
TITLE OF REPORT: **Update on Gateshead District Energy Scheme and Council Energy Management**

Report of: **Strategic Director, Economy, Innovation and Growth**

Summary

Part 1 provides an update on the operation of Gateshead District Energy Scheme, by Gateshead Energy Company, since starting full operation in February 2018

Part 2 provides an update on the Councils energy management and carbon reduction activities, in context of the current energy crisis.

Part 1. Gateshead District Energy Scheme

Background

1. OSC received an update on the Gateshead District Energy Scheme in June 2021, specifically reviewing operational and financial performance, and progress against its 5 year business plan. This report will provide further updates since June 2021. Background is repeated here, to remind OSC of how the scheme was established and operates.
2. Gateshead Energy Company (GEC) was incorporated in October 2015 specifically to manage and operate the Gateshead District Energy Scheme.
3. In April 2016, GEC and the Council signed a 40-year concession contract, which sets out the terms of operation, in which the GEC leases assets from the Council and takes sole responsibility of operating and managing all technical and commercial activities.
4. In addition to the operation of the energy scheme, the Company has the following objectives, which included policy priority outcomes for residents:
 - Attracting economic growth
 - Cost savings for commercial customers in the borough
 - Reductions in fuel poverty for residents
 - Carbon reduction in the borough
 - Income generation for the Council
 - Improving Air Quality and Sustainable Transport
5. Regarding governance, GEC is a subsidiary of Gateshead Energy Holdings Ltd (GEH). This structure allows other ventures to be created under GEH, if required. Current Board membership is as follows:

- Andrew Marshall (Chair)
 - John Shiel (replaced Darren Collins, from 22 October 2020)
 - Mike Barker
 - Andrea Tickner (from 26 November 2019)
 - One vacant director position
6. A Members Advisory Panel was established to advise the Board, and meets the week prior to all board meetings, to consider Board business and make recommendations. The Panel comprise Deputy Leader and three members on Transport and Environment Portfolio. GEC Board itself meets quarterly with arrangements in place where decisions are needed between Board meetings. These are followed up by decision records presented at the subsequent board meeting.
7. Day to day operations are led by Jim Gillon, Energy Services Lead, acting as the nominated representative for GEC. Peter Udall, as Strategic Director for Economy, Innovation and Growth, acts the Council's representative under the Concession Agreement.

Operational Update

8. New connections are a key part of GEC's business model, and since June 2021, GEC has agreed several new connections with the Council as follows:
- In March 2022, Northern Design Centre, and Boules Café were connected to the private wire network
 - In July 2022, a power connection for the Multi Storey Car Park was made live, ahead of the required Aug22 go live date
 - In August 22, Gateshead Stadium and Gateshead Academy of Sport were connected to the private wire network
 - In October 22, GEC is due to complete 4 more heat connections, for Park Road and Shearlegs Road Depots, Gateshead Stadium and Gateshead Academy of Sport
 - The Council will add St Joseph's Primary Schools to their secondary network in October 22, requiring additional heat from GEC to supply that site as well.
9. GEC has also provided connections to two urban solar parks, constructed by Gateshead Council (see Part 2)
10. Other significant connections have been agreed with commercial customers:
- Vistry Developments have agreed a heat connection agreement for 271 units on the Freight Depot site, and GEC has commenced extension of its heat network along St James Road, to the site entrance. Works in the site are due to start in Spring 2023, for the first heat connection due in Autumn 2023
 - GB Lubricants, on Albany Road, requested a heat and power connection, having observed the works to construct the minewater heat pump opposite, and wanting to connect to a low carbon, low cost energy source, to meet company objectives. GEC have entered a 20yr energy supply agreement with GB Lubricant and GEC are funding the connection cost, which will be complete by Spring 2023

- GEC is contractually obliged to provide all of the heat and power connections for Gateshead Quays Arena, Conference Centre and Hotel, once construction gets underway

11. A full list of customers is provided in Appendix 1.

Progress to a Zero Carbon Energy network

12. In line with its Business Plan, GEC continues to work towards becoming a Zero Carbon energy network by 2030. Progress on two major investments is as follows:

13. **Minewater Heat Pump.** Supported by a £5.9m government grant, GEC is close to completing the construction of a 6MW minewater heat pump, based at Shearlegs Road depot. Costing £9m to date, the heat pump is undergoing final testing, awaiting operation permits from the Environment Agency and Coal Authority, before coming into operation this winter.

