Appendix 2

Towards an Energy Security Strategy for Derby City

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Towards an Energy Security Strategy for Derby City

1. Context

The following report has been developed in response to the below Motion which was approved by Cabinet on 25th November 2015.

Notice of Motion: Energy Policy

Moved by Councillor Care, seconded by Councillor Carr

Derby City Council is concerned about the lack of an effective national energy policy, recently demonstrated by the National Grid calling on its 'last resort' option to prevent electrical blackouts early in November and leaked memos indicating that the UK is unlikely to meet its 30 per cent energy from renewables target for 2020.

Council notes that, since the general election, the government is:

- scrapping zero-carbon home standards meaning households will have higher energy bills;
- cutting solar subsidies, and support for community clean energy;
- seeking to sell the Green Investment Bank and remove the requirement for it to invest in green technologies;
- scrapping wind farm subsidies;
- taking nearly £1 billion from the renewable energy sector by changing the climate change levy;
- removing tax exemptions for low emission cars, spending the money on new road building, and;
- being the only G7 country increasing subsidies for fossil fuels.

Derby City Council recognises that energy security is important for existing homes and businesses and key to attracting new business into Derby. Council also reaffirms its commitment to work with others to reduce the city's carbon footprint.

The City Council therefore agrees to develop a local electricity security strategy, working with the private sector to include energy efficiency, renewable electricity generation and electrical power storage. To achieve this, Council agrees to form a member-led, cross-party group with four to eight members, and working with other partners, to report back by March 2016

Motion on Energy Policy approved.

Extract 1: *The city council therefore agrees to develop a local electricity security strategy, working*

with the private sector to include energy efficiency, renewable electricity generation and electrical power storage.

Extract 2: *To achieve this, Council notes the existence of a member-led, cross-party group with seven members, called the Regenerating Our City Overview and Scrutiny Board, and requests that, working with other partners, it considers this matter and reports back by March 2016.*

2. Introduction

Historically, the remit for energy at Derby City Council has sat with the Climate Change Team. The Team has been instrumental in facilitating and enabling a range of energy projects over the past ten years including the Derwent Hydro Scheme and the installation of Photovoltaic arrays on a number of Council buildings. Work also includes numerous energy efficiency projects for both domestic and non-domestic consumers, to reduce energy demand within the city. The Home Energy Advice service has supported thousands of local residents in helping them to reduce their energy bills and the BESPOKE Project (part funded by the European Regional Development Fund), has worked with a range of small businesses in the City to make annual savings of 568,166kWh of energy to help improve the bottom line and increase profitability.

There are a number of areas (listed below) which must be considered alongside 'electricity' to work towards mitigating the effects of climate change and energy consumption on the security of energy (not just electricity) for the city. They are not included in the scope of this report, but should be scrutinised in future plans; they include:

- Heating
- Construction
- Transport
- Climate Change Adaptation
- Planning and Regeneration
- Growth in training and skills for low carbon sector jobs
- Facilitating Community Energy schemes

A key issue for the Council, moving forward, is that the Climate Change Team has fallen victim to budget cuts and thus will cease to exist from 1st April 2016. As such, a new delivery mechanism for taking forward energy related projects must be found. The aim of this report is to outline what work has been undertaken to date in this area along with scoping out what further work needs to be undertaken as opportunities present themselves and additional resources are secured.

3. The Derby Climate Change Strategy

The City's Climate Change Strategy was adopted early 2014 by the Council in conjunction with the Derby Renaissance Board and provides the reference point for this study

The Climate Change Strategy sets outs Derby's ambitions to become a 'greener and more resilient city'. It was created in a way that would encourage residents and businesses across the city to take the lead in tackling the causes and consequences of climate change whilst minimising the level of commitment needed from Derby City Council.

The Strategy sets out six priority themes, one of which is to establish a 'secure local and renewable energy supply'. The ambition that sits under this theme is for Derby to be able to reduce its reliance on energy from fossil fuels through a locally generated, diverse, efficient and more secure energy supply.

Actions set out in the Strategy:

- Develop an Energy Policy for the city.
- Develop a coordinated approach to energy and heat planning and management for the city.
- Promote and support renewable heating and electricity generation in line with the national 15% target for 2020 and the national Renewable Energy Roadmap.
- Develop regional partnerships to attract investment into, and secure research to provide evidence for decentralised energy initiatives.
- Establish developments, small and large, that utilise and support renewable and local energy supply.

