Chapelcross Transformation Programme

Opportunities Workshop - Report Out

21st February 2020

Technology & Innovation Centre, Glasgow

Overview

This report provides an overview of the Chapelcross Transformation Opportunities workshop and captures inputs from attendees and overall outputs from the day.

The workshop aimed to:

- Progress the development of an ambitious and pragmatic vision for the role of Chapelcross,
- Open dialogue with potential partners,
- Highlight any issues,
- Ultimately inform the ongoing strategic outline business case for necessary infrastructure, highway and site servicing improvements.

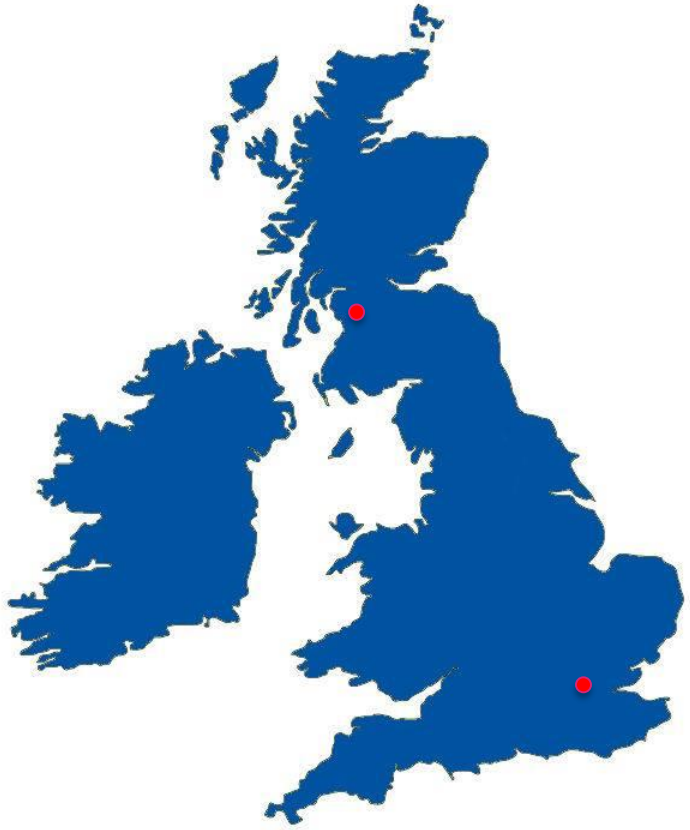
The workshop brought out high levels of critical thinking, enthusiasm and engagement and **we would like to thank all those who attended the event.**

09:00	Arrival
09:10	**Introduction from Lorna Meahan** - Director Economy & Resources, Dumfries & Galloway Council
09:15	**Chapelcross Programme Overview**
09:20	**Keynote: Katrine Feldinger** - Head of International Capital Investment at Scottish Government
09:45	**Workshop Part 1**
10:50	Coffee break
11:00	**Keynote: Barry Carruthers** - Head of Innovation, Sustainability and Quality at ScottishPower
11:25	**Workshop Part 2**
12:50	**Wrap up: Arup**
13:00	**Lunch**
14:00	Close

Overview

Alongside the specific workshop aims, the Chapelcross Programme is working towards a set of high level objectives, these are as follows:

- Create a **large-scale mixed-use** employment site for Borderlands with significant wider economic and policy impacts
- Support the development of **green energy** production, storage and distribution solutions
- Make a significant contribution to the UK Government's **net-zero** target.
- Maintain **100% beneficial use** of the site over the full decommissioning period (in line with Energy Act 2004) and beyond.



Chapelcross

Chapelcross is a former nuclear Magnox power plant located near the town of Annan in Dumfries & Galloway.

Energy production on the site ended in 2004, and the site is in the process of being decommissioned. It spans approximately 200 hectares, with 60ha of land available for development immediately and significantly more over the next decade.

The site land ownership includes the route of a disused rail way line that runs to the shore of the Solway Firth, currently used for an above ground outfall from the site to the sea. The pipeline will be removed within the current phase of the site decommissioning programme. This strip of land is currently held as freehold by the Nuclear Decommissioning Agency (NDA).

