Report of the Executive Director Core Services
and the Executive Director Place,
to the Overview and Scrutiny Committee (OSC)
on 16 July 2019

Energy Efficiency and Pollution Reduction

1.0 Introduction

1.1 The purpose of this report is to inform the Overview and Scrutiny Committee (OSC) of Barnsley Council's current Energy Strategy 2015-2025 (Item 4b - attached) and progress toward its targets, including wider but linked activity around the themes of affordable warmth, air quality and moving toward a zero carbon borough by 2050.

1.2 This report identifies the successes of the existing Energy Strategy 2015-2025 in reducing the Council emissions of Carbon dioxide (CO_2). However, it also identifies the need to refresh its targets and delivery plans in line with the Intergovernmental Panel on Climate Change (IPCC) recommendations and new national legislation to net zero carbon by 2050.

1.3 In moving to a zero carbon borough, residents will be able to live in a cleaner environment, be more active and live in homes that are warmer and cheaper to heat. There will be opportunities for the borough's residents to work in new industries with opportunities that are highly skilled and it will be an ambition that the borough welcomes many of the new small and medium enterprises who specialise in low carbon technologies.

1.4 Barnsley Council's role initially is to be an exemplar of how to transition to a zero carbon borough, but its main challenge is supporting the borough in the much more difficult challenge of its journey and to ensure that the benefits of, and access to, the opportunities of decarbonisation are retained by its residents.

2.0 Background

What is Carbon and Why is it Important?

2.1 Carbon dioxide (CO_2) is one of a group of gases known as 'greenhouse gases'. Greenhouse gases (GHG) also include gases such as methane, nitrous oxide, ozone, and hydrofluorocarbons. The main source of greenhouse gas emissions is the combustion of fossil fuels such as coal, petrol, diesel, or natural gas. Coal (higher CO_2) emits more carbon than petrol or gas (lower CO_2).

2.2 These gases persist in the atmosphere, and an increase in the concentrations of these gases in the atmosphere is proven to cause an increase in global average temperatures, commonly referred to as global warming.

2.3 Global warming is an incorrect term in describing the impact of CO_2, more accurately it should be known as climate change. As the planet warms, existing weather patterns will change, the UK will have warmer, wetter weather; in other parts of the world it will create drought and the melting of the ice packs will mean rising sea levels.

2.4 To prevent these wide scale impacts, efforts are being made nationally and internationally to reduce the level of CO_2 which is emitted in our daily lives, which will require a wholesale shift in how we live.

International, National and Local Response

2.5 Published in October 2017, the Government's 'Clean Growth Strategy: Leading the Way to a Low Carbon Future' report, focusses on the three key areas of: reducing CO_2; keeping supplies secure (keeping the lights on); and ensuring energy remains affordable.

2.6 The IPCC (the United Nations body for assessing the science related to climate change), published a report in October 2018 recommending that the growth in global temperatures should be limited to

1.5°C, and that this would require rapid, far-reaching and unprecedented changes in all aspects of society.

2.7 The IPPC recommends that to keep the rise in the global temperatures within the 1.5°C upper limit, global emissions of CO_2 need to be reduced by 45% of 2010 emissions by 2030 and to be net zero by 2050. Net zero emissions (or carbon neutrality), refers to a reduction in emissions and that any CO_2 that is emitted is offset through programmes such as planting trees. This differs from zero carbon, which means no CO_2 is released. The UK's Committee on Climate Change (CCC) has also advised the Government to legislate to be net zero carbon by 2050.

2.8 Since November 2018, and following the IPCC report and the actions of climate activists, over 70 UK local authorities have declared climate emergencies as a means of galvanising the support for the climate change agenda at a local level. They mostly have promoted the idea of being zero carbon within specified time periods.

2.9 Barnsley Council's Energy Strategy (2015-25) has an existing commitment to be zero carbon in its operations by 2040. Being zero carbon rather than net zero carbon is a significant positive commitment. In relation to the borough's overall emissions, the Council is a relatively small emitter of CO_2 (2%). However, it can facilitate and enable the aspirational transition to a zero carbon borough by 2050.

2.10 In June 2019, the UK became the first major industrialised economy to legislate to become net carbon zero by 2050.

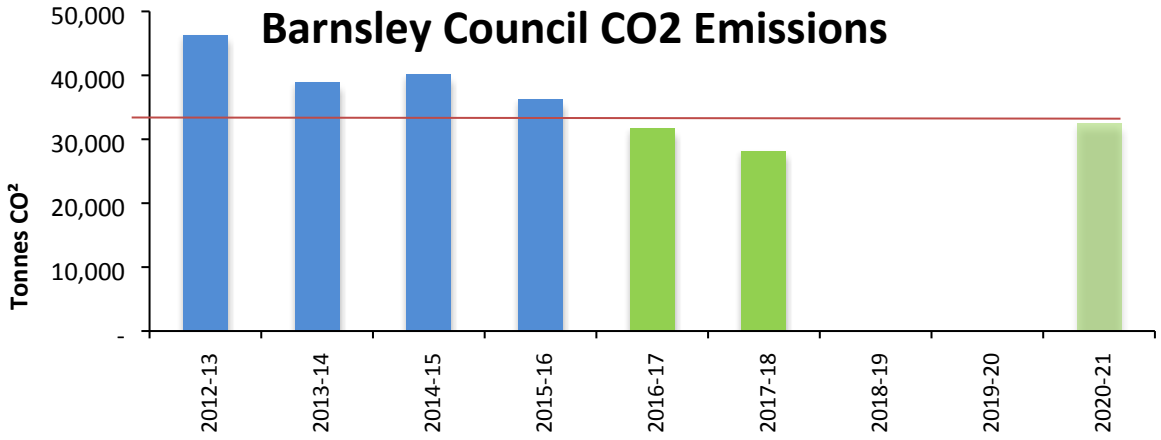
3.0 Barnsley Council's Energy Strategy 2015-2025

3.1 The Council's existing Energy Strategy has three broad targets:

- to be zero carbon by 2040
- to reduce the carbon emissions from its operations
- to generate more of its power from renewable sources

Reducing the Council's Carbon Emissions

3.2 The Council's Energy Strategy sets a target for the Council to reduce the carbon emissions from its operations by 30% from a 2012/13 baseline by 2020/21. As the table below shows, the current target was achieved in 2016-17, and the current decrease is closer to 40%, which is very positive news.



3.3 The decrease in emissions has been largely driven by two factors; rationalisation of the asset base and also the greening of the electricity supply grid. Under the current method calculation, significant assets such as Barnsley Premier Leisure managed sites are not included in overall carbon emissions.

