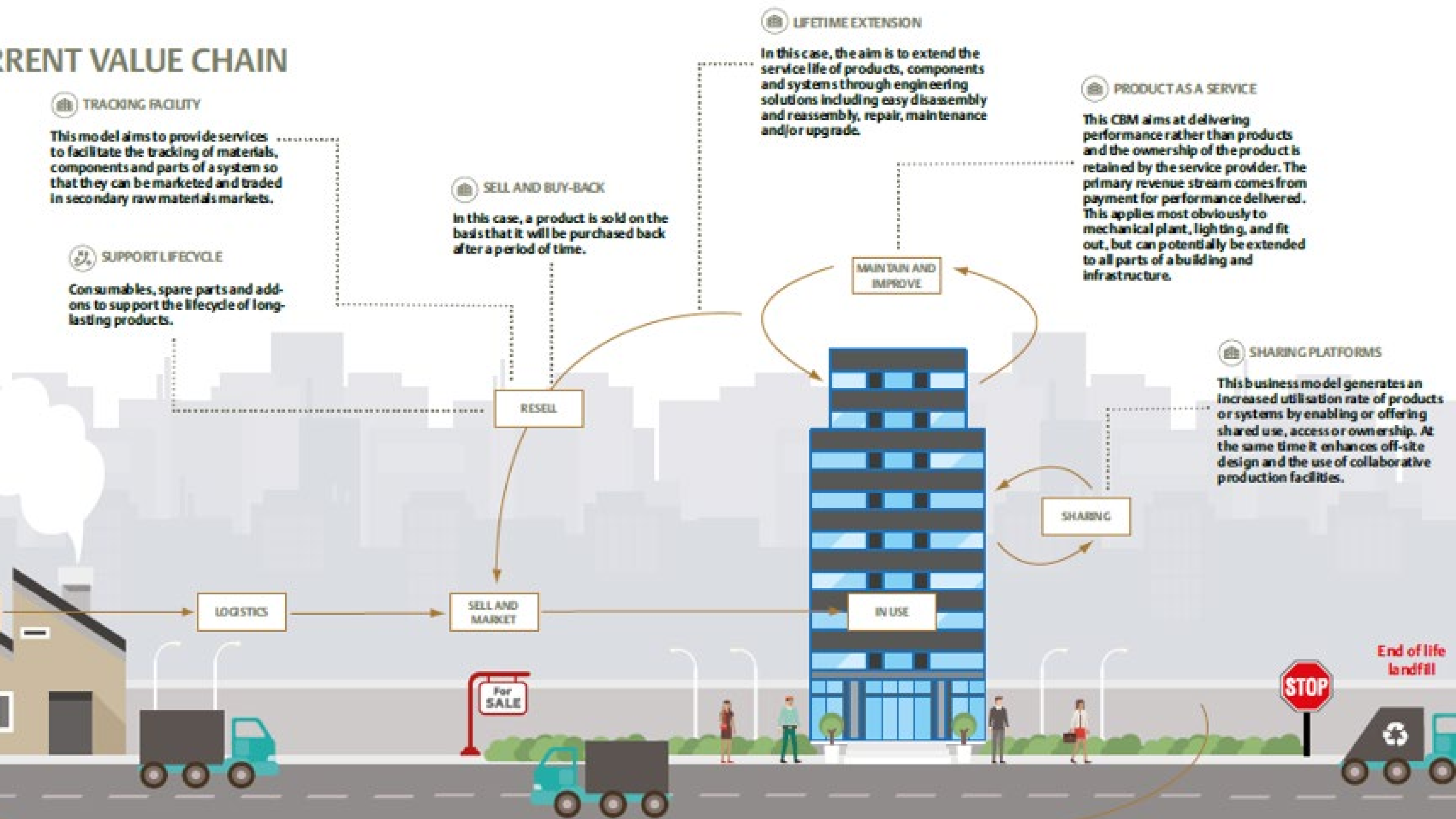
In this case, the aim is to extend the service life of products, components and systems through engineering solutions including easy disassembly and reassembly, repair, maintenance and/or upgrade.

