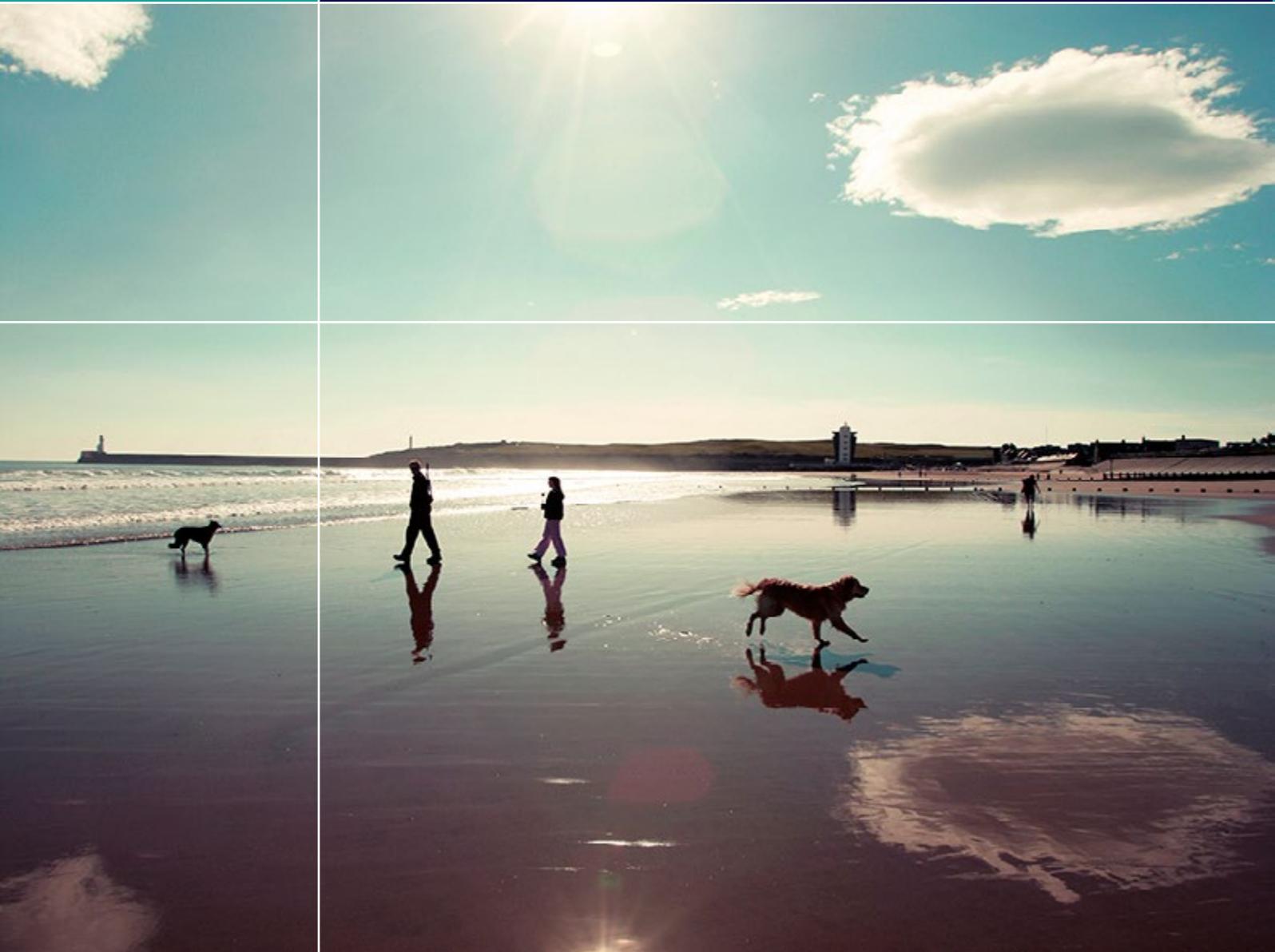


# POWERING ABERDEEN:

ABOUT ABERDEEN



ABERDEEN  
CITY COUNCIL

# 1. ABERDEEN: ECONOMY, ENERGY AND EMISSIONS

## BY 2037

the population of Aberdeen City is projected to be 288,788, **an increase of 28.4 per cent** compared to the population in 2012.

