



# Delivering a circular economy at Hagshaw Energy Cluster

Annual Review

August 2024



# Contents

<b>1</b>	<b>Background</b>	<b>3</b>
<b>2</b>	<b>Circular economy delivery group</b>	<b>4</b>
<b>3</b>	<b>The circular economy opportunity</b>	<b>5</b>
<b>4</b>	<b>Key learnings and recommendations</b>	<b>8</b>



# 1 Background

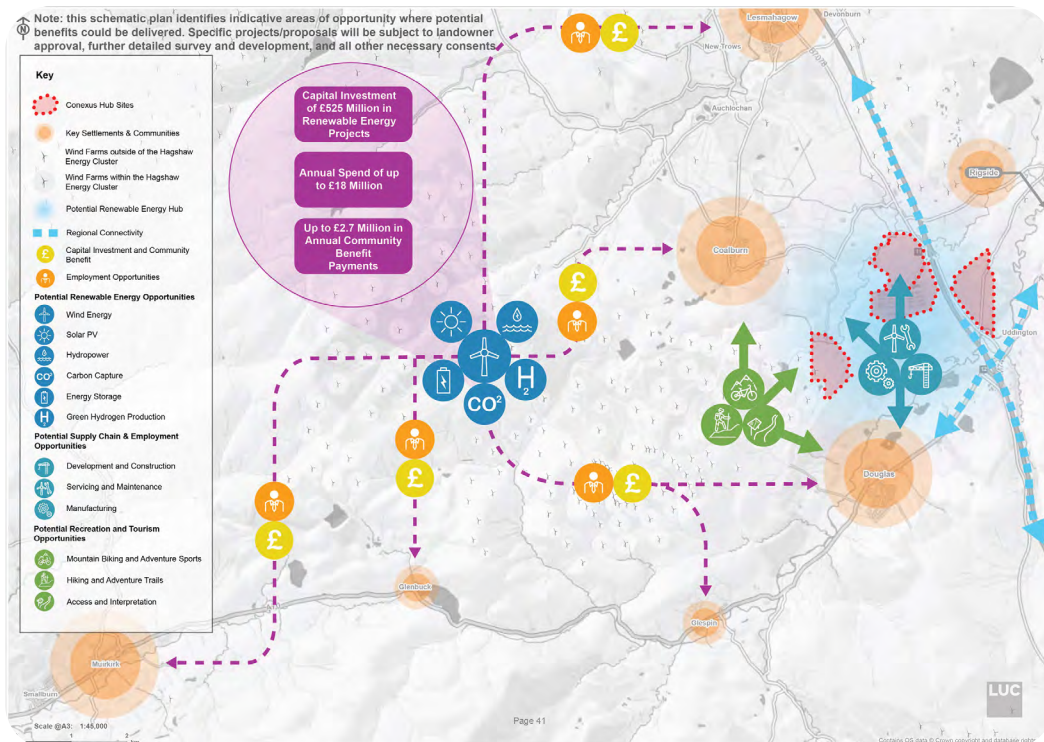
The Hagshaw Energy Cluster is an established strategic location for large scale renewable energy projects, located on the border of East Ayrshire and South Lanarkshire.

The Development Framework for Hagshaw Energy Cluster was published in 2022 and adopted by South Lanarkshire and East Ayrshire Councils in 2023. The Framework’s overarching purpose is to identify opportunities to enhance and invest in the local environment, communities and place. The Development Framework has been agreed between the local authorities, renewable energy developers and operators, statutory agencies, and communities and created a shared vision for the cluster. It sets out an ambitious ten-year vision for how a more strategic and collaborative approach to renewable energy development can help

achieve Net Zero in a just and fair way.