PRODUCT AS A SERVICE

This CBM aims at delivering performance rather than products and the ownership of the product is retained by the service provider. The primary revenue stream comes from payment for performance delivered. This applies most obviously to mechanical plant, lighting, and fit out, but can potentially be extended to all parts of a building and infrastructure.

SHARING PLATFORMS

This business model generates an increased utilisation rate of products or systems by enabling or offering shared use, access or ownership. At the same time it enhances off-site design and the use of collaborative production facilities.



Further learning

Training and Awareness – loads of content in the School library

VIRTUAL: Circular Economy Workshop

Join this event to understand the drivers for moving ...

Tuesday, 21 July 2020, 11:30 AM - 1:00 PM

VIRTUAL: A Circular Economy case study: Whitecroft Lighting and BAM

Join this discussion with BAM and Whitecroft Lighting ...

Monday, 3 August 2020, 1:00 PM - 2:00 PM

Wales and the Circular Economy

The opportunities and benefits for Wales for developing a ...

"Towards the Circular Economy" reports

Ellen MacArthur Foundation

Circular Economy and Resource Efficiency

European Commission: Circular Economy and Resource ...

Circular Economy for SMEs - Project Summary

Project summary and details of European partnerships

European Circular Economy project in Wales

European Circular Economy project kicks off in Wales

Circular Economy Metrics Case Study: Asphalt

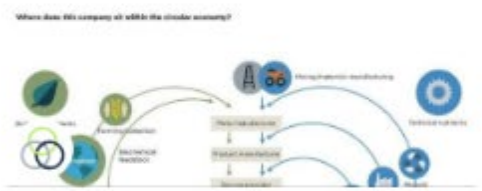
Three of Tarmac's asphalt products were selected to ...

Circular Economy Metrics Case Study: Built Assets

Case study: how progress towards the circular economy ...

CE Indicators and Metrics Tool

Created to calculate the values of Circular Economy Key ...



CE Indicators and Metrics Tool Guidance

Circular Economy Indicators and Metrics Tool Guidance

Embedding Circular Economy Principles

Top Tips for Embedding Circular Economy Principles in the ...