3.4 Decarbonisation of the electricity supply network has had a significant effect on our carbon emissions (estimated to be approximately 20% of total CO_2). This is delivered by national infrastructure such as offshore wind farms.

Energy Efficiency

3.5 Energy efficiency covers any action taken to: reduce the consumption of energy; the reduction of energy via insulation; and better equipment. This should be considered before the installation of renewable technologies.

3.6 Some actions are behavioural or operational, such as reducing the temperature setting for a heated space, or using stairs instead of a lift. Other measures involve replacing energy consuming equipment with a more efficient version. Research shows that implementing energy conservation measures can reduce total energy consumption by up to 15%.

3.7 In order to improve energy efficiency and reduce carbon emissions, the Council has joint funded a Recycling Fund with SALIX to the value of £405,000, which is ring-fenced for use on energy efficiency projects. Capital can be borrowed to fund projects which result in an annual saving on energy costs. This saving is then used to repay the amount borrowed until the project cost is repaid; becoming available for further projects. Once the borrowed amount is paid, any further savings are reflected in annual running costs.

3.8 Notable projects that have taken advantage of the Recycling Fund include:

- In 2010 £170,000 was spent improving lighting and pipework insulation in the Town Hall and introducing a building management system (BMS) to control energy usage more effectively. These measures save an estimated £35,000 annually.
- In 2017 £50,000 was spent improving lighting at a number of business centres. These projects resulted in a cost saving of £11,000 annually.
- In 2018 £120,000 was used to replace lighting in Gateway Plaza with light-emitting diodes (LED) lighting. This project resulted in an annual cost saving of £17,500.

Increasing the Council's Use of Renewables & Low Carbon Technologies

3.9 Renewables are sources of energy that do not diminish with use, as opposed to fossil fuel sources which are finite. Examples are solar photovoltaic (PV) panels that convert sunlight into electricity, and wind turbines that use wind power to generate electricity. These sources produce significantly lower carbon emissions than fossil fuels.

3.10 Barnsley Council has five solar PV installations on the roofs of existing Council owned buildings which attract the feed-in tariff (FiT) (payments for generating renewable electricity). During 2018-19 these sites generated 68,000 kWh (kilowatt hours) of electricity which would have cost £10,000 if purchased from the grid as well as generated £7,000 in FiT subsidy payments. In addition, through the Energise Barnsley scheme (a community benefit energy society which aims to deliver community owned renewable energy, energy efficiency and energy supply projects), 15 Council owned buildings have benefitted from free installation of solar PV panels which resulted in lower energy costs and reduced levels of CO_2 emissions from its buildings.

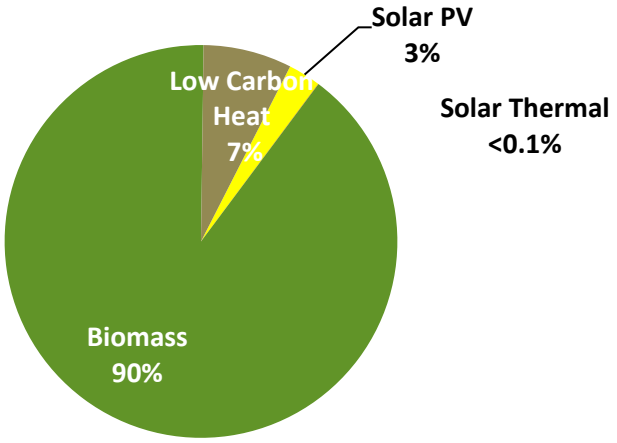
3.11 Low carbon sources of energy are technologies with a very high efficiency and/or those which produce very low levels of carbon emissions. High efficiency technologies include heat pumps which use chemical processes to produce heat from a relatively small electricity input. Low carbon technology also includes the installation of gas powered combined heat and power plans (CHP). The Council is in the final stages of procuring a gas CHP to replace the existing coal powered boilers at the Metrodome, this will save money, significantly reduce CO_2 and improve local air quality.

3.12 Technologies such as biomass (burning plant matter) also count as low carbon, as the carbon they produce is largely offset by the naturally occurring capture of carbon in the fuel as it grows. 11 secondary schools have biomass boilers installed, making significant reductions in CO_2 emissions.

3.13 The Energy Strategy sets out a target for the Council to generate 20% of the energy used in its operations from on-site renewable sources by 2020/21. To meet this target, the Council has installed capacity of 21,050 MWh (megawatt hours, a megawatt is 1,000 kilowatts) of renewable and low carbon generation, capable of producing up to 22% of its total energy consumption.

3.14 The chart below shows the current split of technologies that make up that 21,050 MWh of generation capacity. The vast majority is provided by biomass installations and low carbon heat, which includes technologies such as ground source (absorb solar energy) and air source heat pumps. Approximately half of the biomass capacity is in the modern secondary schools and the other half is in Berneslai Homes' communal heating schemes.

Renewable and Low Carbon Mix



3.15 Final figures for the 2018-19 reporting year are still outstanding although the estimated total percentage generated from on-site renewables is expected to be 13%. This figure is lower than the 2017-18 reporting year total of 17%, despite the total energy consumption decreasing. The cause of the poor performance has been mechanical failures during the reporting year at the majority of the secondary school installations.

3.16 These have now been rectified and performance in the first quarter of 2019-20 is improving and performance exceptions are being carefully managed with the schools' Facilities Management Teams to ensure that installations are repaired quickly.

3.17 Key projects going forward will include the reduction of demand in Council sites through insulation and more efficient equipment; plus an increase in available renewables. The Glassworks development is an example where measures to reduce energy demand (via good design) and renewable generation (solar PV and thermal) have been built into the project, further schemes could also include projects to deliver solar farms; utilising battery technology; and district heat schemes.

3.18 Berneslai Homes has deployed a variety of renewable technologies within their social housing schemes. They have been successful and have resulted in cost savings to households and reductions in CO_2. (More details of these schemes can be found in section 4.0 of this report).

Fuel Poverty

3.19 Another key target for the Council in the Energy Strategy 2015-2025 is reducing the impact of fuel poverty in the Borough.

