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brockwell energy

Westfield ERF – Heat & Power Offtake

Opportunity Overview & Questions of Potential Partners

Westfield ERF – The Partnership Opportunity

At the heart of the development of the Westfield Green Energy Park a modern, best in class, Energy Recovery Facility (ERF) is being constructed.

Construction of the Westfield ERF commenced on 16th December 2021 and is due to reach full and consistent operations in May 2025.

Once operational, the Westfield ERF will be able to offer competitively priced power and / or heat to interested off-takers.

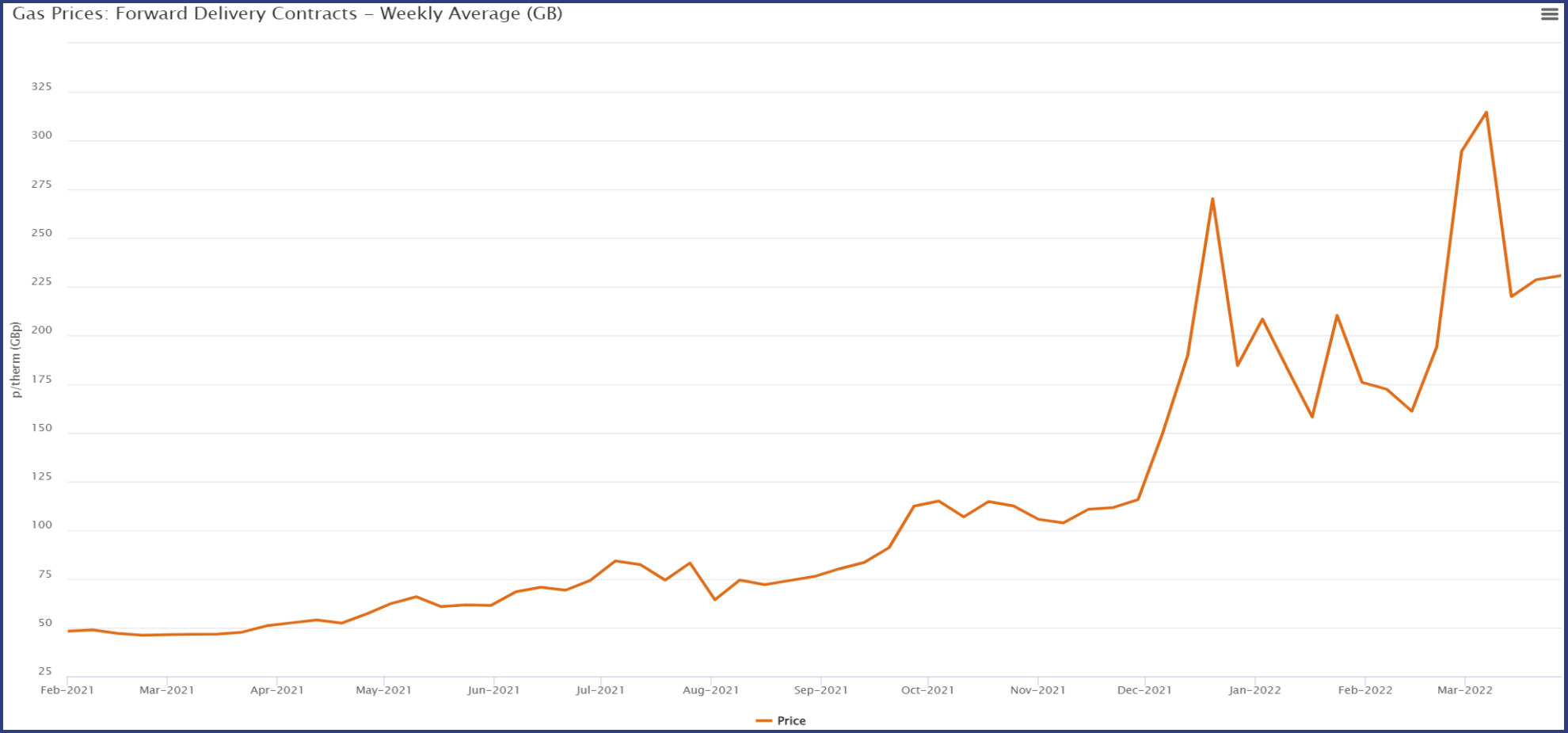
Such energy will either be low carbon, or – if we succeed in our carbon capture ambitions – carbon negative – a sustainable advantage.

The key project parties are highly experienced, reliable, and financially resilient.