14. GEC has successfully constructed 3 boreholes into mineworkings below Baltic Quarter, which can extract up to 140 litres per second of minewater at 15 degC, from which heat can be extracted by the heat pump, supplying 80 degC water into the heat network (See Appendix 1)

15. The heat pump will supply an ever-increasing proportion of heat into the network, reducing reliance on gas engines, initially 20% but increasing to 50% of the networks heat demand when future customers, such as Gateshead Quays, are connected.

16. The heat pump will provide a 36% reduction in the carbon emissions of heat supplied by GEC to its customers.

17. **Urban Solar Parks.** The Council has constructed two urban solar parks, to provide 3.7MW of power into the network (see Part 2 for details, and Appendix 3-4). GEC has supported the Council, by providing the solar parks with power connections to the network, and allowing the Council to supply power through GEC's network to 11 Council buildings. Whilst the Council directly benefits, these will allow GEC to further reduce gas-fired generation during summer months, decreasing emissions further.

18. GEC continues to explore further opportunities to reach Zero Carbon. Currently, the focus of feasibility work is around opportunities for deep geothermal energy, working in partnership with Gateshead and Newcastle Councils, the North East Local Enterprise Partnership, Durham and Newcastle Universities.

Future network expansion

19. GEC continues to explore strategic expansion opportunities, to grow its customer base further, as follows:

- **Gateshead Quays.** GEC has the funding secured, and connections obligated, to provide the Arena, Conference Centre and hotel its full heat and power requirements.

This will grow demand on the network by 60% alone. We await confirmation of the start of construction, to commence

- *Old Fold / Nest House Estate*. The Council has secured a grant of £2.7m to support a heat network extension into these estates of 550 homes and 2 schools, opposite Gateshead Stadium – a further 12% growth in demand. The scheme is paused, awaiting markets to settle and construction inflation to halt / reverse, to be able to review scheme viability. But if successful, it aims to prove the viability of taking heat networks into low rise social housing estates.
- *Chandless estate*. Following build out of Freight Depot, the network is sized to extend into the former Chandless estate, where a further 485 homes are proposed by 2030.
- *Town Centre Public Buildings*. The Council and GEC are developing further grant bids to the Public Sector Decarbonisation Scheme, to seek to connect other public buildings to the network, including Gateshead Police Station and Magistrates Court, JobCentre Plus, Trinity Square, including Northumbria University. A further 10% growth in customer demand.

Energy Markets and Tariffs

20. Since June 2021, the energy markets have seen immense increases and volatility, due to international issues. However, throughout, thanks to its robust business model, and diverse energy generation and storage assets, GEC has maintained its business objectives of delivering lower cost energy to customers, whilst remaining financially viable. The response of GEC to the situation has progressed as follows:
21. **Autumn 2021**. Gas prices increased mid-year from 2 to 8 p/kWh. GEC managed this as follows:
- 50% of gas had been purchased in advance, at low prices
 - GEC increased power sales to grid, increasing revenues to limit cost pass through to customers
 - Customer heat and power tariffs were increased 40%, but this was lower than market increases by other (including NEPO suppliers)
 - Monthly tariff reviews were introduced, to enable reductions to be passed through to customers when situations improved.
22. **March - Sept 2022**. Gas prices remained high at the 8p/kWh range. GEC responded as follows
- Setting tariffs in line with markets, still providing customer discounts and continuing to review tariffs monthly
 - Through April to June22, GEC reduced tariffs, passing through lower costs to customers
 - The reductions were removed through Jul – Sept22, as gas prices started increasing again
23. **Winter 22-23**. Gas prices have peaked at around 18p/kWh for this winter. Without support, GEC would have been able to remain viable as follows:
- Choosing to continue using gas-fired power generation, to increase revenues with power sales to grid

- Passing through 50% tariff increases to customers, in line with inflation

24. However, the Government has announced the Energy Bill Relief Scheme, which limits the cost of wholesale gas to 7.5p/kWh. A recent GEC Board meeting, on 26 Sept 22, has agreed the following as a result of this support:

- GEC can continue to operate the new heat pump this winter, and won't have to rely on gas-fired generation for extra revenue
- Customer tariffs will not have to increase further into Winter 22/23 – importantly, our customers will receive similar benefits to those on regular gas and power contracts
- GEC's cashflow forecast for 2022-23 are still on target

25. Outlook to 2023-24. The government support does not extend beyond April 2023 currently. On current forecasts, gas will still be at 15-16p/kWh in 2023-24, with all customers expecting further 100% increases on heat/gas and 65% increase on power. While challenging, forecasts show GEC's business model still remains robust, and on target to recover all operating costs in 2023-24 under these assumptions

Financial performance of GEC

26. The cashflow position of GEC has changed significantly since June 2021. The table below shows the main revenue and cost items over the past 6 years, showing the impact of increasing energy prices.