Circular economy has been identified as a key opportunity within the Framework, under the theme of ‘inclusive, sustainable growth’. It is estimated<sup>[1]</sup> that by building capabilities in wind turbine component reuse, refurbishment and remanufacturing, the UK economy could benefit to the tune of around £1.6 billion in total Gross Value Added for the period between 2025 and 2035 (this doesn’t include the substantial opportunity that is created by turbine decommissioning which would push this figure even higher). This presents a significant economic incentive to embed circular economy principles at an early stage. The Hagshaw site is also skirted by a significant industrial site (Conexus), presenting a live opportunity to develop manufacturing / remanufacturing and circular economy activity.

**Figure 1: Economic opportunity mapping at Hagshaw**



1 BVG Associates Limited (2023). Circularity market analysis: Assessing the potential market size and economic benefits in the UK of moving toward a circular model for operational wind turbine components. [online] SSE Renewables. Available at: <https://www.sserenewables.com/media/234nrsfp/bvga-31410-circularity-market-analysis-r2-1.pdf> [Accessed 27 Aug. 2024].

## 2 Circular economy delivery group

Zero Waste Scotland was invited by the Hagshaw Energy Cluster steering group to take a lead on exploring circular economy opportunities. Zero Waste Scotland established a Circular Economy Delivery Group in April 2023. Initial activity involved engaging with key stakeholders to understand the knowledge base around circularity and identify specific opportunities that could be progressed locally.

**Figure 2: Packaging material put to use as a rest area within the cluster**





# 3 The circular economy opportunity

Zero Waste Scotland published 'The future of onshore wind decommissioning in Scotland'<sup>[2]</sup> report in 2021 which identified the scale of onshore wind decommissioning and made a series of recommendations for Zero Waste Scotland, Scottish Government, and the industry to enable and embed circular economy principles. The report primed a pilot project that could test delivery of circular economy approaches in the onshore wind sector and the Hagshaw Energy Cluster provides a timely and valuable opportunity to explore and progress some of the recommendations. By 2050 onshore wind decommissioning in Scotland could have generated a staggering 1.25M - 1.4M tonnes of materials. There are some existing examples of good practice in the sector<sup>[3]</sup> who deploy a successful refurbishment business model but there is a need to accelerate progress in how we deal with decommissioning across the sector, from design and the planning process to maintenance and end of life. While it presents a massive material challenge, the economic opportunity is significant given the projected volume of materials associated with decommissioning.

The Hagshaw Energy Cluster Framework presents an opportunity to highlight innovation and explore mechanisms to attract R&D, investment, and other support associated with various life stages of wind farm developments (across the range of infrastructure on site), including the development and testing of decommissioning solutions, particularly around secondary markets. Similarly in terms of the

current work on increased sustainability for blades, there is an opportunity to fast-track some activity in this space, drawing together existing evidence and using this to influence the sector towards increased recyclability, secondary material use and alternative material markets.

With 584MW of committed electricity generation capacity and a targeted 1GW of output, the seven operational wind farms (totalling 100+ turbines) and 4 consented wind farms (totalling 50+ turbines), including new, extension and repowering proposals, Hagshaw Energy Cluster offers a significant opportunity to apply circular economy activity at multiple stages of development. To give a sense of scale, future committed and proposed wind energy development within the cluster is predicted to result in capital investment of up to £525 million, with an operational spend of approximately £18 million annually.