## THE POPULATION OF SCOTLAND

is projected to **increase by 8.8 per cent** between 2012 and 2037.



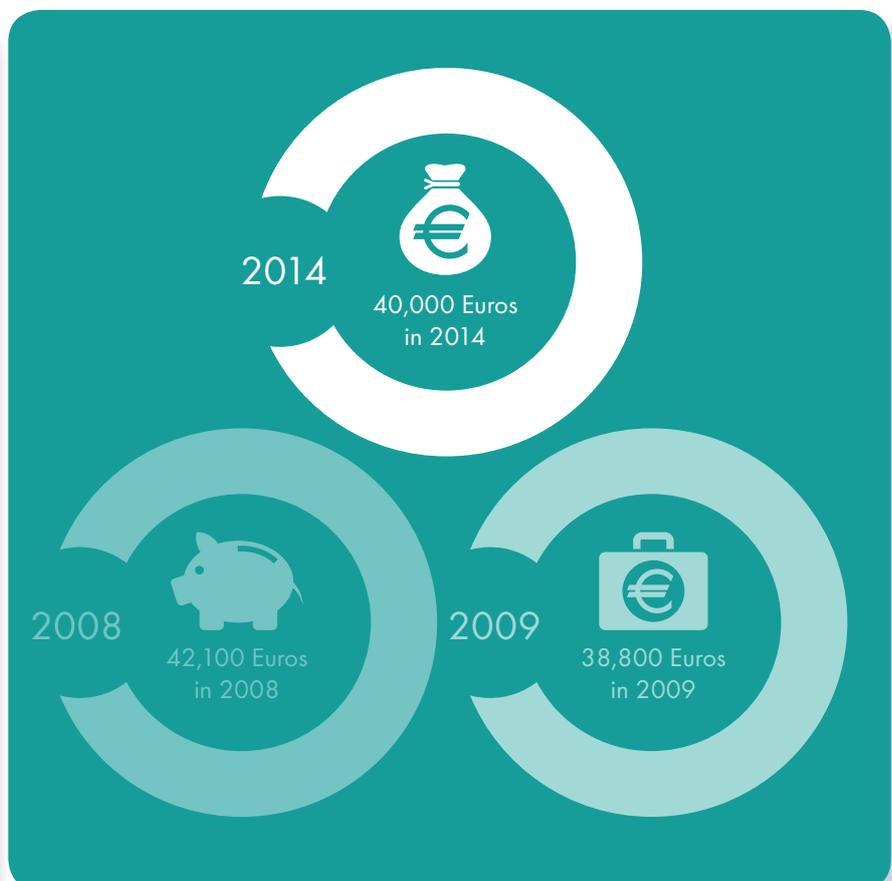
## OVER THE 25 YEAR PERIOD

the age group that is projected to increase the most in size in Aberdeen City is the 75+ age group. **This is the same as for Scotland as a whole.**



## GDP

**GDP – 40,000 Euros in 2014.** GDP per head peaked in 2008 at 42,100 Euros and then dipped to 38,800 Euros in 2009 before beginning a gradual increase. One of the reasons for this is the impact that the recession had on the country as a whole, although it was not felt as sharply in North Eastern Scotland.



Ref – National Record of Statistics Aberdeen City Council area demographic factsheet and the GVA and GDP 2014 briefing note.



## 1.1 Location

Located between the mouths of the River Dee and Don, Aberdeen is Scotland's third most populous city, forming one of Scotland's 32 local government council areas and the United Kingdom's 37th most populous built-up area. Aberdeen's south side is accommodated by exposed cliffs, though moving northwards the coast makes way for a long sandy beach which turns into high sand dunes which stretch as far north as Fraserburgh. The General Register for Scotland indicates that the city extends nearly 200 km<sup>2</sup> including the former burghs of Old Aberdeen, New Aberdeen, Woodside and Torry.

The traditional industries of fishing, paper-making, shipbuilding, and textiles were overtaken by the oil industry and Aberdeen's seaport during the 1970's.

Figure 1 – Aberdeen's location.



## 1.2 Operational Profile

Aberdeen received the accolade of being the happiest place in Scotland in the Good Growth for Cities Index<sup>1</sup>, a Price, Waterhouse Coopers report which grades cities on economic success and quality of life. The report illustrates that unemployment is running at 2% in the city and 1% in Aberdeenshire.