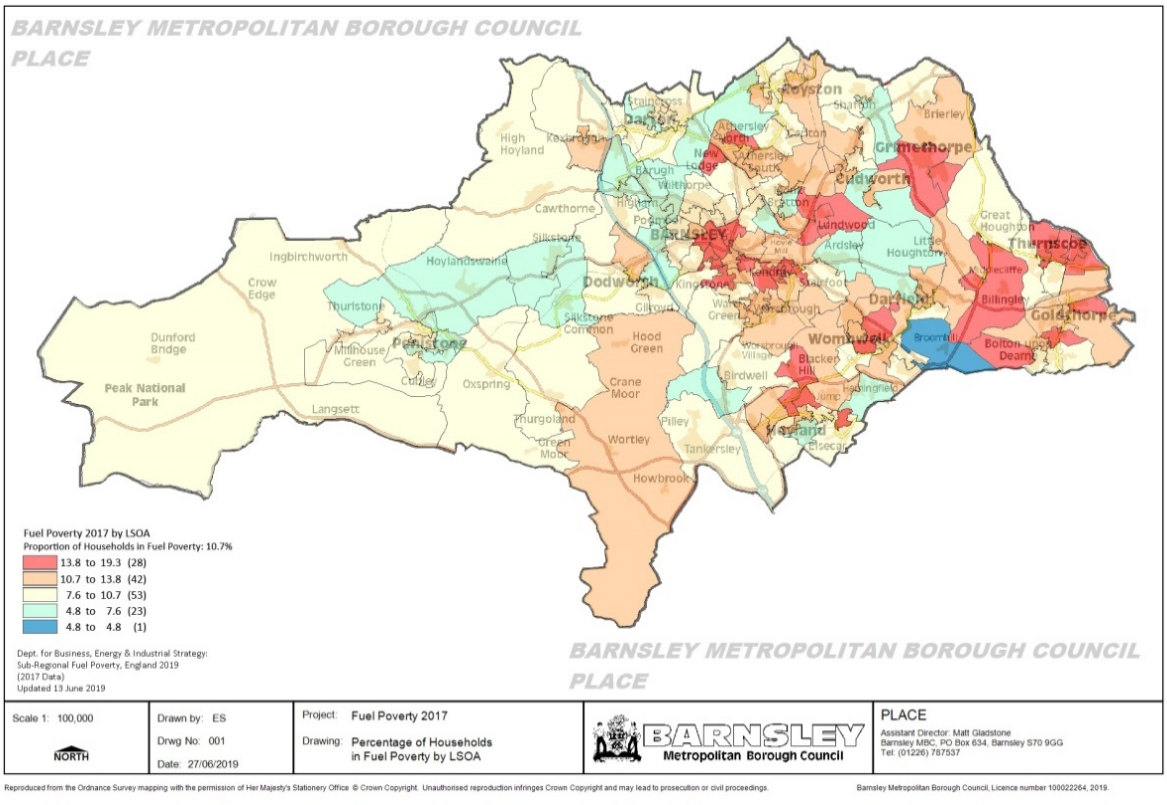
3.20 A household is considered to be fuel poor if they have a low income and high fuel costs - this is also known as fuel poverty. An earlier definition was if they had to spend 10% of their household income on energy costs. Fuel poverty is caused by a combination of:

- **Energy inefficient housing** due to the housing construction type and location; poor insulation; and energy inefficient heating. This can be remedied by improvements in insulation or heating.

- **Low household income**
- **Fuel prices** which are influenced by the availability of different fuels, tariffs and payment options. This can be remedied by offering and encouraging households to switch to cheaper energy tariffs or removing prepayment meters.

3.21 It is estimated that 11,141 or 10.7% of households in Barnsley were fuel poor in 2017. However, the incidence and causes of fuel poverty varies across the borough.

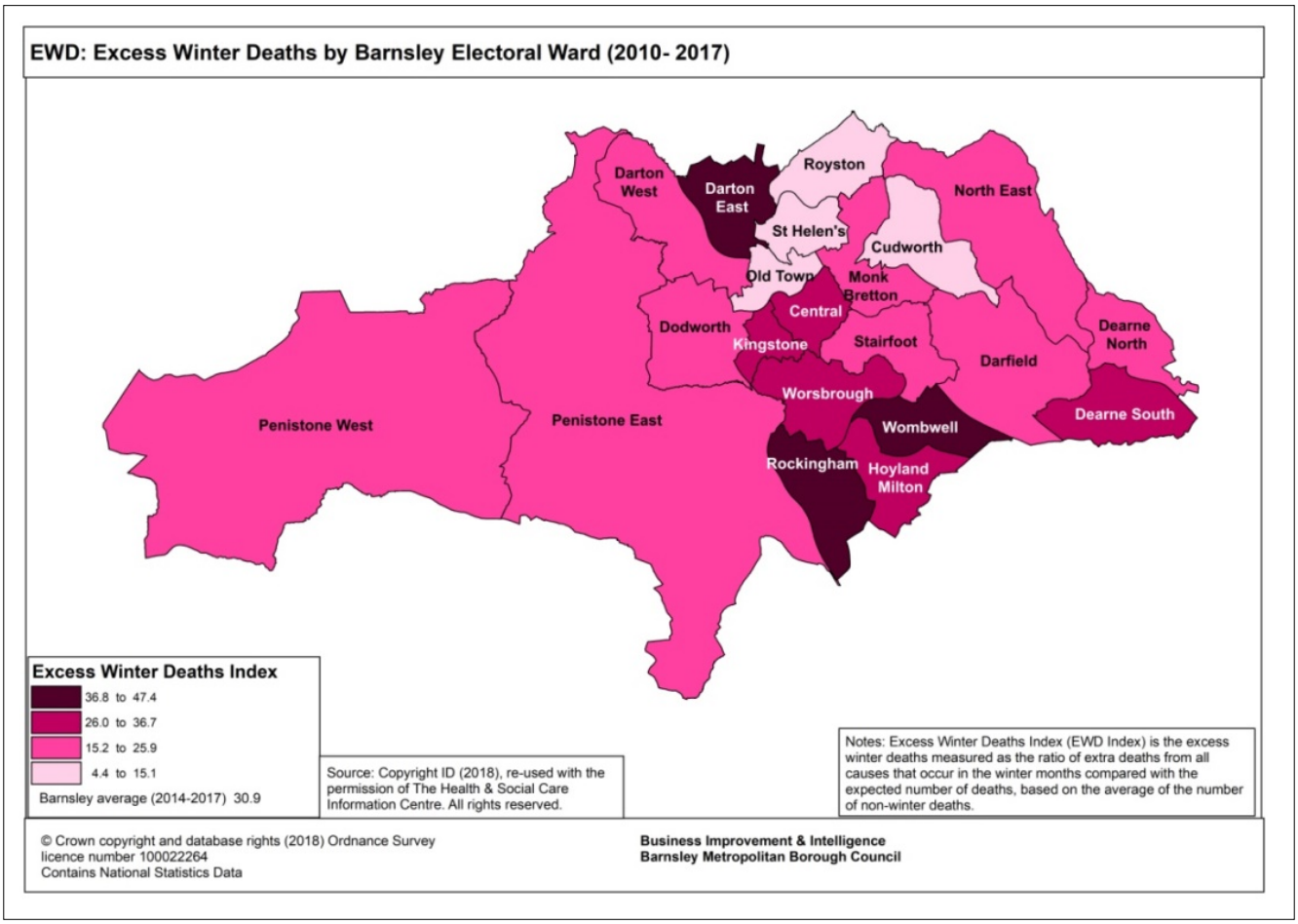
3.22 Generally fuel poverty is greatest in the private rented sector, due to a combination of older properties which are difficult to insulate, and occupiers on lower incomes. The number of households in fuel poverty in the social housing sector is generally lower because of the better quality of housing. The map below shows the distribution of fuel poverty based on the Office for National Statistics' (ONS) Local Super Output Areas (based on population figures from census data to allow comparison between consistently sized areas for statistical purposes):