27. However, most importantly, the operating model of the company remains financially sound, as increases in costs can generally be accommodated by increases in revenue. This is testing and proving the financial model well outside the ranges modelled at its outset.

28. Also in the table below, the total revenues, costs, and net profit/loss, for the past 6 years are shown. This demonstrates that despite the early accumulated losses, GEC has now developed its cashflow position, to ensure revenues broadly cover all costs. The focus of business plan development continues to seek new connections to increase profits, to enable negative cash balances to be paid off, and then for profits to be able to be released to the Council, as dividends.

	2016/17 (£000s)	2017/18 (£000s)	2018/19 (£000s)	2019/20 (£000s)	2020/21 (£000s)	2021/22 (£000s)	
Revenue	-323	-1,165	-2,398	-2,413	-2,017	-3,763	
Expenditure	646	1,832	3,015	2,699	1,771	3,917	
Net (Profit)/ Loss	322	667	617	286	-246	154	
Cumulative loss	322	989	1,607	1,893	1,647	1,801	

29. As reported in previous OSC reports, GEC continues to generate significant income streams for Gateshead Council, from the following sources:

- Concession Charge
- Business rates (which are retained 100%)
- Service level agreement income

- Energy cost savings to Council buildings
- Interest charges on overdrafts and loans

30. These income sources fully cover the Council’s annual financing costs of all capital investment in the scheme to date.

31. The longer term financial forecast has yet to be updated, following the energy market increases, as there is little certainty on price forecasts over the coming years, but this will be carried out prior to any next major investment decision.

Part 2. Council energy costs and consumption - update

Background

32. Since 2010, the Council has been delivering its Carbon Management Plan, to reduce energy consumption, costs and carbon emissions. Recently, this has been replaced by the Climate Emergency Action Plan, which now seeks to reduce Council emissions to net zero by 2030, from all its operations and assets

33. To date, progress has been significant thanks to many initiatives which have been reported to OSC before – invest to save energy efficiency measures, operational improvements, property rationalisation, and generation of renewable heat and power for buildings. Notable progress from 2007/8 to 2021/22 is as follows:

- Building electricity consumption cut by 45%
- Building gas consumption cut by 48%
- Streetlight energy consumption cut by 75%
- Council carbon emissions – reduced by 63.6%, due to the following main reasons
 - i. The Council uses less energy, as above
 - ii. UK power now has 54% less carbon emissions than a decade ago
 - iii. The Council generating and supplying low carbon energy to its own buildings – from PV panels, and Gateshead District Energy Scheme

Current Energy Crisis

34. Since Autumn 2021, global events have driven prices of gas and wholesale power to records highs. To put this in context, winter 22/23 prices are forecast as follows:

- Gas - around 18p/kWh, compared to ca. 2p/kwh in previous winters
- Electricity – around 45 – 50p/kWh, compared to ca. 15p/kWh in recent years

35. The Council started to experience significant energy prices increases from Autumn 2021, and cost have increased into 202/23, and are forecast to increase further into 2023/24. The table below shows the actual and forecast costs of gas/heat and power for Council operational buildings (excluding Schools and Housing sites), to illustrate the potential increases:

	2021-22 actual cost	2022-23 forecast	2023-24 forecast
Electricity	£2.0m	£3.6m	£5.8m

Gas/heat	£0.8m	£2.0m	£3.9m
-----------------	-------	-------	-------

36. There are three main ways the Council is limiting the cost impact of increased energy tariffs.

37. **Flexible energy purchasing, through NEPO.** NEPO – the North East Purchasing Organisation - continues to manage energy procurement for the Council, and has a dedicated team, that advance purchase gas and power, to take advantage of low energy prices. In this way, NEPO has limited the exposure of the Council to the full cost of recent energy price increases. Some examples of the effectiveness of this are:

- NEPO had purchased ca. 50% of the energy needs for 2022-23 prior to the recent price rises, limiting the Council's exposure to the recent price rises
- In Summer 22, NEPO was able to sell surplus gas volumes back to the grid, at higher prices, which has kept gas prices through summer at very low prices
- Current energy crisis – 22/23 figures, 23/24 outlook

38. **Energy Bill Relief Scheme** – to support all business, public bodies and charities, the government has put in place this scheme, which will cap the price of gas and wholesale power for all non-domestic users, from 1 October 22 to 31 March 2023. The scheme works in two ways:

- For fixed contracts, it will cap prices at 7.5p/kWh for gas and 21.1p/kWh for wholesale power (both exclude other distribution charges and levies)
- For variable contracts (like the Council's), it will meet the caps above, subject to a maximum discount, which if exceeded, could see prices increase above those caps

39. Due to the good purchasing of NEPO, it expected that the price caps won't be exceeded, however, the details of how the scheme will work are still being put in place.