The traditional industries of fishing, textiles, shipbuilding and paper making have largely been replaced by technologies supporting the oil industry, electronic design and research in agriculture and fishing.

Efforts are being made to rebrand Aberdeen as the "Energy Capital of Europe" as opposed to the "Oil Capital of Europe" in light of the decreasing oil reserves in the North Sea and the interest in developing alternative energy supplies. This has recently been supported by the Energetica initiative led by Scottish Enterprise and the collaborative project to developing a hydrogen economy in Aberdeen. Utilisation of the engineering skills gained as part of the oil industry boom are readily transferable to diversifying the economy of Aberdeen to one focused upon emissions reduction and alternative energy supplies.

At the time of researching Aberdeen's operational profile, the Aberdeen City and Shire Economics Future (ACSEF) vision was to create an inclusive, energised and sustainable future for Aberdeen City and Aberdeenshire. This has now been subsumed into Opportunity North East (ONE).

Powering Aberdeen aligns with the strategic development of Aberdeen city centre: a city centre for a global city; so that it can continue to thrive as a remarkable 21st century destination for citizens, visitors and businesses. The City Centre masterplan vision is driven by the global significance of the city centre as the metropolitan hub of the Energy Capital of Europe but also the need to ensure the city centre serves the needs and aspirations of local people. Energising the city centre to deliver prosperity and better quality of life for all.

<sup>1</sup> <http://www.pwc.co.uk/government-public-sector/good-growth/>



### 1.3 Demographics

The population of Aberdeen accounts for 4.3% of the total population for Scotland, equating to 227,130 residents. Just over a quarter of the populations is between the ages of 16–29, with persons over the age of 60 accounting for 20%. The most recent census indicates a declining birth rate and a decreasing death rate; the main cause of death being circulatory disease, followed by cancer. During 2011-2013 there was a net inflow of 2,222 people per year, meaning more people entered the city than left.

It is envisaged that by 2037 the population of Aberdeen is projected to be 288,788, an increase of 28.4% compared to the population in 2012. In comparison, the population for the whole of Scotland is to increase by 8.8% between the same periods; with the largest population demographic falling within the 75 years plus category.

Household projections play an important role in determining the direction of **Powering Aberdeen** given the likely demographic changes, with people living longer and in increases in single occupancy. The total number of households in Aberdeen City is projected to change from 103,934 in 2012 to 140,380 in 2037, which is an increase of 35%. In comparison, Scotland as a whole is set to increase by 17% over the same period. The number of lone adult households is projected to increase by 47% over this period, as well as the number of larger households with more than 2 or more adults with children increasing by 28%; with similar increases expected with households headed by the 60-74 age groups.

Such projections<sup>2</sup> are an important consideration in all aspects of planning and future-proofing Aberdeen to a changing climate as well as the levels of expectation of its citizens.

<sup>2</sup> Most of these references come from the National Records of Scotland demographic factsheet.





## 1.4 Transport

### 1.4.1 Air

Situated to the north of the city, Aberdeen airport serves a number of domestic and international destinations whilst the heliport provides facilities to both the oil industry and rescue services; being one of the busiest heliports in the world.

Operated by AGS Airports, it is comprised of one fixed-wing runway, with 3 helicopter runways, one main passenger terminal and multiple helicopter terminals; assisting some 3.5 million passengers per year<sup>3</sup>. It employs around 250 people, with a further 2500 jobs supporting the role of the airport.

The runway has recently witnessed a 124m extension and the airport has developed a new covered international walkway, a parking deck and resurfacing project. The next major project will be the redevelopment of the terminal at an estimated cost of £13 million, due for completion in 2017.

### 1.4.2 Rail

Managed by Abellio ScotRail, Aberdeen's railway station on Guild Street is located in the city centre and forms part of the main UK rail network. It is the busiest railway station in Scotland north of the central belt, with over 3,599,431 journeys entering and exiting Aberdeen during 2013-2014<sup>4</sup>. It provides regular services to major Scottish cities, connecting to London via the east coast network and offers the UK's longest direct rail journey which runs from Aberdeen to Penzance. Aberdeen railway station offers an interchange with Aberdeen ferry terminal, which lies approximately 450m. away.