4. The National Challenge

The UK is facing a likely energy generation gap, as much of the country's current generating capacity (such as old nuclear and coal-fired power stations) will have to be replaced over the next few years. EU directives mean that around one third of the UK's coal and oil fired generating capacity will have to be decommissioned by 2020, however, according to DECC data, in 2014 the UK electricity mix was 31% coal, 31% gas, 19% renewable and 18% nuclear. A recent Institution of Mechanical Engineers (IMechE) report[1] stated that within a decade, energy demand in the UK will outstrip supply by 40% which could lead to blackouts. With current energy consumption levels set to rise, the UK has neither time nor resources (including skilled experts) to construct enough power plants in the required timescale.

[1] Institution of Mechanical Engineers - Engineering the UK's Electricity Gap, Tuesday 26 Jan 2016 http://www.imeche.org/docs/default-source/position-statements-energy/imeche-ps-electricity-gap.pdf?sfvrsn=0

The Climate Change Team has decided to consider energy, rather than just electricity, because electricity constitutes just 20% of energy use in the UK. Energy used to generate heat makes up 40% and transport fuels are the other 40% of the UK's total energy use.

Government plans to secure the country's energy supply and bridge the generation gap is to maximise the capacity of the four subsea 'interconnector' cables that connect Britain to France, Scandinavia, the Netherlands and Ireland, for both import and export of electricity. Relying on other countries for electricity is not ideal; electricity imports will put the UK's energy supply at the mercy of the markets, weather and politics of other countries, potentially making electricity less secure and less affordable.

The National Grid has observed tighter margins than usual for winter 2015/16, with greater uncertainty over a secure energy supply for 2016/17. OFGEM asserts that the Government and the national Grid must plan for 2016/17 now, and that the risks could be managed by either a strong market response or a continued reduction in demand. As such, the Council should look at generating more of the City's energy locally, and maximising renewable energy production where possible. Alongside this, work to reduce the city's demand for energy must be scaled up.

In November 2015 it emerged the UK was no longer on track to meet its legally binding goal of producing 20% of its energy from renewables by 2020, largely because of slower than expected progress in deploying renewable heat technology. It is foreseen that the significant cuts to energy efficiency budgets will put further pressure on the UK's energy security.

The Green Deal, the Government's mechanism to encourage uptake of energy efficiency measures in both domestic and non-domestic properties, no longer exists. Payment rates for the Government's Feed-in Tariffs (FITs) and Renewable Heat Incentive (RHI) have been cut, reducing incentives for businesses and residents to invest in renewable energy generation.

The Energy Company Obligation which requires energy companies to fund energy efficiency improvements for fuel poor and hard to treat households will be replaced from April 2017. The replacement has not been clearly described, however it is said to be a cheaper scheme intended to save 24 million households an average of £30 a year on their energy bills. The RHI scheme will be reformed in a bid to reduce the cost of the subsidy programme by £700m.

Towards the end of 2015, the Chancellor also announced that energy generation would be excluded from venture capital tax breaks, in order "to ensure that they remain well targeted at higher risk companies". A series of moves to limit energy projects access to tax breaks has been slammed by community energy groups, which have argued that the changes make it harder to raise funds for small to medium scale renewable energy projects.

Following on from the Paris Climate Conference in December 2015, the UK will need to implement a National Climate Plan, acting upon the European Union's target to reduce greenhouse gases by 40% by 2030 compared to 1990 levels. Policies and Plans will need to be in place before 2020, following on from the EU2020 legislation; the period covered by the new Agreement is 1st January 2021 to 31st December 2030.

To summarise, the UK's energy supply is not secure, with real potential for blackouts in the near future. The Government's plans to bridge the generation gap still need work, and Derby City Council

has a role to play in supporting the UK towards meeting its overall carbon reduction and renewable energy targets, which will need to be more ambitious to meet the agreements from the Paris Climate Conference. However, set against a backdrop of the Government's on-going cuts to the majority of major mechanisms to encourage the uptake of renewable energy generation and energy efficiency measures, and a focus still on energy sources (such as nuclear) which are less than sustainable, securing the country's energy future will be a significant challenge.

Appendix 1: Paris Climate Conference COP21 Outcomes Summary

5. Existing schemes within Derby City

Derby is a mid-sized city with very limited space. Development is dense and population density is high. This, unfortunately, rules out solutions such as large scale wind or solar farms to produce energy. Other low carbon technologies such as Combined Heat and Power (CHP) linked to district heating have also been investigated through city-wide feasibility studies; however the high capital cost and long term return make this an unattractive prospect in the current financial climate. A great deal of work on energy efficiency and supply has taken place over the last ten years, including the below initiatives.