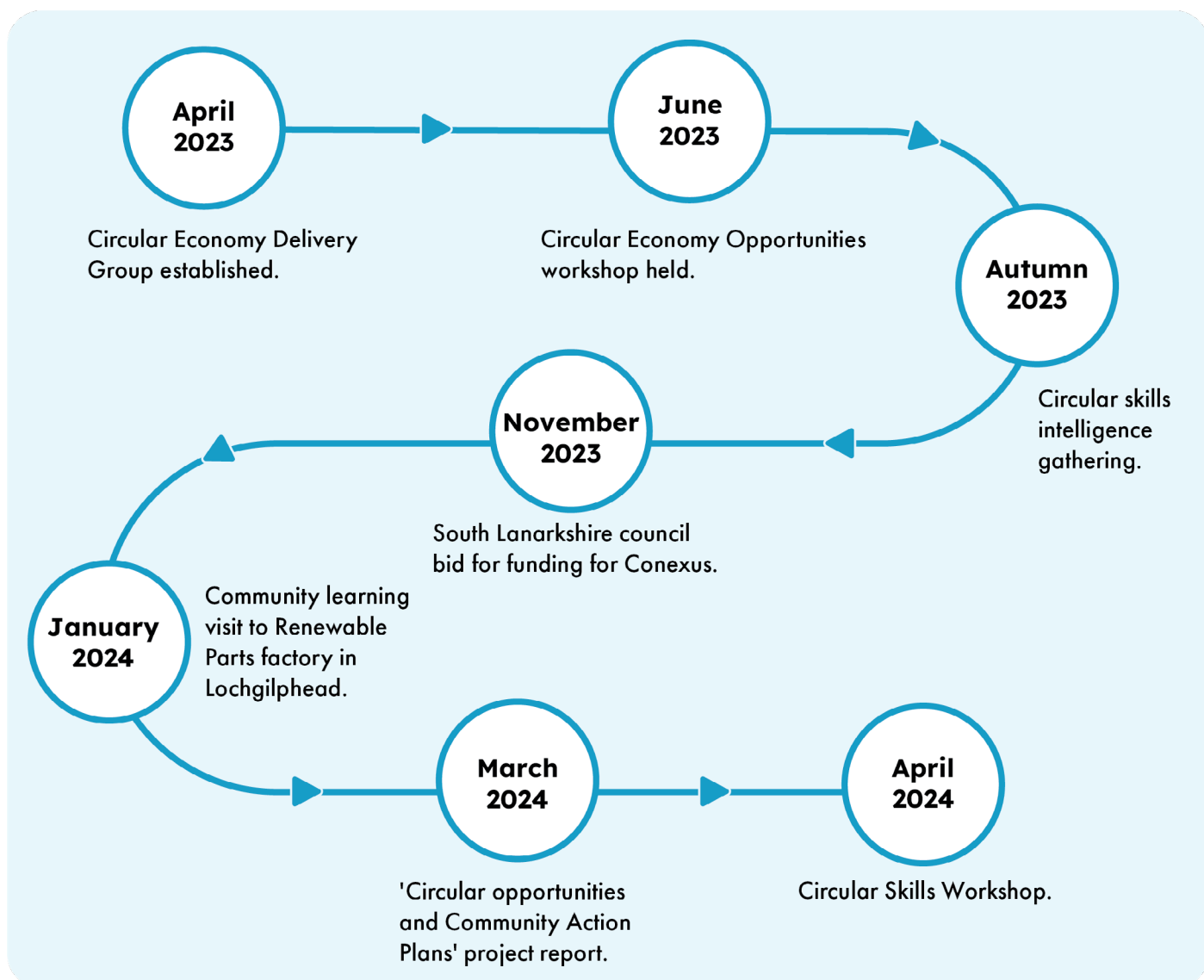
It is important that all elements of the site are considered in circular economy activity, such as track materials, drainage infrastructure and buildings.

The community benefit funds associated with each of the developments amount to £1.69 million, distributed across the following communities: Coalburn, Douglas, East Kilbride, Glespin, Hamilton, Lesmahagow, and Muirkirk. There are opportunities to activate circular projects via these funds that would have significant community benefit.

2 Zero Waste Scotland (2023). The future of onshore wind decommissioning in Scotland. [online] Zero Waste Scotland. Available at: <https://www.zerowastescotland.org.uk/resources/future-onshore-wind-decommissioning-scotland> [Accessed 27 Aug. 2024].

3 Scottish Government (2022). Onshore Wind Policy Statement 2022. [online] www.gov.scot, p.56. Available at: <https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2022/12/onshore-wind-policy-statement-2022/documents/onshore-wind-policy-statement-2022/onshore-wind-policy-statement-2022/govscot%3Adocument/onshore-wind-policy-statement-2022.pdf> [Accessed 27 Aug. 2024].