Distribution of fuel poverty in Barnsley

3.23 Residents living in fuel poverty are more likely to be unable to heat their home properly. Living in a cold home has been linked to an increased risk of developing a range of health conditions including, asthma, arthritis and pneumonia, as well as unintentional injury.

3.24 The report 'Getting the Measure of Fuel Poverty', commissioned by the Department of Energy & Climate Change (DECC), shows that cold homes have been identified as one of the contributors towards excess winter deaths. Barnsley's excess winter deaths rate of 30.9% represents 680 excess winter deaths during August 2014 - July 2017. This is the highest in the Yorkshire and Humber and some way above the average for England and Wales. The map below shows the distribution of excess winter deaths in Barnsley based on the ONS' Super Output Areas:



Distribution of excess winter deaths in Barnsley

3.25 Cold homes are a significant cause of demand on Nation Health Service (NHS) services. There is a proven link between cold weather and an increase in numbers of NHS referrals for heart attacks and strokes. People who are discharged from hospital into a cold home are three times more likely to be readmitted back to hospital and many residents also suffer from mental health issues and feelings of isolation. It has been estimated that every £1 spent on domestic energy efficiency measures saves the NHS £40.

3.26 Within Barnsley, it has been estimated that 9,700 homes are at risk of causing health conditions caused by excess cold and damp/mould. If these were improved there could be an annual saving to the local NHS of £1.2 million per year.

3.27 The acknowledged gold standard of energy efficiency programmes is that delivered in Oldham. This was funded via the local Clinical Commissioning Group (CCG) who recognised the cost savings which could be made to the NHS via its direct funding of energy efficiency programmes.

Affordable Warmth & Energy Efficiency Schemes

3.28 Affordable Warmth programmes look to intervene in all three causes of fuel poverty, often at the same time. The Council currently has a number of schemes which aim to support fuel poor homes by improving the energy efficiency of the home and increasing the household's income or reduce the costs of paying for energy.

3.29 Barnsley is a member of the Better Homes Yorkshire programme, established in partnership with ten other local authorities in the Leeds City Region in 2015. This scheme is available for owners of homes and tenants; through this, 332 private sector properties have received measures since 2017.

3.30 The Council has secured funding for 123 first time gas central heating systems over two years and £250,000 to run an affordable warmth programme which targets support at low income households with health conditions living in the least energy efficient homes. In addition, the Council offers free underfloor insulation to fuel poor households across the borough.

3.31 A project is underway to compare low carbon house build costs and efficiencies against current building regulations.

3.32 As an example, in Leeds City Region, in order to achieve its CO_2 reduction targets it will require significant capital investment (initial estimate of up to £50 billion). However, this would realise economic benefits with initial estimates showing £11billion in Gross Value Added (GVA), which is the measure of the value of goods and services produced, and the creation of 100,000 jobs. Currently, the Yorkshire and Humber has the lowest level of GVA of any region in England and Wales; therefore decarbonisation offers a great potential, if the funding can be found.

3.33 The Council also tries to intervene by reducing the costs of running the home. As part of this, Barnsley Energy Tariff was launched in 2018-19 in partnership with Great North Energy. As well as offering 100% renewable electricity, the tariff aims to tackle fuel poverty by fairer, competitive and more transparent energy deals and proactively encouraging customers to switch away from more expensive prepayment meters. So far, 719 households are signed up to Great North Energy in Barnsley, predominately through Berneslai Homes.

3.34 The service provides a single point of access to offer advice on: energy efficiency measures; energy bills and debts; and income maximisation. The service is offered to all residents in Barnsley, but with a focus on those in fuel poverty and residents leaving hospital. Funding is secured for this service for the next three years and it is envisaged that over 3,000 households will benefit.

3.35 The North Area Council has commissioned the disability charity DIAL to run a warm homes and social isolation service to residents in its area. The service which began in January 2019 has so far carried out 80 home visits and assisted twelve households with energy tariff switching; saving an average of £197.00 per household.

4.0 Domestic Energy Efficiency via Berneslai Homes

4.1 One of the key objectives for Berneslai Homes is to improve the energy efficiency of the Council's housing stock and to reduce carbon emissions. As a result, the Berneslai Homes Board introduced their 'Low Carbon Strategy' which plays a key role in the delivery of the Council's Energy Strategy.

4.2 Almost all of the housing stock falls in the Energy Performance Certificate (EPC) band ratings C and D, with a small percentage of the stock above and below this level. The national average in England and Wales is band D. The thermal performance of the stock is good, considering that the vast majority of it is more than 50 years old. All stock has double glazing, cavity wall insulation (where possible) and a good level of loft insulation.

4.3 Projects that can be implemented to raise the EPC rating of properties are outlined as below:

<u>Continuing to Improve the Thermal Performance of Council Houses</u>

4.4 This includes cavity and loft insulation upgrades to 300mm, as well as installing double glazing to windows and doors. Each year Berneslai Homes invest in the 'maintaining the home standard' and around 1,000 – 1,200 dwellings have these measures applied each year.

4.5 A challenge for Berneslai Homes is that of equity; why should one tenant receive energy efficient measures and others not? A lot of press has been raised recently via Nottingham City Homes retrofitting six properties to become carbon zero - while technically brilliant; they cost £80,000 per property. The challenge locally is to find solutions that will deliver 80% of the energy improvement of the Nottingham City Homes for 20% of the cost. Improvements which cost £80,000 per property are unaffordable for the whole stock.

<u>Using High Efficiency Condensing Boilers and Heating Systems</u>

4.6 Replacing existing systems with high efficiency condensing gas boilers, easy to use controls and thermostatic radiator valves would save tenants residing in a semi-detached property £105 per annum

(source: Sedbuk). This will help reduce fuel poverty in the borough. More efficient boilers also emit less CO_2 because they burn less gas.