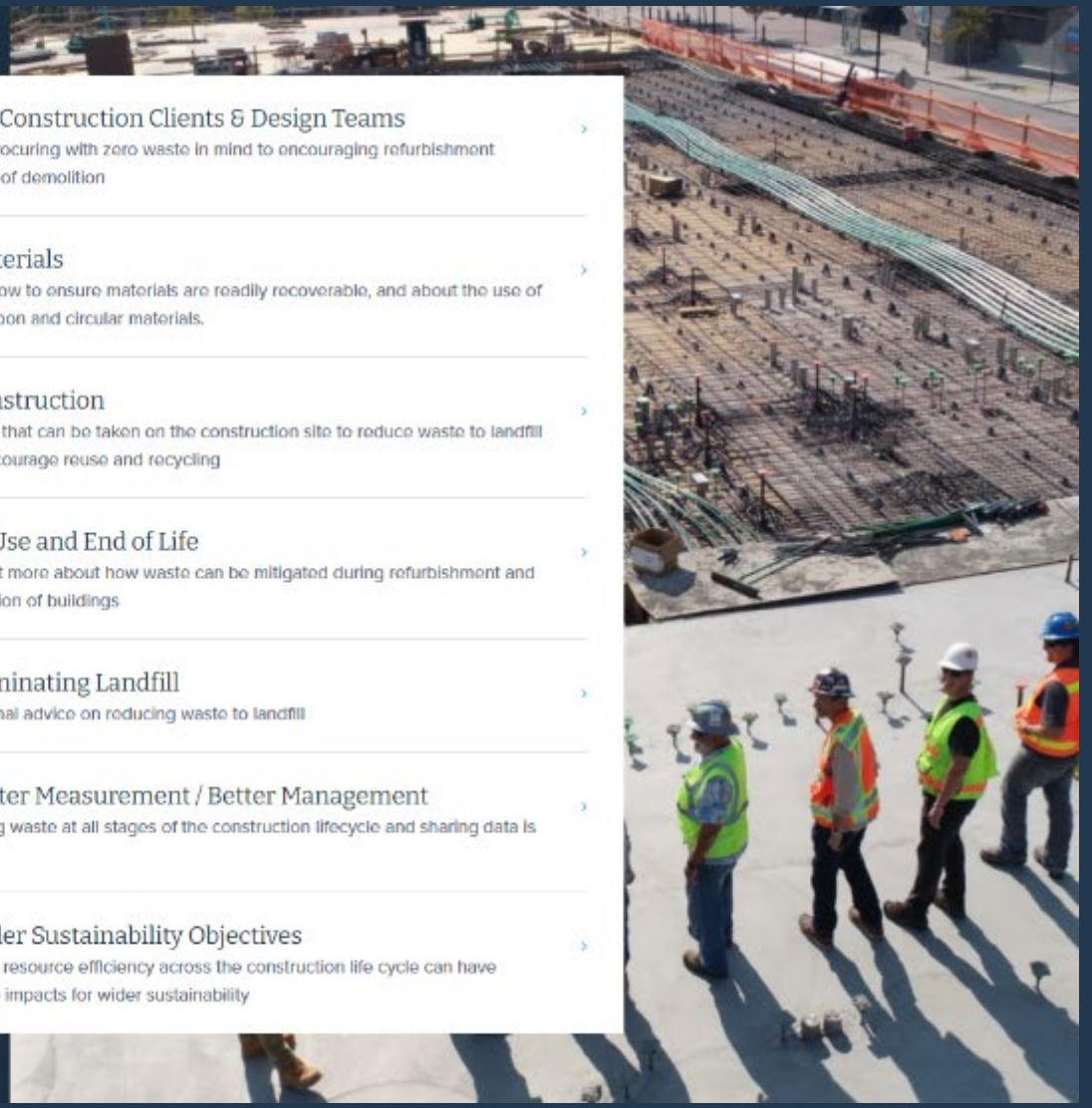
Construction lifecycle waste web feature

A practical guide to

Reducing construction lifecycle waste

These resources help users from all parts of the built environment value chain reduce construction lifecycle waste.

Explore themes and topics for practical examples, learning about the different stages and aspects of a wide variety of construction projects.



1. Pre Construction Clients & Design Teams
From procuring with zero waste in mind to encouraging refurbishment instead of demolition

2. Materials
Learn how to ensure materials are readily recoverable, and about the use of low carbon and circular materials.

3. Construction
Actions that can be taken on the construction site to reduce waste to landfill and encourage reuse and recycling