There are numerous land options available on the wider Westfield site.

We have a few questions for you at the back of the presentation if you're interested, and we are always happy to discuss.

Rendered image of the Westfield ERF (“WERF”)



Energy Economics Context

- Recent events in Ukraine have demonstrated the inter-connected nature of the global energy system, and the significant price shocks and volatility that can arise when an event impacts on the equilibrium.
- Gas prices are 4-5 times higher in early 2022 than in early 2021; electricity has a similar story (Graph source: Ofgem)
- Europe and the UK are committed to reducing reliance on Russian energy which is likely to keep prices high for the foreseeable future.

A Very Economic Proposal – Well WERF it!

Entering a private energy (electricity or heat) supply contract with WERL can provide potential partners with competitive energy costs.

These can be fixed price index linked for those seeking price certainty amid energy price shocks like those experienced in 2021/2022 or can be based on a discount to the market price to suit off-taker preference.

Typical charges associated with sourcing electricity from the grid are avoided with a private wire connection.

Brockwell Energy has experience of developing private wire connection agreements and energy purchase agreements.

Aligning heat demand with the Westfield ERF's availability profile offers potential partners substantial cost savings versus installing their own gas(?) fired boilers through reduced capex, lack of carbon taxation, no need for gas(?) infrastructure or connections and reduced operational costs.

Westfield ERF is designed to consistently generate heat and electricity for at least 8000 hours per year with a short, planned, break for maintenance purposes.

A Sustainable Advantage – Waste to Resource

‘Zeroing in’ on the key challenges of sustainability – zero waste Scotland

The Westfield ERF will divert the waste generated locally away from landfill to create low carbon electricity and heat, helping Scotland to meet the requirements of the Government’s landfill ban.

The Westfield ERF is aligned with the move towards a circular economy as it allows for useful electricity and heat to be generated, and materials to be recovered and re-used, from waste that would otherwise have ended up consigned to landfill.

This efficient re-use of materials reduces the reliance on virgin materials and reduces the emissions associated with their extraction.

Along with facilitating a more efficient use of materials, the Westfield ERF allows for a more efficient use of land associated with the treatment of residual waste by reducing the necessity for landfill.

Landfills occupy large areas of space, limit future local development, emit landfill gas to the atmosphere and have negative impacts of the local communities due to odour.

The Westfield ERF helps avoid export of waste from Scotland – it’s our resource, lets use it well!

A Sustainable Advantage – Low (or Negative?) GHG Emissions

‘Zeroing in’ on the key challenges of sustainability – net zero

The divergence of waste from landfill reduces emissions to the atmosphere of greenhouse gases methane and CO2 which would otherwise be generated as residual waste breaks down within landfills.

Direct combustion offers more efficient power generation from waste compared to capturing landfill gas and combusting in gas engines.

The low carbon heat supplied by the Westfield ERF can allow businesses to reduce carbon emissions in comparison to the use of heat produced by the combustion of fossil fuels.

Analysis has shown that the greenhouse gas emission benefits from sending a tonne of waste to an ERF vs landfill is circa 200kgCO2e per tonne of waste (a saving of circa 45,000 tonnes per annum of CO2e).

The carbon intensity of an ERF in electricity only mode, accounting for said diversion from landfill, is circa -95gCO2e/kWhe.

We have ambitions to incorporate carbon capture to make the project a critical part of the UK’s net zero ambition, by countering the residual positive emissions by actively removing carbon dioxide from the atmosphere. We are actively exploring solutions to realise this ambition

Technically Capable

- The Westfield ERF is being designed to be able to convert the energy contained within residual waste, into both electricity and heat using a moving grate combustion chamber – a proven and reliable design.
- Emissions are continuously monitored and managed with an automated treatment system, designed to ensure full compliance with stringent environmental requirements set out by SEPA.
- The ERF is designed to produce up to circa 23MWe when operating in electricity-only mode and has the capability to provide approximately 6MWth from the steam turbine bleeds.
- The Westfield ERF is provisionally being designed to be able to provide heat in three forms:
    - Intermediate Pressure steam (c.8.7 bar(a); +5 Celsius superheat; condensate return at 80 Celsius);
    - Low Pressure (c.3.2 bar(a); +5 Celsius superheat; condensate return at 80 Celsius); or
    - Hot water (exporting at c.100 Celsius and returning at c.70 Celsius).
- Intermediate solutions are possible, and Brockwell Energy are happy to work with potential partners to explore how their heat and power needs can be met.