### 1.4.3 Bus

Until 2007, a 1950s-style concrete bus station at Guild Street served out-of-the-city locations; it has since transferred to a new and well-presented bus station just 100m. to the east off Market Street as part of the Union Square development. This accommodates 14 stands operated predominately by Stagecoach Bluebird, Scottish Citylink and Megabus; serving all areas of the north-east.

First Aberdeen operate city buses with First Group's global headquarters still located at the former Aberdeen Tramways depot on King Street. Stagecoach Group run buses in Aberdeen and Aberdeenshire, under the Stagecoach Bluebird brand. Other bus companies (e.g. Megabus) run buses from the bus station to places north and south of the city, whilst National Express operate express coach services to London twice daily.

Three park-and-choose sites serve the city: Ellon (approx 27 km out from the city centre) and Kingswells and Bridge of Don (approx 5 to 6 km out) operated by First Aberdeen, ACC and Stagecoach Bluebird; with bus lanes offering priority travel.

<sup>3</sup> <http://www.aberdeenairport.com/about-us/facts-and-figures/>

<sup>4</sup> <http://orr.gov.uk/statistics/published-stats/station-usage-estimates-station-usage-data>





#### 1.4.4 Cycle<sup>5</sup>

Aberdeen is connected to the UK National Cycle Network, and has a track to the south connecting to cities such as Dundee and Edinburgh and one to the north that forks about 15km from the city into two different tracks heading to Inverness and Fraserburgh respectively.

A comprehensive network of on and off-road cycle routes have been established across Aberdeen City and further within neighbouring Aberdeenshire with more projects being completed all the time. Recent monitoring suggests that around 700 cyclists are on the move at 11 key locations during the morning commute with an expectation that this figure will rise in light of increasing cycle provision.

Much work has been done to establish a local Cycle Network including the upgrade of routes, provision of cycle parking, training opportunities for adults and children and development of new facilities such as the Westhill Cycle Path and access alongside Riverside Drive.

<sup>5</sup> Information obtained from Get About.



#### 1.4.5 Pedestrian movement

Under the Land Reform (Scotland) Act 2003, all Local Authorities and National Park Authorities in Scotland have a statutory duty to prepare a Core Paths Plan that will provide the basic framework of routes sufficient for the purpose of giving the public reasonable access throughout their area. The basic framework of routes will link into, and support, wider networks of other paths.

Aberdeen's Core Paths Plan has been developed to form a complete path network throughout the City, encouraging healthy and sustainable access opportunities for all. The Core Paths Plan forms a key part of outdoor access provision and helps to support wider national, regional and local policy objectives on health, recreation, education, economic development, social inclusion, community development, sustainable transport and tourism.

Two particularly popular footpaths along old railway tracks are the Deeside Way to and the Formartine and Buchan Way to Ellon, both used by a mixture of cyclists, walkers and occasionally horses.



# Aberdeen Harbour



#### 1.4.6 Road

There are six major roads in and out of the city with the A90 comprising the main arterial route linking Aberdeen to the north and south, with the A96 linking the city to the wider region. The A93 is the main route to the west, heading towards Royal Deeside and the Cairngorms.

The A944 also heads west, through Westhill and on to Alford. The A92 was the original southerly road to Aberdeen prior to the building of the A90, and is now used as a tourist route, connecting the towns of Montrose and Arbroath and on the east coast. The A947 exits the city at Dyce and goes on to Newmachar, Oldmeldrum and Turriff finally ending at Banff and Macduff.

Aberdeen's Western Peripheral Route (AWPR) was finally given the go-ahead in October 2012. The 50km route is earmarked to be completed in 2018 and is hoped to significantly reduce traffic congestion in and around the city. This is jointly funding with Aberdeenshire Council and Transport Scotland with the overall estimated construction estimated cost of £750 million.

There are two major transport projects progressing through the construction stage, Access from the North - The 3rd Don Crossing and the A96 Park and Choose/Airport Link Road. The costs of these two projects are £18 million and £15 million respectively.

There are a number of transport related projects which will be progressed as part of the City Centre Masterplan and as part of the Sustainable Urban Mobility Plan (SUMP); enabling delivery of the ambition for a more vibrant city centre. The planning and design of the Berryden dual carriageway and the South College Street improvement are both progressing with combined costs of £22 million.



