HALTWHISTLE TOWN COUNCIL

Position paper – Climate change Cllr Mike McGuire, Sept. 2019

1. Technical Background

The surface of the Earth is warmed mainly by visible radiation from the sun. To balance this, the surface temperature is kept constant by emission of heat as infra-red radiation back into space. Carbon dioxide (CO_2), and several other gases which are found in low concentrations in the atmosphere, trap some of this outgoing radiation turning it into heat, some of which gets back to the surface making it warmer than it would otherwise be. This is called the "greenhouse effect".

Over geological time the level of atmospheric CO_2 has varied, sometimes with major consequences for life. For about 10,000 years until the start of the industrial revolution, the CO_2 level remained remarkably constant and the climate was quite stable. This helped mankind to prosper. However, the energy which powered the revolution has been obtained mainly by burning carbon-based fuels and, remembering the chemistry teacher's mantra "burning is joining with oxygen", large amounts of CO_2 have been released. The atmospheric CO_2 level has increased by about 50% and is rising ever faster. As a rough guide to carbon-based fuels, burning coal produces about twice as much CO_2 as burning natural gas for the same amount of energy; oil-based fuels are somewhere in between.

This CO_2 increase would be expected to warm the Earth, making the climate both warmer and less stable. Although the climate is very complex, much more so than the explanation above might suggest, it is now clear that these changes are indeed happening. Our intricate way of life is highly tuned to a stable climate and such changes will have a variety of unwelcome consequences for us and for the ecosystem. Although sea-level rise is unlikely to inundate Haltwhistle, damaging weather events, food shortages, economic disruption, mass movements of an increasing world population, and increasing social instability are amongst a variety of real dangers.

2. Climate change policy

The properties of CO_2 and their implications for climate have been known since the mid-19th century and scientists have been warning for at least 60 years about the possible effects of increasing atmospheric CO_2. However, the world has only taken serious notice since climatic changes have become so clear that there is no doubt about their cause.

At last political initiatives are gathering momentum at various levels. Internationally the "Paris agreement" commits all countries to make major changes, although several large countries are displaying very ambivalent attitudes. The UK government has committed to a target of "carbon-neutrality" by 2050. NCC, along with many other local authorities, has declared a "climate emergency" and, at least internally, is preparing plans to reduce its "carbon footprint". The mayor has made environmental matters his highest priority.

All of these political initiatives, or the effects of climate change if the initiatives don't work, or most likely a combination of both, will have major implications for the citizens of

Haltwhistle. Helping them to cope with these implications will be the Council's greatest responsibility over the next few decades. The remainder of this paper is an initial description of the main areas of concern, and of opportunity.

3. Areas for action

In each sub-section there is a discussion of a particular issue ending with a statement in italics of suggestions for Council policy. The only power we have to make any of these suggestions in reality is the power of persuasion.

3.1 Sources, distribution and storage of energy

If we are to abandon fossil fuels, as we must, the following is a list of the main alternatives:

- solar – solar panel technology has improved considerably and some further improvements can be expected; even in cloudy Haltwhistle enough sunlight filters through to make solar panels cost-effective on south-facing roofs or open ground; but current regulations and financial incentives are not sufficient to encourage their widespread adoption by building owners; ground-based solar panels could be appropriate on land which is not suitable for other uses
- wind – we have plenty of this but it is very intermittent and large turbines are very intrusive; offshore is a better place for large wind-farms but local small turbines for isolated properties can be useful
- hydro – there is little potential for this in our area as our topography is not suitable
- other renewables – no geothermal source has been identified locally, tidal is not relevant here, and biofuels require land which is needed for producing food
- nuclear fission – nationally this may be important but locally we have no source of the volume of cooling water needed by nuclear power stations
- nuclear fusion – a potential game-changer in the future but that future may be a long way off.

All these sources generate energy as electricity. For many purposes this is ideal, though its distribution will mean more and larger power lines. It can quite easily be used to generate hydrogen gas from water but the safe distribution and storage of hydrogen presents major technical problems. Theoretically, hydrogen could be a replacement for natural gas and could be used to regenerate electricity through fuel cells but the technology for such uses is in the uncertain future. Whether these alternative energy sources will be sufficient cumulatively to meet all our needs is one of the biggest issues facing humanity.

Battery storage technology is developing rapidly and will be essential in a "carbon-neutral" world, especially as the main renewable energy sources are intermittent. But there are problems of cost, weight, volume, and the availability of materials.