40. **Purchasing heat and power from Gateshead Energy Company, GEC.** Under supply contracts between the Council and GEC, the Council secures significant discounts on market rates for heat and power. The gradual expansion of the network in recent years means that for Council buildings (excluding schools)

- 11 Council buildings are supplied with power by GEC, accounting for 47% of total building power use
- 10 Council buildings are supplied with heat by GEC, accounting for 29% of total building heat use

41. Financially, the savings arising from discounts to Council energy bill from GEC amount to £320,000 in 2022/23, which will increase further as energy prices continue to rise.

Energy saving measures – operational improvements

42. In addition to the financial measures above, the Council continues to drive forward energy efficiency and generation, to reduce the amount of energy consumed, and generate more renewable energy ourselves. Key interventions are as follows:

43. The pace of the energy cost increases have given little time to accelerate energy saving measures, to be delivered in time for this winter. In addition, the Council is using some of its facilities to support residents this winter by providing Warm Spaces for them to use, where they can't afford to heat their homes. For these reasons, we are not expecting to be able to massively reduce energy consumption this winter from operational changes to buildings.
44. However, all services have been notified of the budget pressures coming, and provided with options to consider for reducing cost and consumption – e.g.
- Reviewing building heating times
 - Reviewing overnight wastage
 - Reviewing internal space temperatures
 - Reviewing behind the scenes plant and equipment, to see where runtimes can be reduced
45. This will allow services to prioritise relevant energy saving measures, so as not to impact their service delivery requirements. Services are supported with data, metering information and advice from the Energy Services Teams.
46. We have also requested Services to target efforts on the Council's largest 17 sites, which combined, account for 75% of total energy consumption of operational buildings.

Energy saving measures – major projects

47. Fortunately, the Council has continued to develop major energy schemes over recent years, some of which are completing around now, to start delivering cost savings and carbon savings, ahead of the price rise this winter and beyond. These are as follows:
48. **Heat Network extensions.** The Council secured £5.4m from the Public Sector Decarbonisation Scheme (PSDS), as 100% grant funding, which has funded a 1.5km extension to Gateshead District Energy Scheme, connecting the following sites to the network. This reduce operating cost, through the discounts offered by GEC to customers. These sites will be connected by end October 2022:
- Shearlegs Road Depot (heat)
 - Park Road depot (heat)
 - Gateshead Stadium (heat and power)
 - Gateshead Academy of Sport (heat and power)
49. **Urban Solar Parks.** Also using the PSDS scheme, the Council secured £3.0m in grants, which has funded the construction of two urban solar parks, as follows:
- Baltic Solar Park – on the SE of Baltic Park, a 2.7MW PV park, comprising 8000 panels, was completed and switched on by 30 September 2022. See Appendix 4
 - Stadium Solar Park – adjacent to the Gateshead Stadium, a smaller 0.9MW solar park has been constructed. This is due to be switched in early November 2022. See Appendix 3.

50. The solar parks are low impact construction, without foundations, on brownfield land, which isn't to be developed for at least 10 years. In this way, the Council has utilised vacant land with an interim use, to generate cost and carbon savings.
51. Combined, both sites will supply green energy direct to Council buildings, through GEC's private network of underground cables. In its first full year of operation, 2023/24, it is forecast to generate net savings (after maintenance and management) of £1.1m/yr
52. **Building Solar PV systems.** In addition to the solar parks, the PSDS funding, along with the Council's own solar programme capital funding, has installed further solar PV systems on Council buildings, as follows:
- PROTO – 50kW installed, operational from November 2021
 - Civic Centre – 191kW installed on a bespoke car port system, operational from January 2022 (see Appendix 2)
 - Multi Storey Car Park – designed to incorporate an additional roof deck to take 240kW of solar PV panels, which will supply the site, including EV charging posts, as well as supplying extra power back into GEC's private network
 - The connection of Gateshead Academy of Sport, with an existing 240kW PV system, will bring surplus power into the private network
53. Combined, these systems will generate savings of ca £200k/yr in 2023/24
54. **Schools energy measures.** Through the PSDS scheme, the Council did secure significant grant funding for energy saving measures in up to 12 schools. However, through design and feasibility, the Council had a number of challenges such as:
- Significant increases in installation costs, compared to grants secured
 - Internal capacity to manage volumes of work
 - Very short timescales to spend funding by the government.
55. As a result, the scope of works had to be reduced, but still achieved the following in 3 schools:
- Connected St Josephs RC Primary School to the district heat network
 - Installed LED lighting in Bede Primary School and Cloverhill Primary in Summer 22
 - Installed new heating system in Cloverhill Primary School, and purchase of an air source heat pump, for installation in Summer 2023.
56. **SALIX invest to save programme.** For the past 10 years, the Council has operated an invest to save fund, which has invested over £4m in energy saving measures to buildings and streetlights. SALIX investment has been paused since lockdown, due to the ongoing review of Assets and Buildings, and capacity has been refocused on delivering the major projects listed above.
57. Going forward, we still have £150k/yr in the capital programme, to invest in energy savings measures, and current projects are focusing on improving the efficiency of domestic heat networks which the Council operates across 7 multistorey blocks.