A Reliable Energy Source

The Westfield ERF will have an operational life of up to 50 years, with robust waste supply contracts in place to ensure consistent supplies of waste during operations.

The Westfield ERF will have an availability of at least 8000 hours per annum.

The heat provision can be increased to 24/7 365 days per year with the addition of the planning consented back-up boilers, capable of providing heat when the ERF is undergoing annual maintenance or to supplement the heat produced by the Westfield ERF to meet the potential partner's heat demand profile.

Back-up boilers are not currently installed but can be if sufficient heat demand is present. Planning permission for the ERF Site includes for the installation of back-up boilers (note, consideration would be needed as to the appropriate fuel for these).

The high availability of the Westfield ERF and the optional redundancy of the back-up boilers means that Westfield ERF can provide long-term and consistent energy supply contracts that can provide businesses with specific energy needs to plan with confidence.

Reliable Partners – Brockwell Energy

- The Westfield ERF has been developed and continues to be managed by Brockwell Energy.
- At the heart of Brockwell Energy's mission to produce clean, renewable energy are the communities in which it hopes to develop and invest. This includes job creation, land restoration, public access, recreational opportunities, and ecological enhancement.
- Brockwell Energy is aware of the sensitive nature of some of its projects and that is why the utmost care and consideration are taken from the initial design phase through to completion.
- Brockwell Energy pledge to proactively seek to engage with communities, groups, stakeholders and statutory bodies through dialogue, consultation, and press coverage.
- Brockwell Energy have experience in delivering heat and power from energy recovery facilities in conjunction with back-up boilers. The Earl's Gate Energy Centre in Grangemouth will deliver on a 15-year energy supply agreement for electricity and heat with load following, redundancy, and 24/7/365 availability with back-up boilers.
- Brockwell Energy has the knowledge and experience to provide a high quality, and reliable, private heat and power network and the accompanying offtake agreements at lower costs than available through conventional grid arrangements.

Reliable Partners – Hitachi Zosen Inova

- The proven and reliable technology is to be built and operated by Hitachi Zosen Innova (HZI), a world leader in energy from waste (EfW) facilities.
- HZI have developed extensive global experience over the last 90 years in construction and operation of high-quality EfW plants and have completed (or expecting to soon complete) 14 similar turn-key projects in the UK and Ireland since 2008. HZI recently completed the Millerhill Recycling and Energy Recovery Facility in Edinburgh, a 13MWe plant that handles the City of Edinburgh and Midlothian councils' household waste, ahead of schedule.
- Westfield ERF is recognised by HZI as an important, long term, project which is demonstrated by their desire to develop the Westfield ERF into a centre of excellence for their O&M operations.
- HZI are backed by Hitachi Zosen Corporation, a large Japanese company with significant financial resiliance