5.1 Energy from Waste

An Energy from Waste plant is currently being constructed in Derby, which is expected to be complete by the end of 2016. The 12MW waste plant will take Derby's residual waste, remove recyclable materials such as metal and plastic, dry the remaining waste and then burn it to produce energy (enough to power 14,000 homes). The plant will reduce pressures on landfill sites, reducing greenhouse gas emissions and costs to the local authority and will use the energy it generates to power the plant, reducing pressures on energy networks and adding further savings to Derby's greenhouse gas emissions.

5.2 Wind Turbines

5.2.1 Derby City Council

The Council undertook a study to identify opportunities for large scale wind generation projects on the Council's own land with the Carbon Trust in 2010. The study identified three potential sites; each could accommodate a single 2.5MW wind turbine. The Carbon Trust stated that a single turbine operating with a 30% capacity factor could generate 6.5GWh of electricity per year, which is equivalent to the power used by 1,300 homes. The partnership with the Carbon Trust did not continue through to developing the sites, largely because the economic viability of the sites was marginal. In Derby the average wind speeds are considered to be close to the 6m/s marginal figure below which the business case does not provide a high enough return. In addition the planning constraints of the three sites were deemed too difficult to overcome, and without erecting two or more turbines, the Council could not access the economies of scale for the project.

5.2.2 Severn Trent Water

Severn Trent Water has erected two wind turbines at their site in Spondon. Each turbine has a rated capacity of 2.5MWh, enough to power 750 homes. Severn Trent was focusing on reducing their

energy demand, due to the financial and environmental costs. The company is keen to produce its own energy to:

• reduce its reliance on grid electricity which will minimise the impact of rising fuel costs;

• improve energy security;

• help to reduce costs for itself and its customers;

• lower the impact on the environment by reducing carbon emissions from energy derived from fossil fuels.

The Climate Change Team ran a community engagement project with Severn Trent from 2013 to 2015. The Low Energy Neighbourhoods Water and Energy Efficiency Project provided up to date information about the turbines and offered home energy and water efficiency advice for local residents to help tackle the issue of fuel poverty. Engagement activities included community events, home visits, advice surgeries and training sessions.

5.3 Hydroelectric Power

Derby City Council developed a hydroelectric power plant on the river Derwent in 2012, to generate around 50% of the electricity needs of the Council House. The plant has a generating capacity of 230kW, with a potential to generate 1.2m kWh per year (enough to power 300 homes). The scheme generates around £138,000 through the Feed-in Tariff and an additional £60,000 from selling excess electricity back to the local grid each year. This will help ensure that the prudential loan used to fund the development will be repaid within 25 years.

The Council also owns Black Weir, which it has leased to a private company, Derwent Hydroelectric Power Ltd. This company will develop a hydroelectric power plant at the site, and the Council will receive income from the leasing of the land.

5.4 Solar Photovoltaic Panels

Derby Homes has installed solar photovoltaic panels on 950 of their properties (various system sizes depending on the size of roof). For the last year, (January 1 2015 until December 31 2015), the panels generated 2.04 million kWh of electricity, enough to power 485[2] homes for a year. The £6 million partnership scheme between Derby Homes and Derby City Council makes annual savings of 1,000 tonnes of carbon and £100,000 a year for residents through free electricity meaning cheaper bills. Derby Homes receives around £800,000 each year (for 25 years) from FITs for generating energy and selling excess back to the grid, which is ploughed back into improving properties and building new homes.

The City Council has installed 230 solar photovoltaic panels on Springwood Leisure Centre (11.05kWp), which generate approximately 7,578.48kWh of electricity per annum. Energy generated is used on-site, with any excess electricity being sold back to the grid. The Council also owns a 17.5kW solar photovoltaic array on the roof of the Council House, which yields an estimated 14,588kWh of electricity per year. This electricity is mostly used to power the Council House, with any excess being sold back to the grid.

The Phillip Whitehead Memorial Library in Chaddesden Park has a 23.75kW solar photovoltaic system, which generates an estimated 511kWh per year. The new Library building was completed in February 2013, with the solar panels being a key part of the building design. Electricity generated by the panels is used at the Library, with excess sold back to the grid.

From these four systems, the city is generating around 2,023,077.48kWh of electricity every year; enough to power 500[2] homes. The Council also has a solar PV panels on Friar Gate Studios, and Derby Homes has a solar array on Milestone House, however it has not been possible to obtain data on these systems at the current time.

6. Schemes in neighbouring cities

In order to benchmark any schemes initiated by the Council, it is essential to look at what other cities in the area have achieved. Many of Derby's nearby cities have instigated energy generation or energy efficiency initiatives; Derby could use the experience of these cities, taking their key lessons into account and working to their identified best practices.