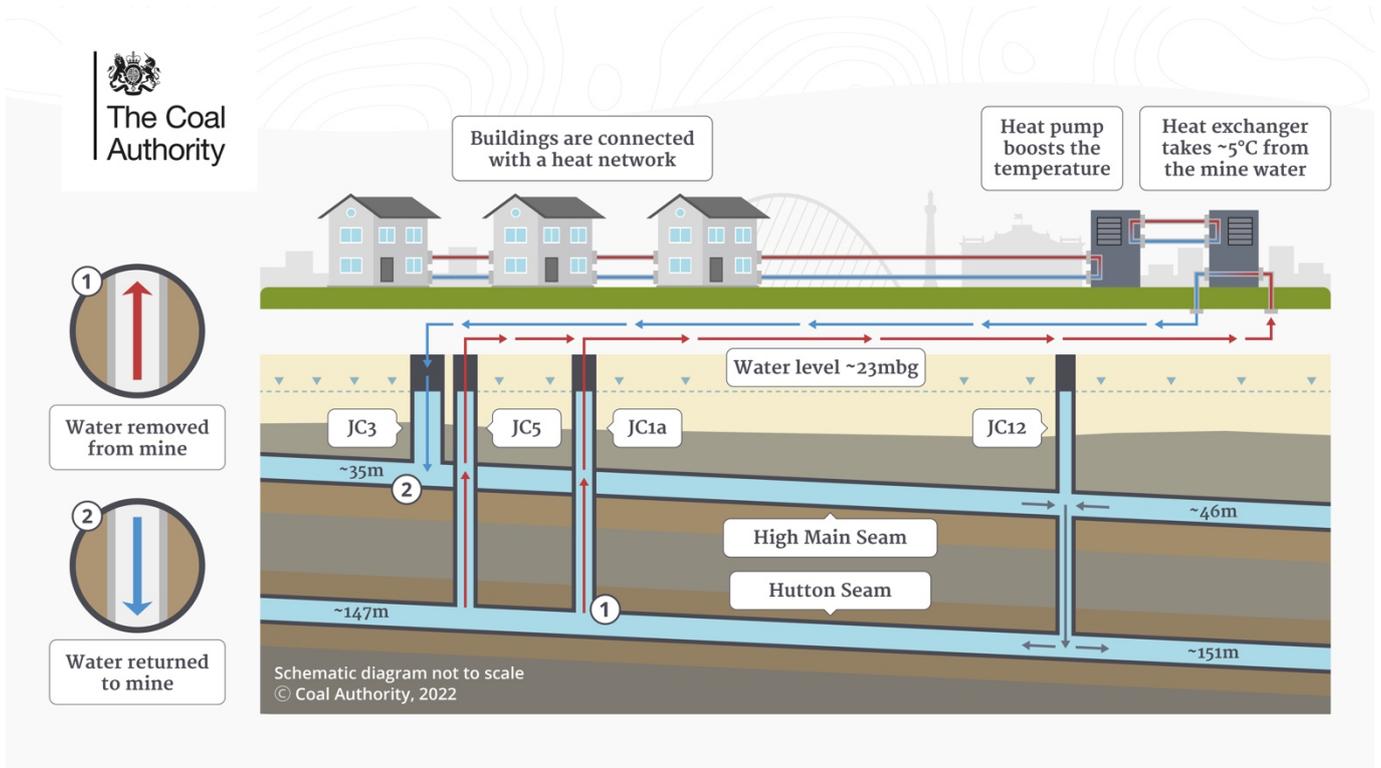
Recommendation

58. OSC is recommended to note the progress in this report and provide any comments or queries for officers to consider and address.

CONTACT: Jim Gillon. Ext 3923

APPENDICES:

Appendix 1. Minewater Heat pump diagram



Appendix 2. Civic centre solar car ports



Appendix 3 – Stadium Solar Park, photomontage



Appendix 4. Baltic Solar Park – mid construction