Reducing Reliance on Fossil Fuels for Domestic Heating

4.7 Air Source Heat Pumps (AHP) have been rolled out across larger properties in the housing stock. These are renewable sources of heat and can be used to replace gas powered heating. This is supported by government strategies which envisage an end to gas central heating by 2025 in new properties; although no date has yet been announced for replacement systems in existing dwellings.

4.8 Berneslai Homes are currently working jointly with the Council on the feasibility of heat pump technology using mine water and how that might provide heating to some parts of the borough.

Prepayment Meters

4.9 Another problem encountered by some tenants is the high cost they pay for electrical energy. Over a third (37%) of council tenants have a pre-payment electricity meter, with a good proportion of others on standard tariffs that have never switched suppliers. However, switching supplier is incredibly difficult if tenants find themselves in arrears with their existing supplier. The Barnsley Energy tariff will help with both of these issues.

4.10 In addition, Berneslai Homes are also considering more staff training around this issue, so the pool of advice to tenants is larger.

Replacing Fossil Fuel Burning Heat Networks

4.11 Berneslai Homes manage 24 heat networks schemes. When existing equipment requires renewal, they will always explore the possibility of replacing fossil fuel burning systems with renewable heat technology; either biomass or ground source heating. Removing coal as the primary fuel source will deliver significant CO_2 savings.

4.12 Berneslai Homes currently have nine biomass and eight ground source heating schemes. All these schemes, with the exception of two older biomass schemes, qualify for the Government's Non-Domestic Renewable Heat Incentive (RHI). This is an environmental programme that provides financial incentives to increase the uptake of renewable heat by businesses, the public sector and non-profit organisations, including those with district heating systems where one system serves multiple homes. Non-Domestic RHI is index-linked and is payable for a 20 year period. The installations have so far generated an RHI income of £1.2m for the Council's Housing Revenue Account (HRA).

Renewables and Micro Generation

4.13 Micro generation is the small scale production of electricity from renewable sources, principally on a domestic level from solar or wind energy.

The Council currently has 388 domestic properties fitted with solar PV (rooftop solar panels). To date these installations have:

- generated 3,990 Mwh of electricity; this could power 1000 homes for a year
- brought £1,834,078 of income into the Council via feed-in tariff income
- saved 2,165 carbon tonnes
- saved tenants around £250,200 from their energy bills

4.14 In addition to the Council owned solar PV, a 2015 scheme by Energise Barnsley has fitted 321 Barnsley Council homes with the technology. This has saved tenants around £140,000 from their electricity bills to date. The income from the feed-in tariff is retained by Energise Barnsley and the society has paid its shareholders a year one and two dividend of five per cent, per annum of investment. The society also has installations on Council owned offices and schools.

4.15 Following on from the project to install solar PV systems to properties across the borough, Berneslai Homes have worked closely with Energise Barnsley to pilot installations of emerging battery

technology at 37 properties in The Willows at Thurgoland. For solar PV installations the battery will charge from unused electricity generated and discharge any demand when the solar PV is not generating; thus saving customers money. Of the 37 properties, 28 of the bungalows now have solar PV systems installed and the cost of the batteries, installation and tenant liaison has all been funded by Energise Barnsley. Work is now underway to install systems at a further 50 properties. The Council's 30 year business plan for Council Housing does not currently include for further investment of solar PV at scale.

Energy Tariff for Domestic Properties

4.16 Berneslai Homes has been working with the Council on the introduction of its Barnsley energy tariff – 'Great North Energy'; a partnership with Robin Hood Energy, a not-for-profit energy supplier. The aim of the tariff is to help to lift residents out of fuel poverty or stop them falling into it by offering fairer, transparent and consistently competitive prices. A particular aim is to support prepayment customers who are often not on the most competitive tariffs elsewhere, by helping them to find a better deal.

4.17 All of the Council void properties are being switched to the Barnsley Energy tariff and Berneslai Homes will be actively working with the Council to promote its use to Council tenants.

5.0 Air Quality & Sustainable Transport

Air Quality

5.1 The Government's Clean Air Strategy published in 2019 states that "air pollution is the top environmental risk to human health in the UK, and the fourth greatest threat to public health after cancer, heart disease and obesity". Air pollution causes more harm than passive smoking and the annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion.

5.2 In 2017, Public Health England estimated that 3.8% of all deaths in Barnsley in those aged 30+ were attributable to fine particulate air pollution.

5.3 Improving the Borough's air quality is a statutory duty under the Environment Act 1995. All local authorities have to regularly review and assess air quality in their areas, and to determine whether or not the human health based air quality standards are likely to be achieved. Where a breaching of the air quality standards is considered likely, the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP), setting out the measures it intends to put in place in pursuit of meeting the standards.

5.4 Pollution Control within Public Health is the lead section in the Council delivering local air quality management. This includes monitoring and modelling air pollution concentrations, and undertaking work to reduce harmful emissions and hence improve air quality. Pollution Control has produced an AQAP, containing actions primarily designed to reduce road transport emissions as they are the major source of the polluting gas 'nitrogen dioxide' within the borough. Raised concentrations of this gas have resulted in the declaration of several AQMAs in Barnsley, including the M1 motorway and busy arterial roads and junctions close to Barnsley town centre.

5.5 Barnsley has not been mandated by Central Government to consider declaring a Clean Air Zone (a zone where older more polluting vehicles are charged to enter); however, the Council is aware that Greater Manchester, Leeds, Sheffield and Rotherham have been mandated to consider and potentially implement these zones. The Council will therefore watch these developments closely, to understand the impact these zones may have on the borough.

5.6 An example of this is the declaration of an AQMA on the section of Dodworth Road between Townend Roundabout and M1 J37 in 2005, partly due to the levels of congestion at the Dodworth Road / Pogmoor Road crossroads junction. Since 2005, this AQMA has been subject to various interventions to reduce traffic emissions including the construction of the Dodworth by-pass to the west of the M1 motorway in 2006; the signalisation of the M1 Junction 37 gyratory; and the introduction of additional lanes on some of the approaches in 2015. These interventions, coupled with the penetration of newer, less polluting vehicles into the vehicle fleet have resulted in a reduction in

air pollution concentrations in the AQMA between M1 J37 and Dodworth Road / Pogmoor Crossroads in particular.

5.7 In addition, the proposed new A628 Dodworth Road / Broadway junction improvement scheme, which will enable the traffic to flow more freely through this area, has the potential to deliver air quality benefits to the existing residents in the immediate vicinity. This is not straight forward, however, as the results of the modelling has shown that whilst some locations, especially those nearest the crossroads would be benefitted; conditions would be worsened where the properties are located on the approach to the gyratory on Dodworth Road from the town centre. However, these increases have been assessed as "slight adverse" and in those locations predicting an increase in concentrations of nitrogen dioxide gas; the concentrations would still remain within the air quality objective.