#### 1.4.7 Harbour

The Dee Estuary, Aberdeen's harbour, has continually been improved. Starting out as a fishing port, moving onto steam trawlers, the oil industry, it is now a major port of departure for the Baltic and Scandinavia with major exports including fertiliser, granite, and chemicals. It is the principal commercial port in northern Scotland and an international port for general cargo and container traffic. The harbour annually handles around 8,000 vessel arrivals and around five million tonnes of cargo, valued at approximately £1.5 billion, for a wide range of industries, serving Aberdeen as an extensive hinterland. The harbour also serves NorthLink Ferries, which sail to Kirkwall and the Shetland Islands and offers smaller cruises along the coast.

Planning discussions are underway for the development of a new harbour at Nigg Bay, which is envisaged to make provision for deep water vessels, decommissioning and cruise ships.





## 1.5 Buildings

Aberdeen's architecture is known for its principal use of granite, which has led to its local nickname of the Granite City.

Over the next 20 years Aberdeen will accommodate around half of the new housing and employment land needed to meet the strategic needs of the North East as set out in the Strategic Development Plan (SDP). Regeneration of city centre sites and other brownfield sites throughout the existing built-up area for appropriate uses will be encouraged and are expected to contribute 7,500 units towards our housing requirements. All construction activity is subject to ever changing building standards that are setting more stringent targets in relation to energy efficiency performance. Further, schemes such as the Building Research Establishment Environmental Assessment Methodology (BREEAM) and the Home Quality Mark are becoming the norm as opposed to being undertaken in a voluntary capacity.

Of the housing stock across the city, 54% are flatted, 35% are low-rise attached housing (semi or terrace) and 11% are detached: 27% of our housing stock was built before 1930, with the vast majority of these buildings being traditional built homes of granite construction.

These traditional buildings typically consume more energy per m<sup>2</sup> to heat adequately, than most housing built later (although there are exceptions). Solutions to improve the thermal performance of these buildings can be expensive, disruptive, and detrimental to the historic integrity of the buildings. There are also legal issues with regard flatted properties in particular tenements where all areas out-with the internal dwelling space are commonly owned; therefore any improvements need the consent of all property owners within a building.



A thermal flyover was undertaken in 2001 and repeated in 2014, with thermal data being collected over two nights. The resultant image allowed identification of the least thermally efficient areas, or house types, within the City and to target homes for energy efficiency promotions to those areas.

A significant number of these houses or blocks of flats will have integral 'rooms in the roof' (i.e. '1.5storey' with dormer windows), and therefore have very poor thermal performance, again these present technical and potentially costly challenges in delivering insulation improvements.

Over 15,000 (42%) of our flats are within traditional tenements. Granite buildings let moisture travel in and out therefore interventions to improve the thermal performance of the walls must consider the effects of disrupting this flow of moisture and air. Even insulating the loft in these buildings can be a process that takes several months to successfully co-ordinate.

Of the other flats, in most cases loft insulation can be delivered more readily, as the loft space is usually owned by the owner of the dwelling directly below the space, and therefore does not need consent from anyone else in block to proceed. However over half of these are of cavity construction and again the same issues of consent arise as for technical reasons the whole height of a buildings wall must be cavity-filled therefore owners of flats vertically adjacent to one another need to give consent for works, and ensure someone is on the day of installation.

Just over half the low level housing in the city is of cavity construction and therefore thermal improvement of walls is relatively straightforward and most have already been insulated. The majority of these homes have pitched roofs with no rooms in the roof so loft spaces are accessible, and the vast majority will have some form of loft insulation installed between the joists.

A number of dwellings in the city, both flats and housing, are of non-traditional construction techniques and solutions to reduce heat loss through the walls can be more challenging with these properties.