6.1 Nottingham

Locally, Nottingham City Council has a significant district heating network (68km of network) and hydroelectric power. The Council also launched Robin Hood Energy on September 7 2015, the UK's first local authority owned, fully licensed gas and electric suppliers. The company is wholly owned by the Council, with a Board of City Councillors. The company is not-for-profit and operates throughout mainland UK. Currently, services are aimed primarily at the domestic sector; however a commercial tariff will be launched on April 1 2016. The organisation's key drivers are: reducing fuel poverty; not disadvantaging those on pre-payment meters; and delivering great customer service. Currently the energy supply comes from wholesale trading, however year three of the business model factors in CHP and local solar energy.

6.2 Leicester

Leicester's city-wide district energy scheme generates 100,000,000 kWh of heat energy and saves 12,000 tonnes of CO2 per year. It provides heat and electricity to a core scheme of 32 administrative buildings and over 2,900 residential consumers. The Leicester District Energy Company is operated by Cofely District Energy Ltd who invested £15m, in partnership with Leicester City Council and the University of Leicester (which are also the core customers of the scheme).

Planning Policy from Leicester City Council, which introduced a requirement to connect if close to network and set the district energy scheme above renewable requirement was central to the success of the scheme.

[2] DECC Sub-National Energy Consumption Statistics 2014 state that the average (median) domestic household consumes 4,088kWh of electricity per year:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/489723/Sub-national_electricity_and_gas_consumption_summary_report_2014v2.pdf

6.3 Sheffield

Sheffield's District Energy Network is the largest in the UK, with 45km of pipeline installed across the city. The Energy Recovery Facility can generate up to either 45MW of thermal energy for District Energy or 21MW of electrical energy for the National Grid. The network provides for all the heating and hot water requirements of over 140 buildings.

6.4 Birmingham

Birmingham is investing in combined heat and power, solar photovoltaic, and ground source heat pumps. The CHP scheme was delivered by the City Council and Utilicom Ltd and owned/operated by Cofely District Energy. The first phase of the scheme in the Broad Street area of the City Centre was fully operational by October 2007. In 2008 Aston University joined and in 2010, Birmingham Children's Hospital also connected to the network. The scheme provides electricity, hot water for heating, and cold water for cooling for many of Birmingham's major buildings, including the National Indoor Arena, New Birmingham Library, The RepTheatre and the International Conference Centre. Heat supply alone is predicted to save around 68% of carbon emissions, compared to a conventional boiler system. The Councils' Energy Savers programme has installed solar photovoltaic panels to thousands of the Council's housing stock (with an original target of 10,000 homes).

7. What are other medium sized cities doing?

It is also useful to look at energy schemes across England, within other medium-sized cities. This gives an idea of potential options for Derby.

7.1 Hull

http://energyworkshull.co.uk/

Hull Energy Works – creating a Renewable Energy Generator on a brownfield site (part funded by £20m ERDF) to power 43,000 homes (a third of total homes in Hull). The generator will combine low carbon technologies (including gasification, anaerobic digestion and solar photovoltaic panels) to process 250,000 tonnes of waste per year, producing electricity and biomethane and saving around 30,000 tonnes of carbon per year over conventional energy generation. The facility has been designed to be CHP ready, so that equipment can be retrofitted to allow heat offtake at a later date, to help satisfy future heat demand. The plant should be operational in 2018 and the site will pay an estimated £1,250,000 of business rates per year.

7.2 Portsmouth

Portsmouth City Council Community Energy Scheme was implemented in 2002 and features a CHP system and a community heating network, serving 538 homes, two schools and an arts and sports centre. It is estimated to save 424 tonnes of carbon per year, whilst also making cost savings for residents and the Council.

Portsmouth Energy Recovery Facility has been in operation since 2005 and processes non-recyclable household waste to generate up to 14MWs of electricity to the National Grid; enough to supply

20,600 homes. This facility is in an urban location, on an inner city industrial site situated next to Portsmouth MRF.

7.3 Plymouth

This Energy from Waste and CHP plant is located in Devonport Naval Base. It generates electricity, which is mostly used by the dockyard and naval base, with the remainder being sold back to the national grid. The plant also generates a significant amount of heat which is used by the dockyard and naval base, with future potential to add houses and local offices to the network.

7.4 Southampton

The city-wide district heat and energy scheme, operated by Southampton Geothermal Heating Company, generates 70,000,000 kWh of energy and saves 11,000 tonnes of CO2 each year. The system provides heat, chilled water and electricity to more than 45 commercial consumers and over 800 residential consumers. Commercial consumers include the City Council, IKEA, a leisure centre, TV studios, a hospital, a University, a hotel, a shopping mall, and a port.