The decommissioning process and final site clearance is scheduled for between 2090 and 2095, and we are committed to maintaining 100% beneficial use of the site over this period.

Review of Keynote Speech 1

Lorna Meahan (Director Economy and Resources, Dumfries & Galloway Council) opened the workshop with a short talk focused on the need for co-creation to achieve key policy ambitions on a range of different levels. The Chapelcross video was shown to the group giving an overview of the site and it's history.

Lorna was followed by Katrine Feldinger (Head of International Capital Investment, Scottish Government). The key themes of Katrine's talk were:

- There is an urgency to act with regards to climate change,
- Acting in a manner that promotes a 'Just Transition' and achieves a net zero scenario can act as a driver for inclusive growth,
- Scotland is well placed to act, based on it's current skills, knowledge and assets,
- Various Investment channels and programs for green energy development, alongside example projects.

Review of Workshop 1

Workshop 1 followed Katrine's talk. This workshop focused on drafting initial individual ideas which were then clustered into themes.

The instructions were as follows:

1. Write three ideas on post-its – one per post-it! (individual task),

2. Share and cluster your collective ideas following your facilitator's instruction,

3. Review the clusters of ideas and decide together which ideas should be developed in greater detail in the next session.

The results of this workshop for each group are summarized on the following pages.

Workshop 1: Group 1

Negative Emissions

- Explore virtual farming / meat-free products
- Energy from Waste (EfW) with CCUS
- Biochar
- Forestry and peat carbon sink

Innovation hub/skills/demonstrator

- Opportunity here to develop local skills and there is the capability to build a unique skills development centre

Hydrogen Industrial hub

- Low/zero carbon transport fuels hub (Hydrogen, LNG, CNG)

Data

- Re-use of direct site strengths with regards to location and security
- Noted that this is dependent on digital connectivity and grid capacity
- Host server banks and use generated heat for a district heating network with the existing pipeline route.

Workshop 1: Group 2

R&D / training / innovation hub

- Vocational training / open university
- Future tech test facility and training facility
- Green energy and renewable R&D centre with a collaborative space for testing out new technology
- 'Just transition' skills hub where CX sits as the 'Borderlands Transition Hub'

Agriculture

- Hydroponics on adjacent land
- Power and heat generation with power to industry and heat to intensive agriculture
- Innovative rural industries building on D&G's workforce and sector reputation (e.g. forestry and timber technologies)

Other themes

- Low carbon manufacturing, net-zero food/drink (Annandale expansion)
- Logistics modal hub

Transport

- Hydrogen/electric charging station off M74
- Supply to hydrogen trains
- Hydrogen production for transport in partnership with Hydroview Power
- Zero emissions flight hub

Workshop 1: Group 3

Green Energy

- Energy storage demonstration site
- Solar/windfarm within boundary
- Co-location of complementary users e.g. solar alongside industry and hydrogen
- Local grid balancing
- Geothermal system to produce electricity and heat
- Battery storage for black start
- Private wire smart grid network

Green Energy

- Green energy tourist visitor centre
- Creation of carbon neutral industrial/commercial units with green infrastructure to link the localities (train link to Annan)
- Green electrolysis from off-shore wind/ tidal in Solway Firth

Skills

- Access to skilled workforce and career development opportunity in the digital market

Next-gen agriculture / carbon sink

- modern methods of farming (demonstrator centre)
- Self sustaining farm
- Involve local farmers in the program (trade shares for carbon sinks on their land

Other themes

- carbon haulage between Scotland, England and Ireland.
- Green electrolysis from off-shore wind / tidal in Solway Firth
- digital reuse of existing infrastructure and buildings
- Pre-fab timber building manufacturing

Review of Keynote Speech 2

Barry Carruthers (Head of Innovation, Sustainability and Quality, ScottishPower) started the second part of the workshop with his presentation. The key themes were as follows:

- Electric vehicles and charging infrastructure,
- The net zero ecosystem and the impact of electrification of heat and transport on the grid,
- The inefficiency of fossil fuels,
- Green energy projects with complementary uses.

The presentation from Barry was designed to get attendees thinking about other projects that are happening in the UK, which acted as a stimulus to Workshop 2.