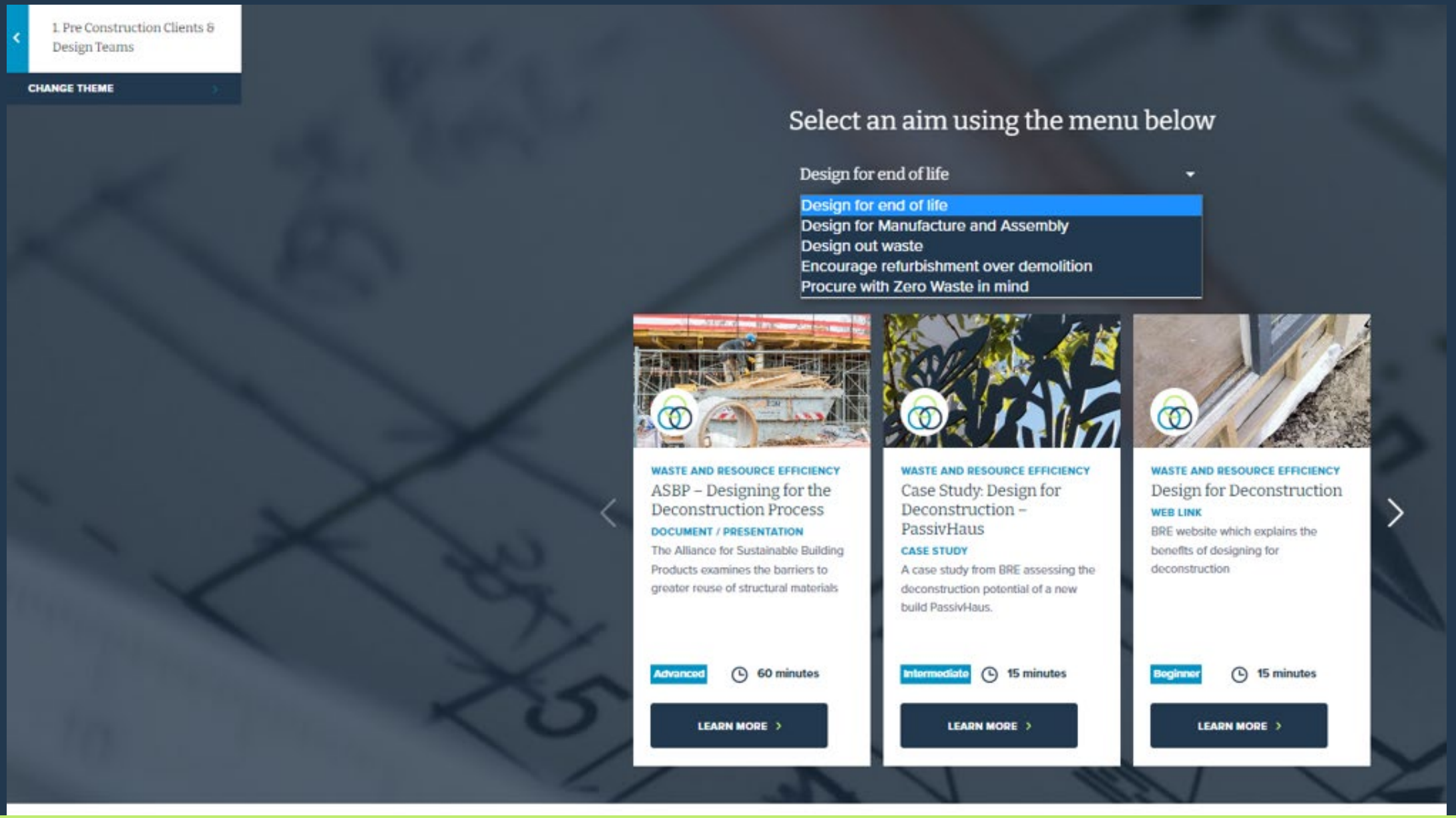
4. In Use and End of Life
Find out more about how waste can be mitigated during refurbishment and demolition of buildings

5. Eliminating Landfill
Additional advice on reducing waste to landfill

6. Better Measurement / Better Management
Tracking waste at all stages of the construction lifecycle and sharing data is vital

7. Wider Sustainability Objectives
Greater resource efficiency across the construction life cycle can have positive impacts for wider sustainability