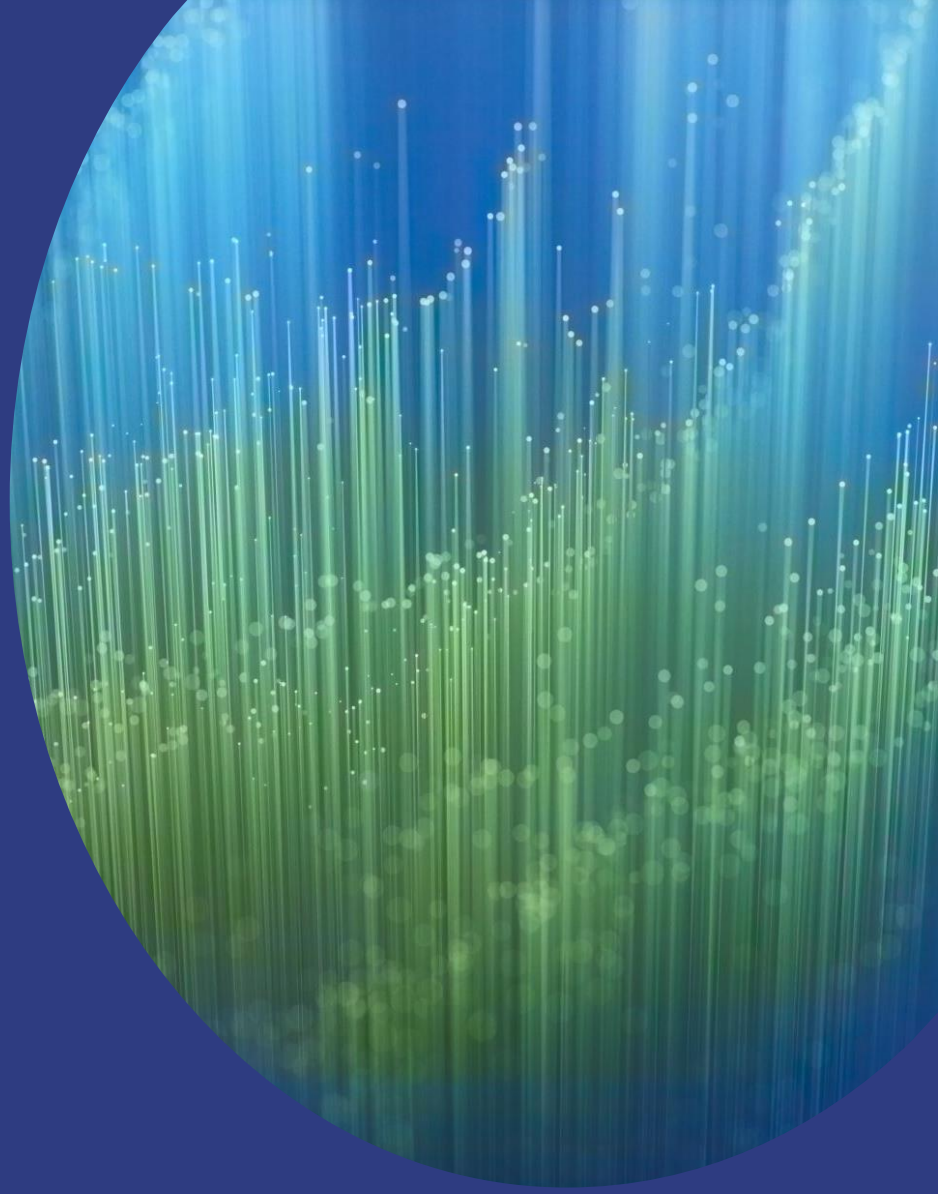
Hitachi Zosen INOVA

Reliable Partners

- Hargreaves are a large land-owner and property developer and experienced landlord operating in the North of England and Scotland
- After acquiring the Westfield site in 2013 they have been remediating and improving the site to create development ready platforms for a mixture of commercial uses
- Hargreaves have a Westfield-specific website with further detail of available land at www.westfield-fife.co.uk, and can be contacted there for more details

Questions of Potential Partners – General Details

- Contact name, position and contact details (phone, email, address)
- Building location and primary uses
- Name of the owner, occupier, and contracting party (appreciating these may be different)
- Expected duration of energy offtake contract(s)



Questions of Potential Partners – *Building* Heating Demand

- How many hours per day will the building be occupied?
- What will you primarily use heat for? (e.g., space heating, domestic hot water, cooling etc.)
- What format will you use for heating? e.g., steam, hot water, hot air?
- What will your annual energy demand for heating and domestic hot water be (kWh_{th} or MWh_{th})?
- What will your maximum power demand for heating and domestic hot water be (kW_{th} or MW_{th})?
- What will the daily, weekly and monthly demand profiles be (e.g., 24/7, seasonal, week-days only, etc.)?
- Do you have any plans in the future to source heat from elsewhere?
- Is your heat demand likely to rise or fall?
- Do you have any redevelopment plans or expansion plans for the building?

Questions of Potential Partners – *Process* Heating Demand

- What will you primarily use process heat for?
- What format(s) will you use for heating? e.g., steam, hot water, hot air?
- What will the supply conditions be? e.g., temperature and pressure?
- How often will the process be running, e.g., 24/7, shift operation?
- What will your annual energy demand for heat and be (kWh_{th} or MWh_{th})?
- What will your maximum power demand for heat be (kW_{th} or MW_{th})?
- What will the daily, weekly and monthly demand profile be (e.g., 24/7, seasonal, week-days only, etc.)?
- Do you have any plans in the future to source heat from elsewhere?
- Is your heat demand likely to rise or fall?
- Do you have any redevelopment plans or expansion plans for the process that utilises the heat?

Questions of Potential Partners – *Electrical* Demand

- What will you primarily use electricity for?
- How often will the demand be running, e.g., 24/7, shift operation?
- What will your annual electrical demand be (kWh_e or MWh_e)?
- What will your maximum electrical power demand be (kW_e or MW_e)?
- What will the daily, weekly and monthly demand profile be (e.g., 24/7, seasonal, week-days only, etc.)?
- Do you have any plans in the future to source electricity from elsewhere?
- Is your electricity demand likely to rise or fall?