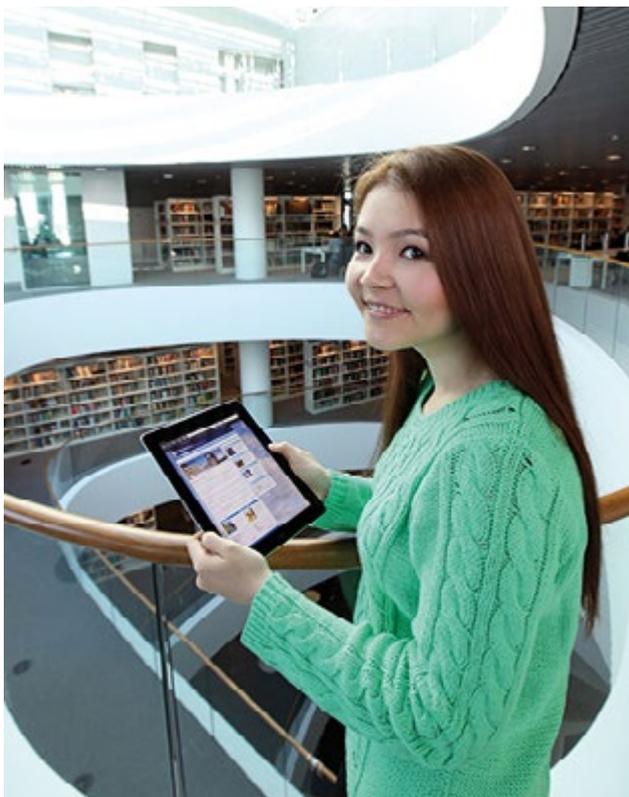
The analysed data shows indicative mean heat loss from each building in the City on a colour range from dark red (high heat loss) to dark blue (minimal heat loss). The data provides only an indication of heat loss. There could be other reasons for, say, a property apparently losing no heat, for example it could be there was no heating on at the time the image was taken. What the image provides is a snapshot of possible heat loss at the specific time of the flight.



## 1.6 Energy supply

The major sources of energy in Scotland, and Aberdeen, are fossil fuel (oil, gas and coal), nuclear and large scale hydro. Fossil fuels will run out and it is important that sustainable alternative forms are developed to ensure energy security. In addition, the burning of fossil fuels has led to an increase in global CO<sub>2</sub> emissions, which in turn has led to global climate change. Nuclear energy has a limited range of end uses and there is widespread concern regarding its waste products, which will take thousands of years to decay. Renewable sources of energy will make an important contribution towards securing a sustainable and diverse supply of energy for present and future generations in Aberdeen, with energy conservation being a key element in reducing energy demand in the first instance.

Figure 2 – Major sources of energy in Scotland.



## 1.7 Digital connectivity

Digital technologies play an increasingly important role in the management of energy consumption at individual, organisational and city levels. The Information Technology and Transformation function within the Council, along with city wide stakeholders, will seek to deliver the infrastructure, platforms and networks to support the delivery of energy reduction technology, energy and environmental measurement and application of data science to achieve the aims and objectives of **Powering Aberdeen**. This will be achieved by aligning closely the development of both programmes to secure cost effective deployment and best value solution.



## 1.8 Current emissions levels

The global climate is changing. Sea levels have risen about 20 cm and the average surface temperature has risen by about 0.8°C since the end of the 19th Century. Many other observed changes, such as retreating glaciers and arctic ice, and shifting distributions of species, are consistent with a warming world. The main cause of the changing global climate is emissions of greenhouse gases from human activities.

According to the fourth report: Reducing Emissions in Scotland 2015 emissions in 2012 were higher than the 53.226 MtCO<sub>2</sub>e target, by around 2.4 MtCO<sub>2</sub>e (4.5%). This can be accounted for through increased heating demand due to colder temperatures and inventory changes having made legislative targets harder to reach. That said, this is the third time that Scotland has missed an annual target. There has been good progress in deploying renewable electricity generation capacity, in installing community and locally-owned energy projects and in rolling out area-based energy efficiency programmes. There has been less progress in other areas including transport, renewable heat, agriculture and forestry, and the waste sector. Even in areas of good progress, further action will be needed to meet Scotland's ambitious 2020 target.

To develop **Powering Aberdeen** it was necessary to establish current emission levels and how energy is consumed across the city. Initial work on gathering this information was undertaken by Robert Gordon University's (RGU) Centre for Understanding Sustainable Practice (CUSP) and then validated and finalised by Aether. This culminated in the production of a BEEI, a full copy of which is available on the **Powering Aberdeen** webpages<sup>6</sup>.



<sup>6</sup> [http://www.aberdeencity.gov.uk/council\\_government/shaping\\_aberdeen/SustainableEnergyActionPlan.asp](http://www.aberdeencity.gov.uk/council_government/shaping_aberdeen/SustainableEnergyActionPlan.asp)

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