8. Opportunities for Derby City

The Council first should commission an in-depth study of energy opportunities in the city, with a full Energy Strategy as a final product. Nottingham City Council has had its own energy strategy since 2010, which covers the period from 2010-2020. Derby City Council needs to consider the issues around energy efficiency, generation and security in a strategic manner, so as to plan for the future needs of the city and to contribute to the UK's progress as a whole. The following section looks at potential opportunities for further work, which would likely be identified and investigated by the in-depth study, to secure the city's energy supply.

8.1 CHP/ District Energy

Combined Heat and Power (CHP) or District Energy plants operate at 70-85% efficiency compared to typical power stations (25-35%). Heating, and potentially cooling, is piped to buildings, with heat losses of 1°C per km of pipe. Electricity is also provided by the plant.

District heating schemes are not regulated in the UK, which tends to reduce the size of feasible schemes, due to expense and disruption when installing pipes. It would be prudent to plan to develop smaller schemes which can later be merged into larger schemes within the City. To improve a CHP plant's productivity, an anaerobic digester could also be included to produce energy from organic waste.

A District Energy Study was carried out by ICE (UK) Ltd for the Council in 2013. It identified, in priority order, the best publicly owned sites to include in a District Energy Network. The most viable option was to link the Council House, the Assembly Rooms and the planned swimming pool next to the council house. Due to the fire at the Assembly rooms and the planned swimming pool being stopped, this option can no longer be pursued, particularly as the main CHP engine was to be situated within the swimming pool building, and the pool used as the main heat sink.

The study did identify other options, but the funding gap and level of disruption to implement these schemes in different areas of the city, make them unattractive. A key learning point for the Council is that in planning future development, a district energy and heat network needs to be designed in before the construction phase, as it makes the system both cheaper and more efficient than when retrofitted. Also, CHP systems work best for multiple dwellings (e.g. blocks of apartments) rather than single dwellings; this should also be considered when planning future developments in the City.

8.2 Local Energy Company

Derby City Council could follow in the footsteps of Nottingham City Council with the creation of a Council-owned fully licensed energy company, offering a special tariff deal to City residents, but also supplying a wider area. Nottingham City Council is happy to share their learning points from their journey to create Robin Hood Energy. The Council purchased a 'supplier in a box' commercial model, a company which already had a full energy supply license. Setup costs were around £2 million and the staff costs (the project used almost exclusively internal Council staff) were around £200,000 for the 18 month set-up period.

Robin Hood Energy keen to partner with local authorities and housing associations. They offer a number of options, from a switching partnership to white label branded, fully or partially managed options. Derby City Council could, as an alternative to starting an energy company, look to partner with Robin Hood Energy to secure better rates for local residents. Derby Homes could also partner with Robin Hood Energy to provide void supply to their properties, particularly those with prepayment meters, so as not to disadvantage residents when tenancies change. Robin Hood Energy also offers a range of highly competitive prepay meter options and provide monthly billing to allow residents to budget more easily for energy costs. This particular focus on cheap, fair tariffs for prepayment meters is intended to help address some of the most fuel poor residents in the City and the country as a whole.

8.3 Solar Photovoltaic Panels (PV)

Some public housing has been fitted with solar PV; however there is a significant amount of unused commercial roof space in the city.

A survey of the potential for solar PV was conducted in 2013 by Bluesky International Ltd on behalf of the Council. Bluesky used mostly aerial data to assess which commercial rooftops in the city would be suitable (orientation, pitch angle etc.) for solar panels. This information can then be used to calculate the total solar potential for the city centre, which would allow the Council to decide whether to proceed with a plan for installing solar panels on the suitable rooftops. The data from the survey was supplied to the GIS Team, however there has been no resource allocated to process the data into a useful format for assessment. In order to ascertain the solar potential of Derby city rooftops, the Council will need to either:

- allocate internal resource;
- pay Bluesky to continue with the project;
- consider offering the task as a work placement or project for a Masters Degree student.

8.4 Further Hydroelectric potential

Water is the most efficient natural moving force for generating energy; it is around 80% efficient, compared to solar (12%) and wind (25%). Even gas fired power stations are only 50% efficient on average. The proximity of the River Derwent provides an opportunity to assess further hydroelectric potential at other riverside sites within the city. It is worth noting that a hydro plant does not have to directly power sites in close proximity to a river. As long as there is viable access to an electricity sub-station, the system can stand alone and feed electricity into the National Grid.

A desktop study into hydro potential on the Derwent was carried out in late 2012. Besides the Longbridge Weir and Black Weir locations, only one other site was identified for potential hydro. This site, at Darley Abbey, only had low viability, largely due to cost.

8.5 Water Source Heat Pumps

Water Source Heat Pumps (WSHPs) are particularly useful for providing large scale heat in densely populated urban areas.