5.8 Elsewhere, the scheme is predicted to have "negligible" or a "slight to substantial beneficial" impact. For this reason the Air Quality Pollution Control Officer has resolved not to object to the application. Accordingly, where emissions are forecast to increase, because they will remain within the objective, the effects are not considered to be sufficient to warrant objection. Moreover, in the areas where the modelling exercise predicted concentrations to be currently above the objective, residents stand to benefit from the scheme. Accordingly, the proposal complies with Core Strategy policy CSP41, and Local Plan policy AQ1, both of which stipulate that developments impacting upon areas sensitive to air pollution in AQMAs will be expected to demonstrate that it will not have a harmful effect on the health or living conditions of any future users of the development in terms of air quality, or that any such harmful effects can be suitably mitigated against.

5.9 Within Barnsley's Air Quality Action Plan, there are 22 actions tackling industrial, domestic and road transport emissions. Road transport related actions within the plan include: stipulating emission standards for buses; measures to reduce congestion; encouraging walking and cycling; working with heavy goods and bus fleet operators in order to reduce emissions by improving fuel consumption; working with developers to minimise the air quality impact of new development; and encouraging the uptake of low emission vehicles and alternative fuels.

5.10 The Council encourages local stakeholders to "do their bit" to improve air quality and is routinely involved with various awareness raising campaigns. The latest was 'Clean Air Day' on 20 June 2019 and involved working with local schools and Barnsley Hospital to promote good air quality.

5.11 Each year, Pollution Control produces an air quality Annual Status Report, detailing progress with implementing actions within AQAP and reporting on air pollution trends. Current trends indicate that air pollution concentrations are reducing; however it is important to continually drive down emissions, as health effects associated with air pollution still occur below the legal limits.

Sustainable Transport

5.12 Sustainable transport though a separate delivery programme is linked heavily with air pollution control, through the reduction in local emissions associated with transport.

5.13 Sustainable transport aims to meet current transport needs without compromising the needs of future generations, creating a borough where active travel is a preferred choice and supported by a connected network of high quality, safe and inviting cycle routes and footpaths for all people to use.

5.14 In the UK 27% (and is forecast to grow) of total greenhouse gas emissions come from the transport sector. While the electricity generation sector has made great strides in decarbonising our power stations, transport has been slow to respond. In 2018, the UK government launched their 'Road To Zero' strategy which sets out a roadmap for decarbonisation of the transport sector, including a ban on the sale of traditional diesel and petrol engine cars by 2040.

5.15 The two principle technologies vying to replace fossil fuels in transport are battery electric vehicles and hydrogen fuel-cell vehicles. The likelihood is that both these technologies will feature in the transport system of the near future, and both of these technologies require a low carbon electricity generation system to ensure that they are as low carbon as possible.

5.16 The challenge goes far beyond passenger vehicles, with current reliance on fossil fuels being central to our public transport systems including buses and trains, as well as our international freight and travel systems such as sea and air transport. While changing the fuels that our vehicles use will help to reduce carbon associated both with our travel and the products we use that need to be imported; we also need to ensure that we make the most possible use of low or no carbon methods of transport wherever possible, and seek to reduce the carbon embedded in our supply chains.

Electric Vehicles – Public Charging Infrastructure

5.17 With a wide number of electric vehicles (EV) now available there is a growing requirement for public charging infrastructure. Central Government has recognised the role of local authorities in providing this and made some grant funding available.

5.18 The Council is currently seeking approval for a project to install 45 dual chargers across the borough, including locations in all principal towns, leisure centres and town centre car parks to ensure that residents and visitors have access to charging to support the uptake of EVs. EV chargers will be located in Council car parks in locations where local residents will be able to use them overnight when car parks are typically under used. The project will make use of available grant funding to provide EV chargers for residents without access to off-street parking.

Electric Vehicles – Fleet

5.19 The Council has a fleet of 433 vehicles and plant and equipment; all of which currently run on diesel or petrol. The Environment & Transport Service is currently seeking approval to replace 35 conventional diesel or petrol vehicles with battery electric vehicles (BEV), which represents approximately 20% of the total fleet, between 2020 and 2025.

Eco Stars

5.20 Eco Stars is a fleet recognition scheme set up by Barnsley Council along with Doncaster, Rotherham and Sheffield Councils. ECO Stars encourages and helps operators of HGVs, buses, coaches, vans and taxis to run fleets in the most efficient and green way and provides recognition for best operational practices, and guidance for making improvements.

5.21 The scheme aims to reduce fuel consumption which naturally leads to fewer vehicle emissions and has the added benefit of saving money from both fuel and maintenance. Members are awarded an ECO Star rating when they first join ranging from 1 Star to 5 Stars based on an assessment of their current operational and environmental performance.

Active Travel

5.22 The Council is promoting active travel to increase physical activity whilst reducing the number of vehicles on the road. Recent initiatives have included:

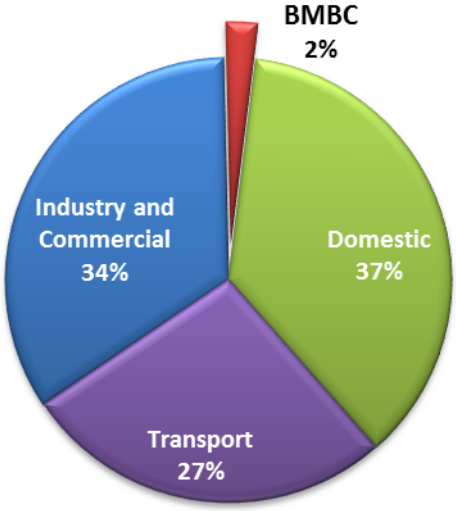
- The introduction of the Barnsley Active Travel Hub, located at the interchange, which offers free bike hire and electric bikes as well as changing and storage facilities and maintenance
- Barnsley staging the 2nd day of the 2019 Tour de Yorkshire race
- 6,633 pupils receiving Bikeability training since 2016 which is delivered by Active Barnsley, a non-profit organisation
- The delivery of Modeshift Stars (a national award scheme that has been established to recognise schools that have demonstrated excellence in supporting cycling, walking and other forms of sustainable travel) to 20 schools
- 10 Day Active Travel initiative - currently 14 schools have signed up to take part
- The launch of Beat the Streets in June which is an interactive game involving all Barnsley schools, enabling pupils and their families to travel actively to their school

6.0 Barnsley Council Future Plans & Challenges

Proposals to Refresh the Council's Existing Energy Strategy (2015-2025)

6.1 To keep within the IPCC recommendations, it is proposed that the Council reaffirms its commitment to reduce its carbon emissions from its current levels of 28,000,000 tonnes annually, by setting milestones and becoming zero carbon in 2040. This matches the Council's ambition in the existing Energy Strategy.