Construction lifecycle waste web feature



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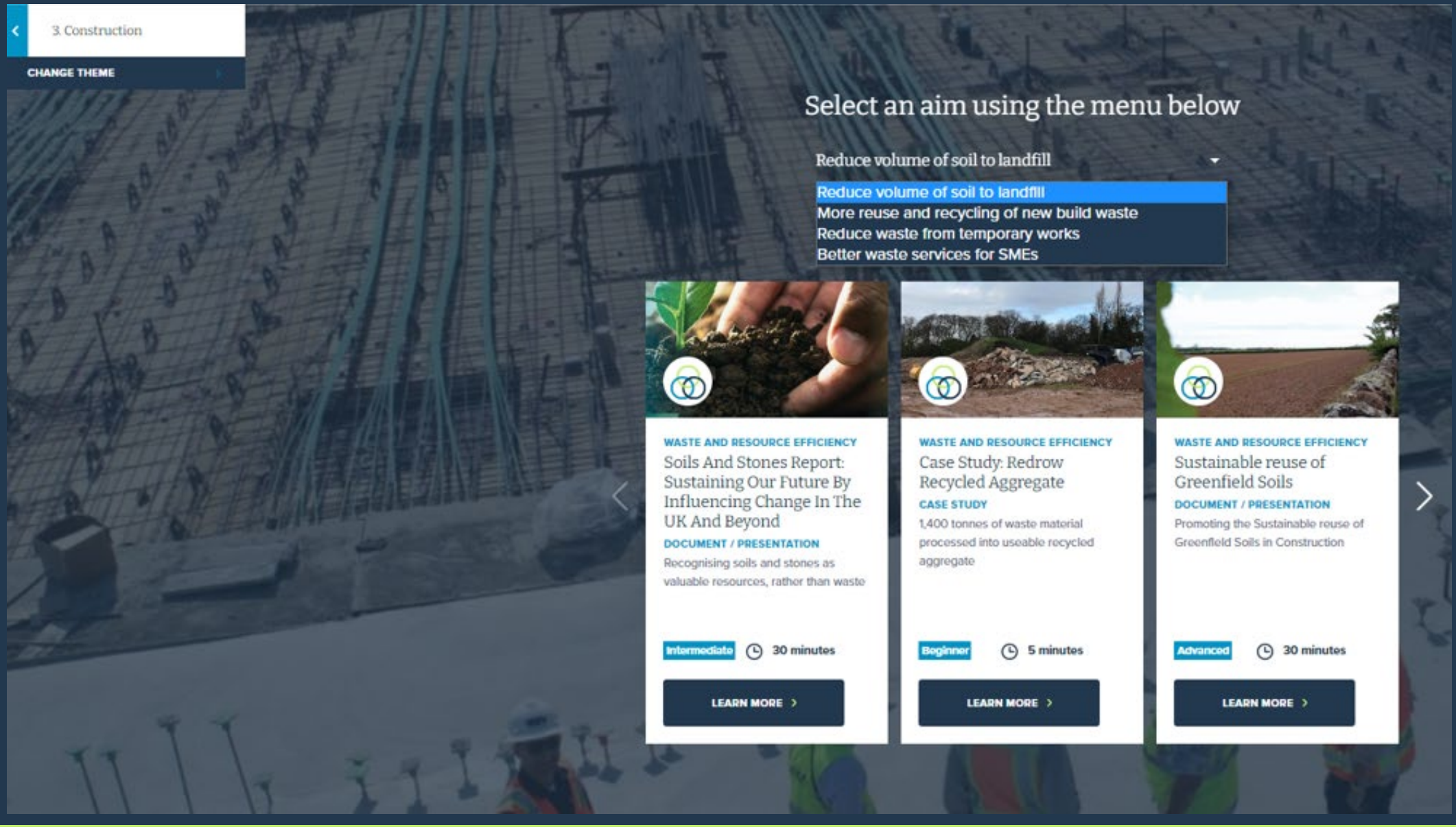