This map shows the potential for WSHPs along the River Derwent[3]. The Council House is circled in blue. The map shows that the River Derwent has high potential (21,000 - 59,000kWh, the second highest capacity grade) for providing heat as it passes through the city. It would be worth investigating whether the city could provide heating and cooling via the river water to reduce gas consumption for heating (most gas in the UK is used for heating) and electricity consumption for cooling.

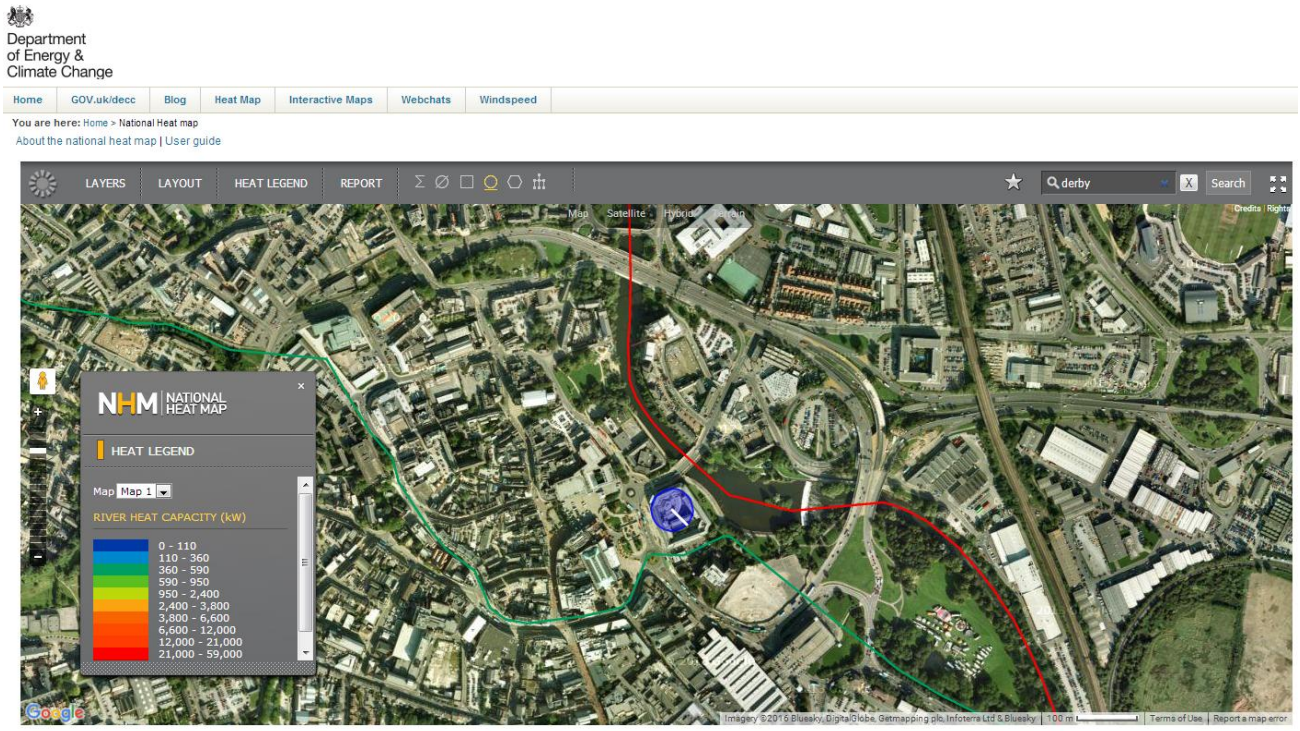

Figure 1: Department of Energy and Climate Change Interactive National Heat Map

[3] Department of Energy and Climate Change Interactive National Heat Map http://tools.decc.gov.uk/nationalheatmap/