6.2 However, as can be seen in the chart below, Barnsley Council only emits 2% of the borough's CO_2 emissions; transitioning the borough to zero carbon by 2050 (the national requirement) will be much more challenging than the transition for the Council.



6.3 To meet the IPPC recommendations and Government legislation, the borough will need to reduce CO_2 emissions by 45% by 2030 and to be net zero carbon by 2050. However, it would be beneficial if the borough could aim to be zero carbon rather than the national target which only seeks for the UK to be net zero carbon (emissions offset).

6.4 To ensure that a constant focus is given to the targets, it is proposed that they will be underpinned by evidence-based Sustainable Energy Action Plans (SEAPs), influenced by five themes which build on existing carbon reduction programmes for the Council and are known challenges for the borough and the Council:

- energy efficiency and procurement of energy
- resource efficiency
- sustainable transport
- renewables
- decentralised heating

6.5 Each SEAP will be brought forward with estimated delivery costs for each project as well as the amount of carbon saved. Progress will be reviewed via an annual outturn report which will operate a traffic light system of red, amber and green, to monitor progress.

6.6 Energy efficiency is the area where the largest reduction in emissions is possible and behaviour change will be an important component of this programme. The aims of the project will be to:

- develop a major energy retrofit programme for non and domestic buildings
- work towards zero carbon in construction and operation targets by working with the largest employers to set targets for energy reduction
- develop smart energy solutions by implementing new technologies for monitoring energy in buildings and retrofitting lighting

6.7 The resource efficiency programme will encourage resource efficiency across the town with businesses and consumers. Actions will include:

- the introduction of zero waste projects and evaluating opportunities for capturing waste heat and power
- the promotion of a circular economy, aimed at minimising waste and making the most of resources, by promoting resource efficiency to small and medium enterprises and engaging with organisations involved in reuse and repair activities in the town

6.8 By supporting the Local Transport Strategy, the sustainable transport programme will aim to reduce the need to travel, encourage active travel and decarbonising travel (such as low emission vehicles) as well as improving the local charging infrastructure to support the uptake of electric vehicles.

6.9 The renewables programme aims to increase the use of renewables in both the domestic and non-domestic sectors and encourage innovation in adopting new technologies. Actions could include:

- piloting the wider use of ground source heat pumps to serve existing housing
- assessing the potential for renewables in the Council's estate
- providing new guidance for community groups and householders
- assessing opportunities for a number of specific renewables projects such as biodiesel (a clean-burning diesel replacement made from animal & vegetable oils and fats) solar panel systems and microhydro systems (a type of hydroelectric power)

6.10 A key objective of the fifth SEAP is to increase the use of decentralised heating in the borough (switching to individual units that control the heating within a single room or location), evaluating the potential for expanding schemes, and the use of geothermal resources such as mine water that has been naturally heated by the earth.

Key Future Programmes

6.11 The following list highlights some of the key future pieces of work the Council will be undertaking to improve energy efficiency and air quality:

- Improvements to newly acquired Core (DMC2) and a programme of improvements for Westgate Plaza
- Investigation of innovative funding approaches such as Energy Performance Contracts to identify and implement energy conservation measures across our built estate
- Research shows that behaviour change programmes can save up to 10% of annual energy costs, we need to develop a policy for energy use within our built estate and engage our Operational Estates teams to manage behaviour and energy use more efficiently
- The Council needs to continue to invest in renewable energy; installed capacity has not increased significantly in the last two years with no new installations being commissioned apart from small solar PV and solar thermal at the new Glassworks building
- There are significant opportunities for solar PV at secondary schools and also within the Barnsley Council estate, and we must ensure that new developments are making best use of available renewable technologies
- Review opportunities for battery and PV farms to be installed on Council owned land
- Review opportunities within BPL managed leisure centres especially the swimming pools
- Review opportunities in the culture centres such as Elsecar Heritage Centre
- Barnsley Active Travel Strategy (2019-2033) was co-produced between Transportation and Public Health and endorsed by Barnsley Cabinet on the 6 February 2019 and an implementation plan is currently under production which will contain both infrastructure measures and behavioural change/modal shift measures
- Barnsley are looking to submit a package of measures totalling £39m to Transforming Cities Fund of which 40% will be spent on Active Travel routes including a contribution to the bridge and walking route around the town centre
- Wider deployment of EV charging points

Challenges and Opportunities

6.12 Barnsley sits within the Sheffield City Region (SCR) and is well placed to take advantage of the opportunities that will present themselves in efforts to eliminate CO_2. These strengths and opportunities are:

- a long legacy of energy generation
- a skilled energy sector
- unique opportunities to utilise closed mine-workings
- a higher education sector which hosts a significant level of expertise which is directly relevant to the needs of decarbonisation
- a high level of investment by employers in apprenticeships that relate to the specific needs of the energy sector
- a large number of manufacturing, construction and distribution businesses that have the potential to play an integral part in moving to a zero carbon economy
- significant existing low carbon programmes such as Better Homes, Energy Accelerator and more in development
- growth in new technologies such as batteries, especially when co-located with renewable sources of energy
- the Council's current Energy Strategy 2015-2025 and its commitment to be a carbon zero authority by 2040
- the City Regions are well positioned to support sub regional delivery of major low carbon programmes via leverage of funding and the provision of expert support.

6.13 There are a range of challenges that also need to be addressed, including:

- an estimated 13% increase in energy demand over the next 20 years
- the need to half CO2 emissions every five years to meet our targets
- continued significant growth in emissions from transport
- a continued reliance on fossil fuels, especially for heating and hot water via gas
- low uptake of low carbon and renewable energy sources (8.8% of energy consumed currently provided by renewables)
- a high number of households (10.7% within Barnsley) which remain in fuel poverty
- Barnsley's 2014 - 2017 excess winter deaths rate 30.9% is significantly higher than the England rate of 21.1%
- the need for all homes to achieve an EPC rating of C by 2035. (The current average is a low D, with the poorest properties being in the private rented sector)
- an oversupply of pre 1919 terraced properties which are difficult to insulate via traditional (cheaper) methods and difficult to heat with anything other than gas
- an electricity grid which requires significant reinforcement works before large scale renewables can be connected
- a need to ensure the SCR's and the borough's energy intensive industries (particularly in the chemicals, food and drink, and glass sectors) remain competitive on a global scale and are retained within the region
- a difficult funding landscape, with small numbers of investable schemes by third parties and little Central Government support
- a need to ensure energy prices are kept manageable for businesses and households
- the national picture is evolving very quickly and the Council is positioning itself to best deliver the national targets and meet the challenges

7.0 Challenges & Recommendations for Private Sector Domestic Housing

National Challenges & Recommendations

7.1 Retrofitting energy efficiency measures to properties is expensive, especially as most of the traditional easy to install insulation measures have already been taken. What is left are the more expensive hard to treat properties which require external wall insulation or 'room in the roof' insulation which will cost circa £10,000 per property. Central Government funding is limited and initiatives such as the Green

Deal failed. The Council and SCR will continue to lobby for greater support and local delivery of projects.