Review of Workshop 2

In **workshop 2** the groups assessed the shortlisted ideas to identify the most compelling idea. This idea was when refined and the subgroups focused on how to take that idea forward.

The instructions were as follows:

1. Assess your short listed ideas to identify the most compelling idea, using the criteria provided. This should be an anchor idea or set of ideas for the initial phase of the site's development

2. Build on your one chosen idea, to develop a high level overview that answers the What, Why, Who, When and How?

3. Ideally, come up with a set of next steps and actions to take this idea forward for more in-depth consideration

Group 1 focused on the overall vision and how the site can progress from now until 2095, Group 2 focused on the potential for green energy generation on the site and, Group 3 looked into potential industrial activities and potential energy off-takers.

The outputs for workshop 2 for each sub-group are summarised on the following pages.

Workshop 2: Group 1 Overall Vision

Key Findings

- The group set out a suggested pathway for the site, while maintaining and keeping the energy heritage of the site

Short Term (2035)

- Suggestions that the 'short term' should run up to 2035 (to align with Borderlands Heads of Terms)
- Initial development should **focus around energy generation** and skills development
- Attempt to make the site a negative emission area, i.e. CCS & biochar from the start
- Talk of enabling infrastructure (data line, pipeline, sea grid connections, transport)
- Upskilling is necessary for a 'Just Transition' (e.g. Berkeley). Could this include an Open University/virtual institute kind of operation? Include social scientists with focus on behavioural elements. This should be tied to Scottish skills strategy

Medium Term (2035-2045)

- Begin to bring users to the site, as discussed by Group 3
- Logistics and transport refuelling hub
- Innovation and demonstration to bring high value skills to D&G

Long Term (2045-2095)

- MOU style agreement between all stakeholders and tenants to move towards the four key objectives (for example). Look at Shawfair Sustainable Growth Agreement
- Deliver on policy aims, local, regional and national
- Achieve a net-zero mixed use site by 2045

Other Themes

- Maintaining 100% beneficial use of the site, don't just build everything new
- Modern methods of construction for new buildings (timber)
- Three graphics of the site for S/M/L term to demonstrate deliverability
- Value in creating an institution that can track carbon across the lifetime of something

Workshop 2: Group 2 Energy Generation

Key Findings

- The group discussed specific energy generation technologies which could be deployed on site
- The overall consensus was the importance of focusing on green/zero-carbon generation – to attract potential industry with low-carbon heat/electricity

Overall Discussion Points

- Energy storage demonstration site
- Solar/wind farm within boundary
- Grid balancing for local onshore wind
- Geothermal boreholes to produce electricity and heat
- Co-location of complementary users e.g. solar alongside industry and hydrogen

Other Themes

- Circular economy
- Vertical farming
- Agriculture
- Data centres

Workshop 2: Group 3 Energy Off-takers

Key Findings

- Group 3 provided potential energy off-takers that could occupy the site and make use of any green energy generation

Agriculture and Land Use

- Neighbouring sectors can benefit
- Dairy innovation project?
- Re-use heat from digital for vertical farming
- Local farming of warmer climate crops
- Forestry industry usage

Mixed Use

- Hydrogen/electric logistics for trains, buses and HGVs
- Innovation centre linking generation and usage
- 3D printing
- Pre-fab timber building manufacturing
- Commercial units

Risks Captured

- Power supply for security
- Potentially limited high skilled jobs
- Risk averse farmers
- Requires digital infrastructure & skills training
- Requires energy resilient systems

Skills

- Digital skills development
- Access to people (labour)
- Innovation in farming
- Educational hub around mixed use innovation

Large Scale Green Energy Hub / R&D

- Local R&D facilities for heat source and battery options
- Hydrogen (for transport fuel), solar (for electricity) and geothermal (for district heating)