We should lobby for improved incentives for solar panels and encourage owners of domestic and business premises to fit them. We should object to all planning applications which do not specify the maximum possible fitment of solar panels. We should not object to any proposals for solar panels on otherwise waste ground nor for modest wind turbines next to

rural properties. We should not object to proposals to enhance electricity distribution and storage provided the visual impact and environmental effects are not too great. We must encourage and help all our citizens to use energy as wisely as possible.

3.2 Transport

Within 20 years, most cars and many other vehicles will be electric. Range and performance are improving, fuel costs should be less than half that of petrol or diesel, there are tax incentives and grants, overnight charging at home is possible, and local pollution is greatly reduced. On the other hand, initial costs are currently quite high, the second-hand market is yet to develop, range is still an issue as is battery life, and the charging infrastructure is sparse and confusing. A combination of market forces and government intervention should be capable of overcoming all these problems.

Public transport must also go electric. Electric buses are already in use in some urban areas and should be available for routes such as ours before too long. Electrification of our railway, though initially expensive, would bring many benefits. Electric aeroplanes for short-haul flights are a realistic prospect; long-haul is still a conundrum.

We should encourage our citizens to go electric as fast as their personal circumstances allow and promote the development of the charging infrastructure. We should lobby for the electrification of our railway and encourage everyone to make more use of it and the bus services.

3.3 Homes and Businesses

Electricity currently costs about three times as much as gas per unit of energy. Domestic heating is one of the biggest uses of energy in Britain and nearly all homes are currently heated with fossil fuels. It is not clear how the technology for heating buildings in a low-carbon world will develop. Improved insulation has an important part to play. All new homes and industrial premises must be built to the highest available (not just the highest required) standards. The availability of very efficient LED lighting is offset by our increasing use of electrically powered devices.

Our biggest single challenge will be helping to ensure all our citizens have affordably warm places to live and work. We should oppose any development which does not explicitly state that it provides the lowest possible carbon footprint.

3.4 Trees and other plants

Plants, and their marine counterparts, are the original source of all food. They are built largely from the CO_2 in the air. They absorb it and release oxygen, but they only absorb it when they are growing and they release it through decay when they shed leaves or die.

So a growing forest absorbs CO_2 – in fact planting trees is the only effective means of "carbon capture" we currently have – and a mature forest is a huge carbon store. But cutting down trees, even if some of the wood is used for artefacts and structures, eventually sends all the CO_2 back into the atmosphere. Burning forests releases huge amounts of CO_2

all at once and is lunacy. If population growth or climate change cause food shortages, we must use the land we have more efficiently not destroy forests.

Peat is also a large carbon store and can continue to accumulate indefinitely if conditions remain constant. Human activities have already substantially reduced peat and climate change could reduce it much more.

We should plant trees wherever we can and conserve and develop all ecosystems which absorb and store carbon.

3.5 Food and Farming

We are being encouraged to eat less meat and more plant-based food. This is for two reasons. Firstly, animals which eat grass release, mostly by mouth, methane which is a very powerful greenhouse gas. Secondly, raising animals produces much less food per area of land than growing plants. Much of the farming in our area is pastoral with cattle and sheep the largest proportions. However, it is not intensive, much of it is on land which could not support arable farming, and British farming standards of quality, sustainability and animal welfare are amongst the best in the world. We must leave choice of food to individual taste.

We should encourage people to choose local food wherever they can and to waste as little food as possible.

3.6 Recycling

We have a good recycling system. Some materials which could be recycled are not but, on the whole, NCC and their contractor do well. Importantly, nothing we commit to them is allowed to "leak" into the environment. However, the system – both the bins and the recycling facilities – can be complicated to use and people often have enough other complications in life to spend time working out what should go where. They are discouraged by restrictions such as not being permitted to enter the household waste recovery centre on foot. Further complications in the system may result from changes in regional, national and international recycling policies.

We should do whatever we can to help and encourage people to re-use whatever they can and, where they can't, to use the recycling facilities effectively.

4 Haltwhistle in 50 years' time

Whatever happens in the wider world, major changes will be forced on us in the coming decades. With good planning and a willingness to work together we cannot just weather these changes but emerge a better community – even more caring, co-operative and confident. Leadership will be needed and it is the Council's responsibility to provide this.

We need a plan, very soon, and we need to persuade the people of Haltwhistle it is a plan worth following. The information in this paper is intended to provide a starting point for drawing up our plan.