7.2 Funding for renewable projects such as solar PV have now been stopped, as installation of these technologies is slowing down.

7.3 Decarbonising electricity is progressing well via the greening of the national grid via renewable technologies such as offshore wind and solar PV. However, the great challenge is how the heating of homes and provision of hot water is moved away from gas to other fuel sources. This is especially challenging in areas of pre 1919 terraced stock and will require the use of heat networks, hydrogen and heat pump technology; all of which are very expensive.

Local Challenges & Recommendations

7.4 Like every other authority, funding and delivery are the main concerns when it comes to improving the energy efficiency of large numbers of properties prior to 2035. It is likely that the responsibility will be passed to councils on a street-by-street basis. Energy efficiency is key to addressing affordable warmth issues and it helps to achieve the Council's overall aims to shift towards a low carbon borough.

7.5 Different teams are targeting the same people for similar things; there needs to be a joined up approach to make sure that the resident gets the best outcomes and the Council gets value for money for the cost of its interventions.

7.6 An affordable warmth strategy would help to do these things and would also help to bring in other organisations working in this area, but focus on wider affordable warmth issues. By pulling in other providers it will help in levering in funding from the NHS for retrofitting of energy efficiency measures.

7.7 Many of the householders who are impacted by cold homes are those who are vulnerable and hard to reach. Successful projects come through constant promotion and a dedicated communication resource is vital – this aspect of delivery takes up a lot of time and needs proper focus from a full time communications officer working with the team.

7.8 A borough-wide funding programme which blends funding from different sources and is delivered locally would represent a significant step change in deliverability of outcomes.

8.0 Invited Witnesses

8.1 The following experts have been invited to today's meeting to answer questions from the committee:

- David Shepherd, Service Director – Regeneration & Culture
- David Malsom, Group Leader – Housing & Energy
- George Lee, Project Manager – Housing & Energy
- Councillor Tim Cheetham, Cabinet Spokesperson for Place (Regeneration & Culture)

9.0 Possible Areas for Investigation

9.1 Members may wish to ask questions around the following areas:

- How will you ensure that the future economic and residential growth of the borough contributes positively towards achieving the 2050 targets?

- Now that the feed-in tariff scheme has closed to new participants, what else is available to encourage the use of renewable energy?

- What has been achieved in the last 12 months that you are most proud of?

- To what extent is performance in relation to emission targets being met reflective of the true picture, given that some Council buildings are ran by external organisations such as Academies, Barnsley Premier Leisure etc.?

- Given that, even when fully operational, the biomass boilers are not reaching full capacity, do you consider them fit for purpose and are they cost effective for the schools?

- As micro-hydro systems work on a relatively small scale – how do you foresee these being beneficial to the borough?

- What will be the penalties if homes do not achieve an Energy Performance Certificate rating of C by 2035 and how achievable is this target?

- What are the quick wins that could have the greatest impact for a relatively small investment?

- Where does the work overlap between Council departments and how can this be rationalised?

- What can members do to assist with the work around the Energy Strategy and associated topics?

10.0 Background Papers and Useful Links

- Item 4b (attached) – Barnsley Council Energy Strategy 2015-2025
- HM Government report 'The Clean Growth Strategy: Leading the Way to a Low Carbon Future': https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/700496/clean-growth-strategy-correction-april-2018.pdf
- BMBC 'Core Strategy', Adopted September 2011: https://www.barnsley.gov.uk/media/4084/adopted-core-strategy.pdf
- BMBC 'Local Plan', Adopted 2019: https://www.barnsley.gov.uk/media/9924/local-plan-adopted.pdf
- The Intergovernmental Panel on Climate Change (IPCC) special report on Global Warming: https://www.ipcc.ch/sr15/
- The Committee on Climate Change website: https://www.theccc.org.uk/
- Climate Emergency website: https://climateemergency.uk/
- 'Getting the Measure of Fuel Poverty' report commissioned by the Department of Energy & Climate Change, 2012: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/48297/4662-getting-measure-fuel-pov-final-hills-rpt.pdf
- Better Homes Yorkshire website: https://www.betterhomesyorkshire.co.uk/
- The Barnsley Energy Tariff, BMBC website: https://www.barnsley.gov.uk/services/housing/energy-at-home/barnsley-energy-tariff/
- Great North Energy website: https://www.greatnorthenergy.co.uk/
- SEDBUK (Seasonal Efficiency of Domestic Boilers in the UK) website: https://www.homeheatingguide.co.uk/central-heating/sedbuk-seasonal-efficiency-domestic-boilers-uk-rating
- Energise Barnsley website: http://www.energisebarnsley.co.uk/
- Robin Hood Energy website: https://robinhoodenergy.co.uk/
- Salix (Solving Energy Efficiency Finance in the Public Sector) Recycling Fund: https://www.salixfinance.co.uk/recycling-fund
- Department for Environment, Food & Rural Affairs report 'Clean Air Strategy 2019': https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/770715/clean-air-strategy-2019.pdf
- 'Government launches Road to Zero Strategy' news release: https://www.gov.uk/government/news/government-launches-road-to-zero-strategy-to-lead-the-world-in-zero-emission-vehicle-technology

11.0 Glossary

AHP	Air Source Heat Pumps
AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
BEV	Battery Electric Vehicles
BMBC	Barnsley Metropolitan Borough Council
BMS	Building Management System
CCC	Committee on Climate Change
CCG	Clinical Commissioning Group
CHP	Combined Heat and Power
CO_2	Carbon Dioxide
DECC	Department of Energy & Climate Change
EV	Electric Vehicle
EPC	Energy Performance Certificate
FiT	Feed-in Tariff
GHG	Greenhouse Gasses
GVA	Gross Value Added
HRA	Housing Revenue Account
IPCC	Intergovernmental Panel on Climate Change
LED	Light-Emitting Diodes
ONS	Office for National Statistics
PV	Photovoltaic
RHI	Renewable Heat Incentive
SCR	Sheffield City Region
SEAPs	Sustainable Energy Action Plans

12.0 Officer Contact

Anna Marshall, Scrutiny Officer, 8 July 2019