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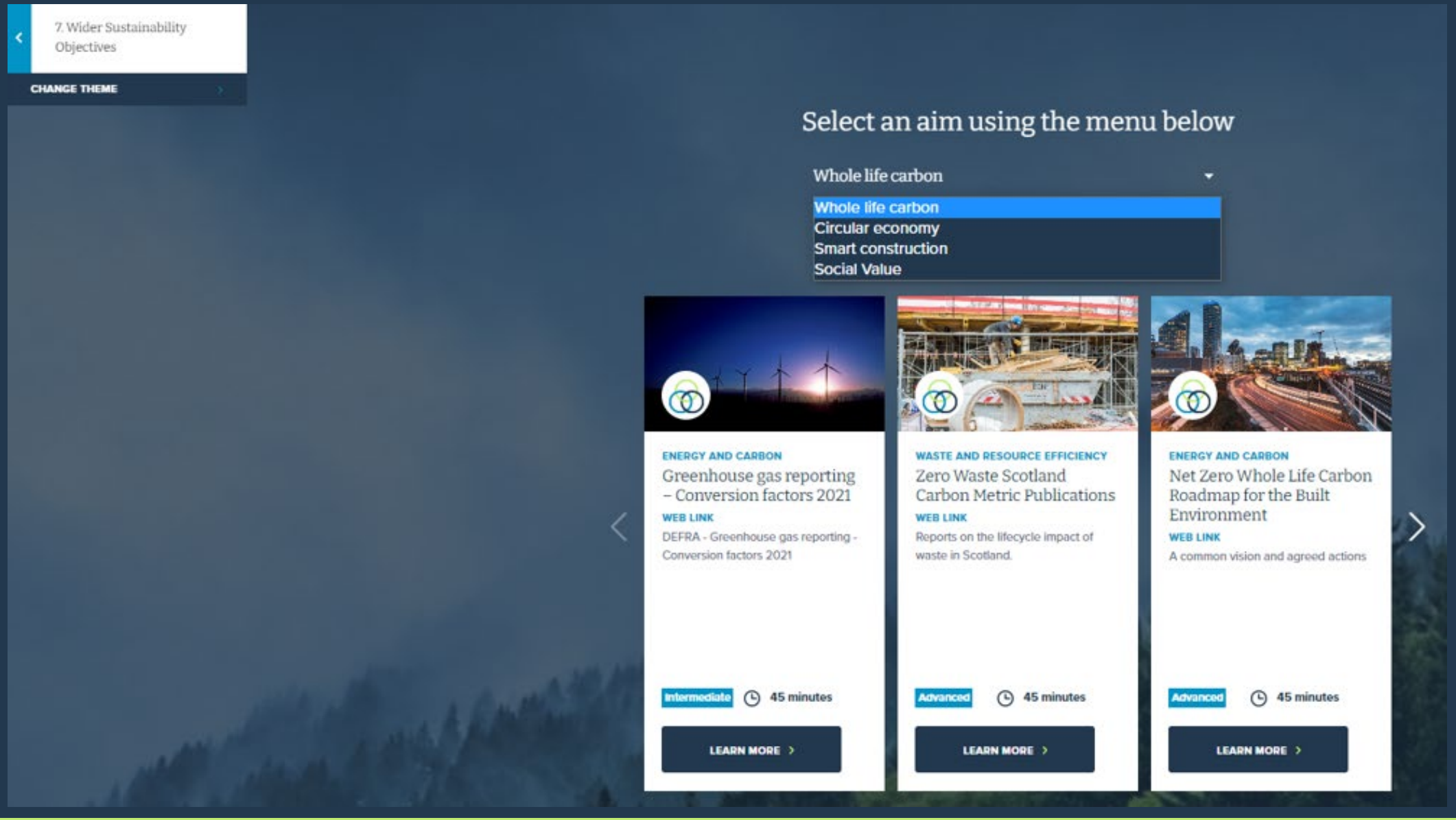