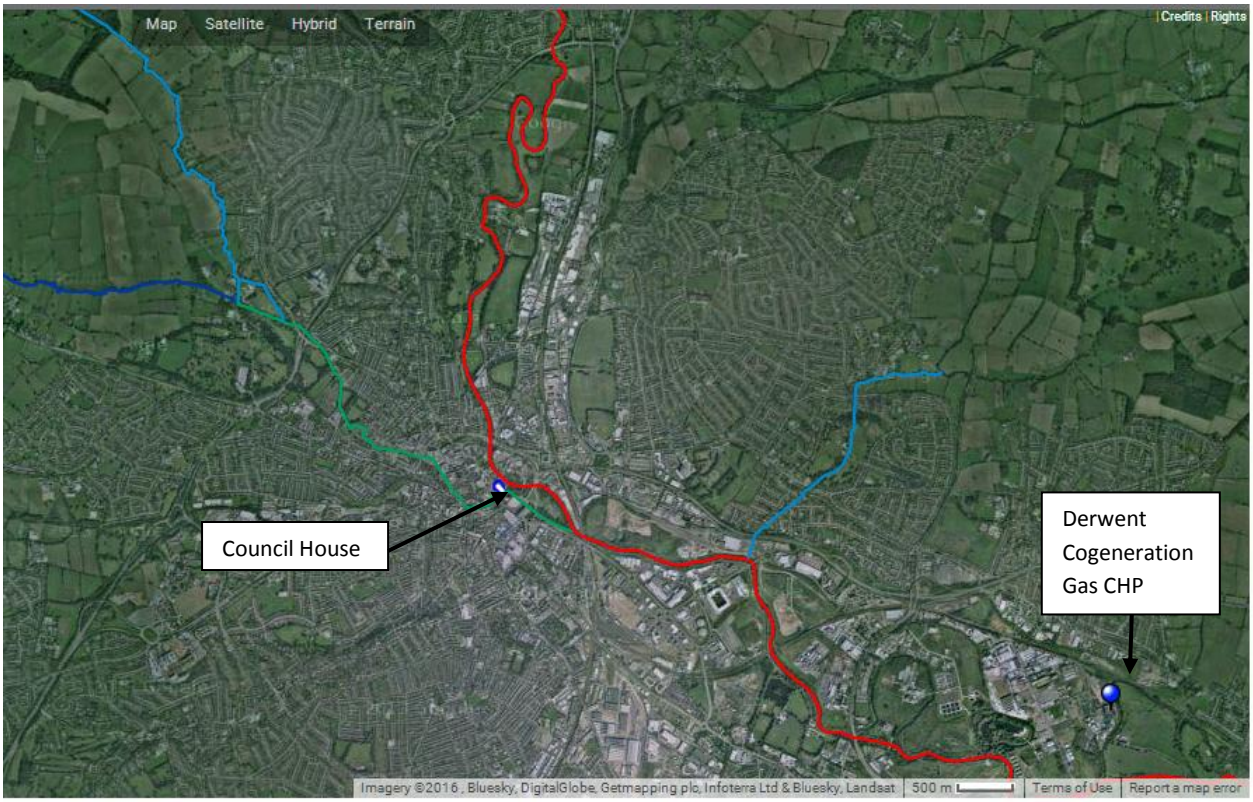

Figure 2: Department of Energy and Climate Change Interactive National Heat Map

8.6 Supporting businesses to reduce energy consumption

The Climate Change Team has run a number of valuable projects to help reduce commercial energy demand and improve energy efficiency awareness among the business community. A recent example is the BESPOKE project, which ran for three years, increasing energy efficiency and also equipping some SMEs with generation capacity such as biomass boilers or solar photovoltaic panels. Since its launch in October 2012, BESPOKE engaged with more than 130 Small and Medium sized Enterprises and provided over 1,090 hours of advice and assistance. 32 organisations received grants, totalling £148,000, and 11 businesses were assisted with two days of free energy efficiency support (such as audits) through officer time and more in-depth consultancy assistance.

Following on from the successful BESPOKE project, the Council has taken an active role in applying for a follow-up project with even greater potential. The Derby and Derbyshire Energy and Efficiency project (D2EE) is a comprehensive low-carbon support and energy efficiency grants programme for small and medium sized businesses across Derby and Derbyshire. It will run for three years from April 2016.

The project enables businesses to:

1. improve their competitiveness by reducing their energy costs;
2. attract new customers through networking events and activities;
3. improve their own green credentials enabling them to access low-carbon supply chains.

D2EE will reduce the energy consumption and carbon emissions of business activities, products and

processes by providing energy efficiency audits and grants (up to £15,000), access to state-of-the-art equipment and cutting edge technical expertise to foster improvement and innovation.

It is also important to **e**ngage big local players such as Rolls-Royce, Bombardier, Toyota and other significant procurers, employers and energy users in both the private and public sectors (e.g. NHS, University).

8.7 Supporting residents to reduce energy consumption

Derby City Council currently has a dedicated Home Energy Advice Service (DHEAS), which has a long history of working with residents across the city though individual and area based support and through a dedicated Derby Home Energy Advice line. The team has run many Low Energy Neighbourhood schemes, tackling cold homes and fuel poverty across the city, though insulation projects, boiler replacement and advice to residents. The most recent was a partnership project with Severn Trent Water and offered a dedicated energy and water saving advice service to residents in Alvaston, Chaddesden and Spondon. During the project, more than 1500 people were assisted to lower their energy bills and get help to stay warm in their homes.