Consistent Themes

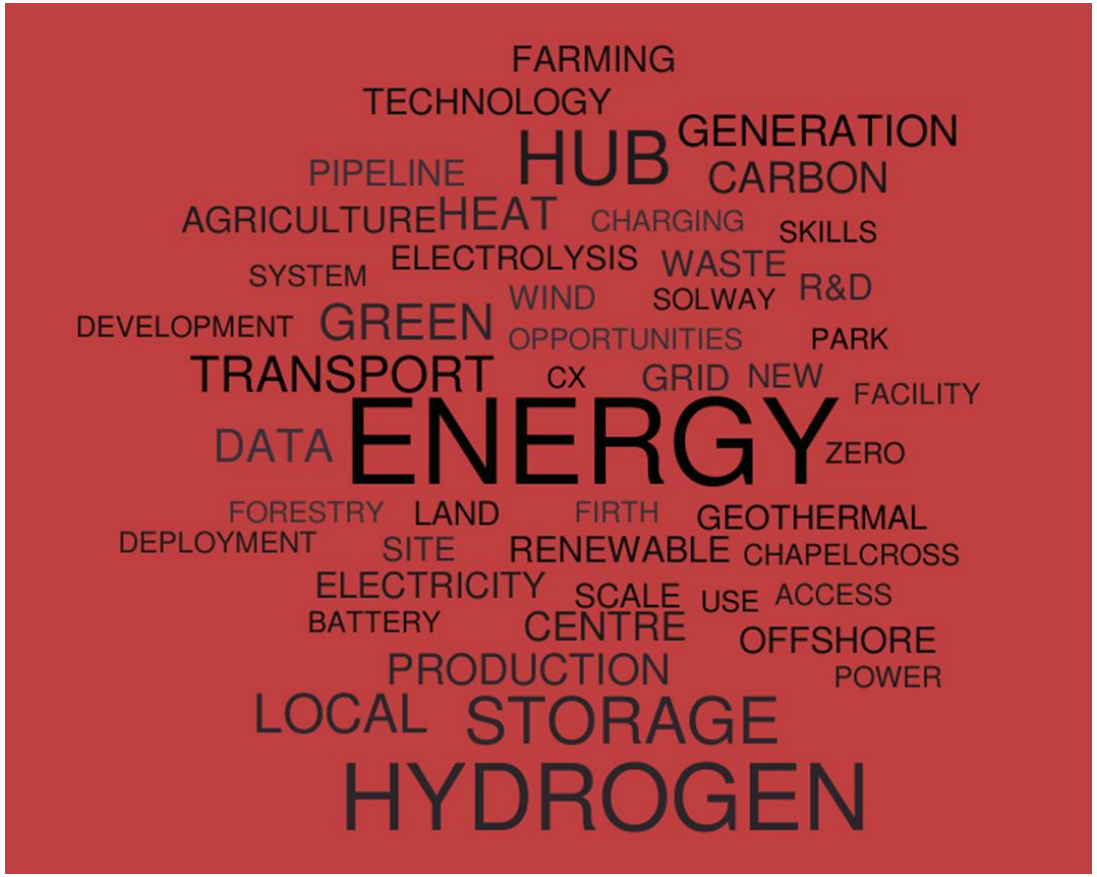
Throughout workshops 1 and 2 some consistent themes began to emerge. Areas of overlap between the sub-group conversations include:

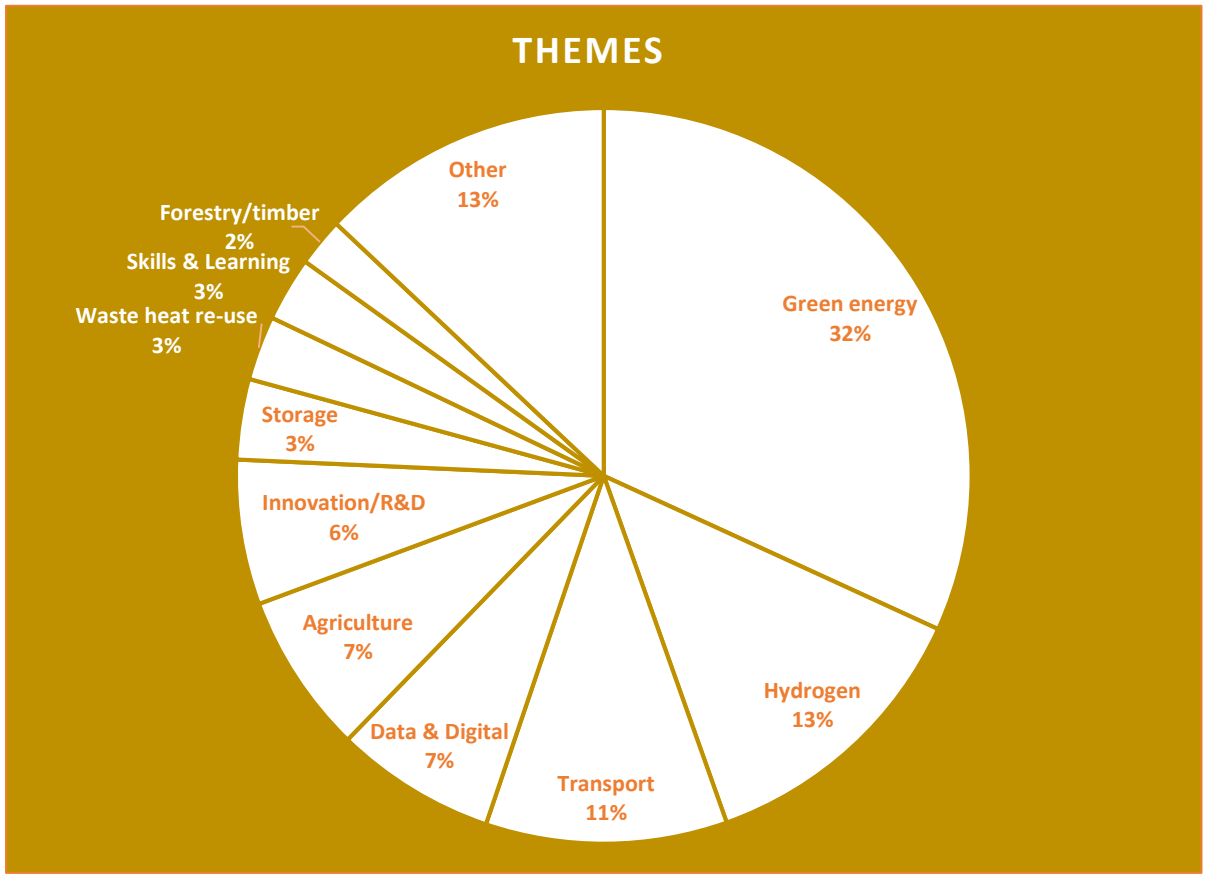
- Green energy
- Hydrogen
- Transport
- Data & digital
- Agriculture
- Innovation and R&D
- Energy storage
- Waste heat re-use
- Skills & learning
- Forestry & timber

- Nationally important asset
- Enabler for 2050 carbon net zero target
- Access to off-shore possibilities
- Cross sector energy hub
- Agriculture – under glass nearby to the site
- Green energy demonstrator at scale
- High security data and digital

Overall 32% of ideas raised in workshop 1 were centred around **green energy**. While a number of themes were discussed across the groups 70% of all individual ideas were captured by 5 key themes: **green energy**, **hydrogen**, **transport**, **data & digital**, and **agriculture.**

Consistent Themes





Next Steps

The workshop brought together a varied group of stakeholders to increase the profile of the Chapelcross site and discuss development options that aim to:

- deliver on policy ambitions;
- create a shared sense of ownership;
- continue to engage with key stakeholders;
- ensure the site is deliverable and capable of being serviced.

The workshop was a step in engaging key stakeholders and organisations that will be key to driving the Chapelcross Programme and economic development in the region. The next steps are as follows:

- Inform the ongoing Strategic Outline Business Case
- Progress dialogue with attendees
- Investigate a potential delegate visit to the Chapelcross site
- The Chapelcross Programme should consider how to raise its offer profile at COP26.
- The Chapelcross Programme should actively target partner and funding support through the 2nd London workshop
- Produce a graphic that maps the options onto a regional, national and international basis to contribute to wider policy transformation
- Be aware of the NPF4 and establish the role that Chapelcross can play
- Recognise the guidance provided by the D&G local plan for 58 of the 200 ha on site, including aligning with NPF4.

We are excited to progress this further and a second workshop will be held in London in the near future to build on the progress already made. Should you have any further ideas or opportunities to discuss please do not hesitate to get in touch.

Thank you for your participation

For any further queries please contact mark.fulton@dumgal.gov.uk or David.hogg@arup.com