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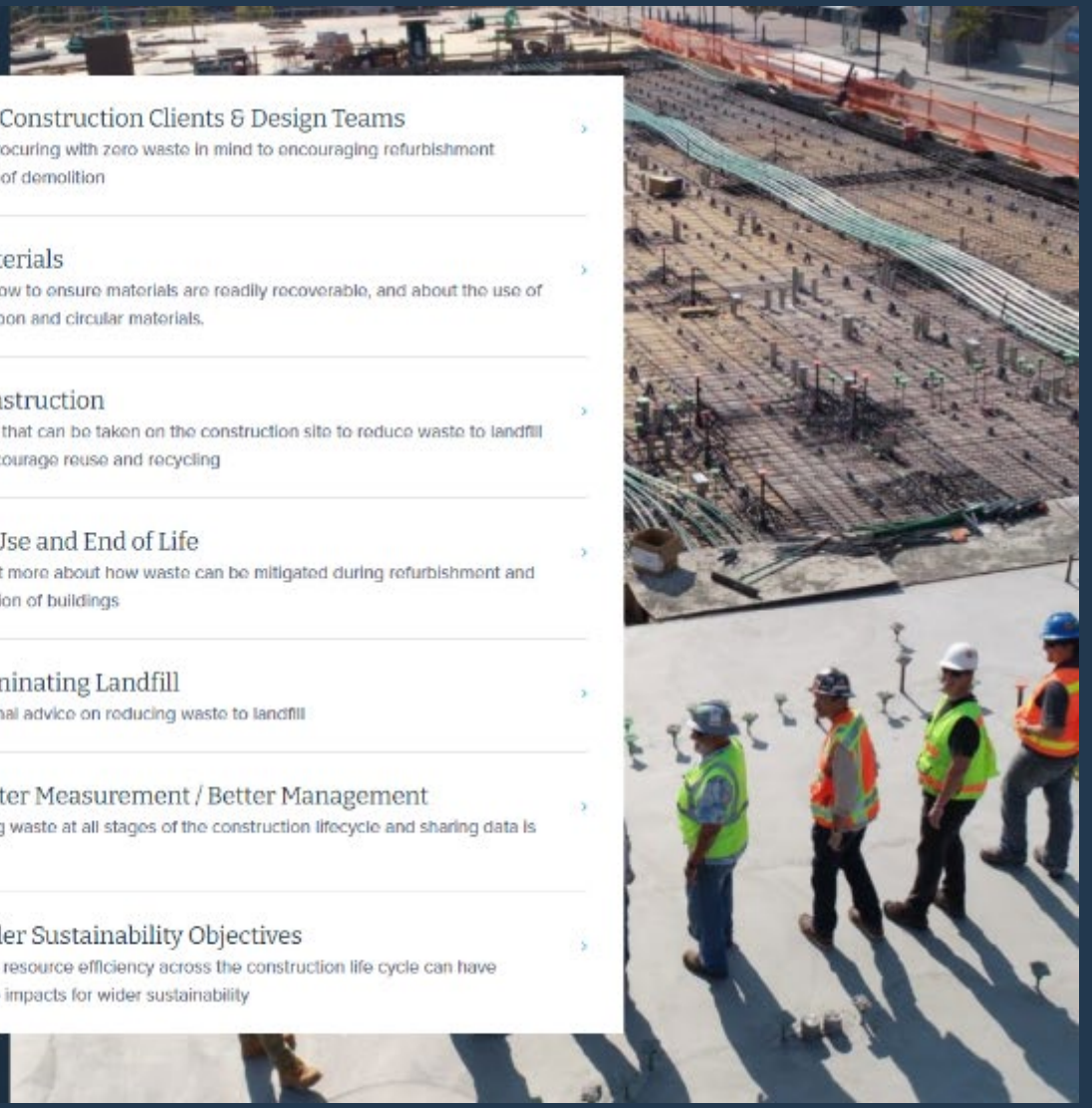

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Find it here!

https://www.supplychainschool.co.uk/partners/groups/waste-group/

SUPPLY CHAIN SUSTAINABILITY SCHOOL

Other School resources to help you

1. **'Introduction to Waste' e-learning** – available here

2. **MEP map:**
   - Feedback template ✓
   - Promotion & marketing ✓
   - Courtesy email to organisations ✓
   - New recommendations received ✓
     - *Now need to be added*
     - *New tags for social enterprises and academic institutions to be added*

Thank you

Any more questions?

SUPPLY CHAIN SUSTAINABILITY SCHOOL

We need your feedback please

LINK:

SUPPLY CHAIN SUSTAINABILITY SCHOOL

SUPPLY CHAIN SUSTAINABILITY SCHOOL

0207 697 1977

info@supplychainschool.co.uk

supplychainschool.co.uk