The Derby Home Energy Advice Service will cease to function from April 2016 and as such Derby City Council will not have the capacity to run dedicated energy efficiency projects and an energy advice line for residents in the city. For vulnerable residents, Derby City Council will continue to offer support through the Healthy Housing team which delivers work to help prevent, delay or reduce the severity of harm arising from health or wellbeing risk in the home. The service does not actively target those needing assistance on energy related issues, however does assist the most vulnerable people when there are heating or housing issues.

Until April 2016 the DHEAS will continue to run the Energy Advice line and will support the CCG funded Stay Warm and Healthy partnership which includes a number of different partnership projects aimed at helping vulnerable people during the cold weather including help with heating and energy advice.

9. Recommendations

The key recommendation and first step is to commission an in-depth study and produce an Energy Strategy for the city. Without a medium to long term vision for the city, and a plan to achieve the vision, progress will likely be piecemeal and ineffective. Nottingham City Council's Energy Strategy is an excellent example of what Derby should look to achieve. There are four key areas, all of which the Council has already conducted a considerable amount of work on, which can be further developed through a detailed study and resulting Energy Strategy:

1. potential to harness the River Derwent for heat and power;
2. consider opportunities for District Energy/CHP schemes in future developments; maximise the efficiency of any District Energy scheme (e.g. include anaerobic digestion in the plant);
3. complete the assessment of solar photovoltaic generation capacity for the city;

4. work with the University of Derby, Derby College and other education institutions to ensure that appropriate courses and work experience are available to students, to ensure that the necessary local skills and knowledge are available to help tackle the energy challenge over the next decade.

Energy security should be factored into future plans for the city, including in construction, planning and transport. The council could look to projects such as iBuild for innovative ways to plan and fund sustainable infrastructure development; an example is the 2015 Local Electricity Supply report, which explores the business models and value opportunities for local electricity supply.

Energy is necessary for all residents and organisations in the city; as such its security and sustainability should be a priority. The challenges of reducing carbon emissions and dealing with or preparing for the effects of climate change are global issues, which need to be combatted on a local scale. As such, the Council should ensure that where possible, resources are channelled towards these key issues, both now and in the future.

10. Appendices

Appendix 1: COP21: The Paris Climate Agreement – A Summary

In December 2015, at the Paris Climate Conference, 195 countries adopted the first ever universal global climate deal. The Agreement will enter into force in 2020.

10.1 Key Points in the COP21 Agreement:

1. The text emphasises the need to keep warming (above pre-industrial levels) "well below 2^{o}C", with all parties "pursuing" efforts to keep warming below 1.5^{o}C.

2. Every five years, a 'stocktake' will be carried out to review how well each party is delivering on their climate plans, setting more ambitious targets where possible and tracking progress towards the long-term goal.

3. Issues of "Differentiation" and "Loss & Damage" included.

    - Differentiation – recognising the difference between developed and developing countries in terms of contributions, commitments and finances.

    - Loss & Damage - the idea that compensation should be paid to vulnerable states for climate-related events that they cannot adapt to.

4. No clear timescale of when fossil fuels will be phased out.

10.2 How much of the Agreement is legally binding?

Some of the Agreement is legally binding within the United Nations framework. The regular review and submission of emission reduction targets will be binding.

So too will the $100bn per year fund from developed economies to help emerging and developing nations decarbonise their energy mix - which means moving away from burning fossil fuels to clean energy sources, such as renewables and nuclear (until 2025 when a new collective goal will be set).

What won't be legally binding will be the carbon emission targets. These will be determined by nations themselves. This relates back to the 2009 climate summit in Copenhagen. Observers say the attempt to impose binding targets on countries then was one of the reasons why the talks failed.

In Paris, a number of big emitting emerging economies - including China, India and South Africa - were unwilling to sign up to a condition that they felt could hamper their economic growth and development.

Within the agreement the emissions targets are known as Intended National Determined Contributions (INDCs). To date, 188 countries have submitted their INDCs. Observers have calculated that all of the targets, if delivered, will only curb warming by 2.7C. This is well above, not well below, the 2.0C goal of the Paris Agreement.

10.3 What must the UK do?

The UK will be required to contribute a portion of the $100bn fund to help developing nations; it is not yet clear exactly how much the UK must contribute.

The UK will need to implement a National Climate Plan, acting upon the European Union's submitted INDC on behalf of the 28 Member States. The INDC target is reducing greenhouse gases by 40% by 2030 compared to 1990 levels. Policies and Plans will need to be in place before 2020, following on from the EU2020 legislation; the period covered by the INDC is 1st January 2021 to 31st December 2030.

View the EU INDC Document