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ABERTHAW: A STORY OF POWER, PROACTIVITY & A LEAP OF FAITH

Mike Fox talks about working with CCR Energy on an exciting new energy and industrial project in the Cardiff Capital Region.



THE CONTEXT

The UK aims to decarbonize its electricity grid by 2035, eliminating the current 40% fossil fuel share.

Gas is currently the main source of supply, at 34%, with coal at around 1% (and due to be phased out completely in 2024). Other sources of energy comprise wind (30%), nuclear (15%), biomass, and solar (both around 5%), followed by hydroelectric. In parallel, energy demand needs to be reduced.

As of 2022, transport accounted for the largest share of energy consumption, at 43% of the total. Domestic users accounted for 41%, with industry accounting for 23%, and finally services (including agriculture, commercial, public administration, and others) accounting for the remaining 21%.



None of this is a simple task.

Setting aside the complexities of driving behaviour change (reducing demand), it also involves transforming entire industries and the power supply network to a more agile, decentralised model.

The latter includes grappling with decades-old grid infrastructure, which limits future inputs into the electricity grid despite an increasing number of renewable energy projects navigating their way through the planning system.

Therefore, the overall energy balance is a critical issue, i.e. balancing fluctuating electricity generation and usage throughout the day, 365 days a year. The storage of energy (for example, through batteries) and its conversion to fuels (such as hydrogen) can contribute towards the latter.

This requires systemic change on a scale hitherto unseen. The public sector and its relationship with both the third and private sectors are fundamental to its overall success.





AN OPPORTUNITY FOR POSITIVE INTERVENTION

Aberthaw, once a technologically advanced power station that closed in 2020, is now a focal point for Cardiff Capital Region's (CCR) energy initiative, CCR Energy. Committed to regional economic transformation since its 2016 City Deal, acquired the site in 2021.

With a **£1.2bn** funding pot, CCR aims to foster clean growth, boost regional GVA, enhance productivity, attract investment, and create high-value jobs. The Aberthaw site, crucial to their economic and energy strategies, is envisioned as a model for a just transition, bringing valuable jobs, pathways, and community regeneration to deprived areas.

CCR Energy, aligning with regional initiatives like the South Wales Industrial Cluster, Celtic Freeport, Bro-Tathan Enterprise Zone, and projects like Blue Eden in Swansea, aims to position the region as a global leader in green industry.



THE MASTERPLAN

We worked with CCR Energy to identify multiple objectives from the outset. Energy was one factor, but in line with CCR's modus operandi, fostering innovation, bringing high value-added employment, and maximising social value were also key goals.

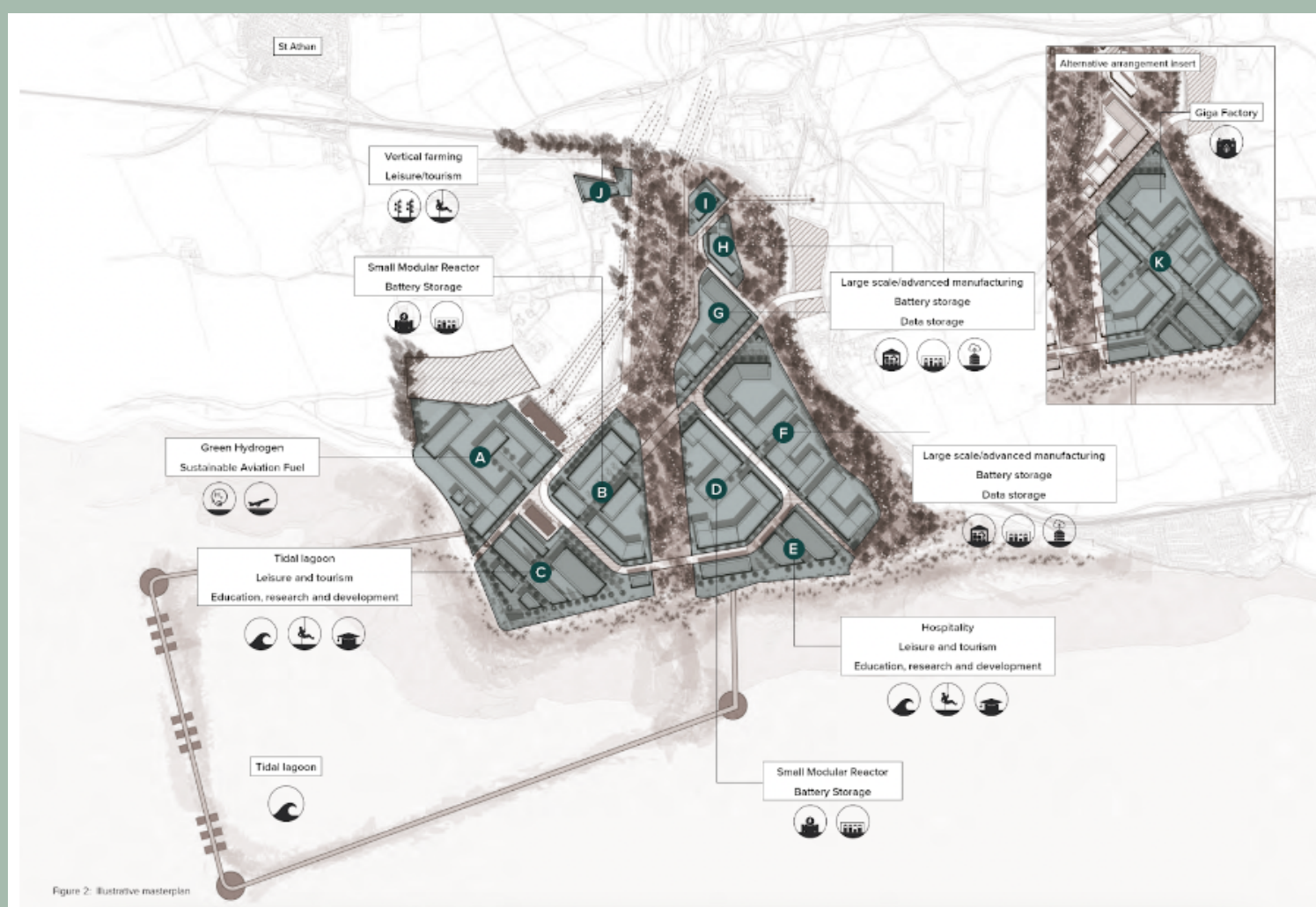
In addition, addressing broader ambitions, capturing the opportunity to open up the site, contributing to a sense of place, providing leisure opportunities, improving local health and wellbeing, and enhancing biodiversity were also key goals.