## 3.1 Timeline



### April 2023

#### Circular Economy Delivery Group established

### June 2023

#### Circular Economy Opportunities workshop held

Identified initial areas for further exploration including waste regulations and routes to market for materials and components; skills requirements and local skills base; streamlining multi-stakeholder engagement to facilitate circular opportunities; the role for communities; collaborative logistics; building circular options into decommissioning.

### Autumn 2023

#### Circular skills intelligence gathering

Engagement with a range of stakeholder including colleges, communities and wind farm developers and operators to better understand the skills requirements and opportunities associated with applying circularity at Hagshaw and inform a future workshop (see below).

## **November 2023**

**South Lanarkshire Council submitted a bid for ‘Conexus @ Hagshaw Energy Cluster: Turning a collaborative vision into reality to create a Renewable Energy Investment Zone in South Lanarkshire, powering the Glasgow City Region’.**

The bid has a vision for a Circular Energy Hub at Conexus West. The hub aims to provide a South of Scotland facility at the technological forefront of the circular economy and will contribute to the development of an innovative value chain with an investment of around £17.65 million and the creation of around 80-100 jobs.

## **January 2024**

**Community learning visit to Renewable Parts factory in Lochgilphead**

This benefitted the group by highlighting the potential of similar remanufacturing opportunities at Hagshaw / the Conexus site.

## **March 2024**

**Circular opportunities and Community Action Plans**

Zero Waste Scotland and South Lanarkshire Council commissioned Community Enterprise to undertake a project to identify added value through circularity for Hagshaw Energy Cluster Community Action Plans. The role of applying circular economy principles in enhancing community benefit funds / activities was also explored.

## **April 2024**

**Circular Skills Workshop**

The workshop identified barriers and opportunities to the integration of circular economy skills to fully realise the circular potential at Hagshaw Energy Cluster. Including: skills mapping; increasing understanding of green skills; addressing cultural and rural location barriers to entering the workforce at Hagshaw.

## 4 Key learnings and recommendations

- It is essential to include a wide range of stakeholders in discussions on the circular economy opportunity, such as community representatives, developers and further / higher education and skills providers. The creation of a circular economy delivery group, and running themed workshops was beneficial to facilitate this cross-stakeholder collaboration.
- There is a need to build understanding of circular economy principles and how they can have influence on cross cutting themes, such as skills, emissions savings, and cost reduction.
- Apart from community benefit funding involvement, the communities attached to the cluster do not feel particularly engaged with the wind farm development. This was not the same with the traditional industries of the area, and the transition does not feel inclusive. This is a challenge that could be addressed through consideration of circular economy opportunities.
- An opportunity has been identified to establish a local resource exchange mechanism platform – to facilitate sharing and reuse of materials. An opportunity to manage aggregate / inert materials on site within / near the Hagshaw cluster (note a requirement to engage with SEPA on any development of this nature).
- It could be beneficial for local communities to establish a directory of local trades people to allow developers to identify local skills for ongoing work across the sites.
- Clearly communicating a timeline of minor and major development occurring at site e.g. decommissioning activity, routine maintenance, traffic movements etc could help to identify further circular opportunities and maintains positive engagement between local communities and developers etc at the Cluster. Identifying an organisation(s) to take ownership of this requires further consideration. There is a specific opportunity to assess turbine base removal techniques at repowering / decommissioning stage, identifying and reporting on, planning, logistical, material market, and restoration issues. Developers would be at the forefront of this, demonstrating and quantifying the opportunity for innovation that could generate material and carbon savings
- As per the wider onshore wind sector deal commitment to using the Hagshaw Energy Cluster as a learning platform, there is an imperative for all Sector Deal stakeholders to consider their role in advancing circular economy opportunities at Hagshaw – capturing and sharing lessons learned and exploring replication opportunities.