In developing plans for the 198ha site, we grappled with a range of constraints, including complex power and grid supply infrastructure, a 55ha ash-mound, an operational rail head, access constraints, a river bisecting the site; and flood risk, ecological and heritage designations.

This was balanced by some significant opportunities, including capitalising on existing rail links and the placemaking potential of existing green/ blue infrastructure, site setting, and proximity to heritage assets, as well as agglomeration benefits offered by proximity to the adjacent Enterprise Zone and neighbouring sites over the longer term. Working with CCR Energy, we weighed up the benefits of a range of potential uses, focused on potentially game-changing' tier 1' uses that fit with CCR's overarching vision and objectives. A range of potential uses beyond energy were appraised, including advanced manufacturing and ancillary uses that will bring multiplier effects, such as research and development and leisure activities.



Our resulting masterplan seeks to accommodate a range of uses and enable a range of potential scenarios as CCR Energy's understanding of the technical constraints develops further; and discussions with potential investors and the wider community move forward. Target typologies include energy-generating uses (such as solar, small (or micro) modular reactors, and tidal power), energy storage (hydrogen and battery storage), energy users (data centres, a giga factory, and others), and 'ancillary' uses (leisure, innovation, ecology park). The latter can help to maximise the value of the other uses, enhance sense of place, and deliver social value.



Despite the utilitarian nature of some of the uses, our masterplan ensures good placemaking is central to the proposals, with the ultimate aim of creating a centre for innovation in emerging industries and energy technologies while opening up the site to the wider community.



KEY ELEMENTS

INCLUDE:

- Green and blue infrastructure corridors provide enhanced biodiversity and habitat, including enhancements to the existing nature reserve, sustainable drainage, tree planting, and other landscape interventions.
- Waterfront development with an emphasis on education, innovation, and leisure, as well as upgrades to the existing coastal path.
- Allowing for a tidal lagoon providing a mix of energy generation, tourism, research, flood defence, and environmental enhancements.
- Creating key destinations throughout the development, where development interfaces with a vibrant, active public realm.
- A focus on sustainable travel, with a network of pedestrian and active travel routes through the site, as well as a mobility hub at the site gateway.



THE END OF THE BEGINNING

But we are just at the 'end of the beginning'. While our masterplan sets a flexible vision for the site, much work still needs to be done to engage with the public and other stakeholders to test these ambitions and delve deeper into the technicalities of what is a highly complex, contaminated site. In parallel, there will be ongoing engagement with investors and future developers as they approach CCR Energy with various propositions. There is also a complex planning process to grapple with. In turn, all these factors will feed into future iterations of the masterplan.

In this regard, we look forward to working with CCR Energy's newly appointed technical team, led by Arup, in taking the proposals to the next level of detail, refining the masterplan, and devising an approach to planning that will cement the best of these proposals while allowing sufficient flexibility to adapt to the realities of the market.

**So here's to power, proactivity, and leaps of faith...
without it, net zero seems a distant possibility.**