WPC Climate Action Plan

# Starting Point

WPC declared a climate emergency in 2019 as follows:

*That Council agree to:*

*a) Join Councils, such as Bristol, Brighton and Oxford, in declaring a Climate Emergency; Call on Oxfordshire County Council, South Oxfordshire District Council and Westminster to provide the powers and resources to make local action on climate change easier;*

*b) Work with other local authority organisations such as OALC (Oxfordshire Association of Local Councils) and appropriate government departments (both within the UK and internationally) to determine and implement best practice methods to limit global warming to less than 1.5°C above pre-industrial levels.*

*c) Recommend to Full Council within six months with the actions the Council could take to address this emergency*

It is generally accepted that global warming is a result of the release of Green House Gasses (GHGs) into the atmosphere from human activity over the last 200 years. The most significant GHG is Carbon Dioxide (CO2) from burning fossil fuels but other gasses such as methane are also contributors. GHGs are measured in grams of Carbon Dioxide equivalent (CO2e) which take into account the range of impacts of different GHGs. GHG emissions are measured in tonnes of CO2 per annum (tCO2e pa).

The UK Government is committed to achieving a “net zero” (i.e. CO2e emitted less any CO2e absorbed by sequestration in plants or through carbon capture processes) by 2050 to limit global warming to 1.5˚C.

This Action Plan identifies actions that WPC can take to make a significant difference to the level of GHG emissions in the Town by focusing on the biggest sources of emissions and actions that are within WPC’s powers.

# What is our target?

WPC has not previously adopted a target for carbon reduction. Before doing so, it is worth understanding where there are overlapping targets and what those mean.

**Nationally** the Climate Change Act commits the UK to the following carbon reduction schedule (known as Carbon Budgets):

|  |  |
| --- | --- |
| **By** | **Reduction in CO2e pa compared to 1990** |
| 2022 | 37% |
| 2025 | 51% |
| 2030 | 57% |
| 2035 | 78% |
| 2050 | 100% |

UK Government has strategies deigned to achieve these targets. It is on track to achieve the 2022 milestone but is behind on progress to future targets.

**Oxfordshire County Council** have two targets:

* Operate at net-zero carbon by 2030
* Enable a net-zero Carbon Oxfordshire by 2050.

OCC have worked with District Councils and parishes on a “Pathways to zero carbon Oxfordshire” which provides a framework for policies to meet their targets.

**SODC** have set two carbon reduction targets:

* Making the operations of the council itself net zero by 2025
* Achieving net zero for all of South Oxfordshire by 2030 (i.e. the 100% reduction target set in the legislation but 20 years earlier than required in legislation).

SODC has no plan to meet these targets and will not be looking at a plan for the District level target until 2022/23. In OCC’s opinion net zero by 2030 is not possible without resorting to offset payments.

**Oxford City Council** have a target for a zero carbon city (ZCOP) by 2040 and a carefully worked through plan including actions and dependencies to achieve that target by 2050.

All of these targets are “Territorial” measures. That is they are for the CO2e emitted by transport, homes, industry, agriculture etc. in the territory (District, County, nation etc.). They do not include the CO2e emitted outside the territory to create goods, services and food that are imported into the territory. For Watlington this more comprehensive measure (called a “consumption” footprint) is approximately twice the territorial footprint.

**WCAG** have an aspiration for Watlington to achieve net zero at a **consumption** level by 2030. WCAG recognises this is beyond the scope of either it or WPC. WCAG will nevertheless continue to promote behavioural change targeting consumption related emissions and is well placed to raise awareness of this as a core part of their activities.

The following graph illustrates the reduction in CO2e needed to achieve each of the targets for Watlington.

Taking effective action to reduce the carbon in products produced elsewhere in the UK or abroad is far more challenging than addressing local emissions and is well beyond the powers of WPC.

Achieving net zero on any basis by 2030 is not possible with current national initiatives (e.g. decarbonisation of electricity supply or deployment of carbon capture technologies) unless Watlington residents are willing to make investments (e.g. in home energy systems and electric vehicles) and lifestyle changes (such as not flying) well beyond other UK citizens.

**Proposal 1:**

That WPC adopt two targets:

1. To achieve net zero CO2e emissions at the territorial level by 2050 in line with legislation. This gives the following interim targets:

|  |  |  |
| --- | --- | --- |
| **By** | **Footprint target**  **(tCO2e pa)** | **Reduction in CO2e** **compared to current footprint** |
| 2025 | 10,418 | 22% |
| 2030 | 9,142 | 32% |
| 2035 | 4,677 | 65% |
| 2050 | - | 100% |

1. To achieve net zero for its own operations by 2025. This is in line with equivalent OCC and SODC targets and, while a small impact in its own right, will signpost the actions required in the parish to achieve the wider objective.

# Watlington’s Current Carbon footprint

Watlington’s CO2e footprint today is 13,394 tonnes of CO2e per year or 4.9 tonnes per person. (See Appendix A for how this was derived)

|  |  |  |
| --- | --- | --- |
| **WPC Territorial Footprint** |  |  |
| All figures: t CO2e pa |  |  |
| Energy use in homes | 5,395 | 40% |
| Cars & Vans | 2,504 | 19% |
| Flights | 1,627 | 12% |
| Other Transport | 1,328 | 10% |
| Industrial / Commercial | 954 | 7% |
| Agriculture | 2,425 | 18% |
| F-gases (refrigeration etc.) | 189 | 1% |
| Waste Management | 153 | 1% |
| Land use sequestration | - 1,180 | -9% |
|  | 13,394 |  |

The biggest contributors to our footprint is the energy we use to heat our homes, drive our cars and in the flights we take for business and leisure. Most of that energy comes from fossil fuels (gas, oil, petrol and coal). Achieving net zero is not possible without doing less of these things or changing the source of the energy away from fossil fuels - known as decarbonising.

# Action Plan

The following graph shows one possible plan for Watlington to achieve net zero by 2050.

The assumptions used to create this plan are described in Appendix A. A more detailed model is available if you are interested.

You can see that the plan does not eliminate emissions (agriculture and flights are still significant) but these are matched by levels of sequestration into the natural environment and artificial carbon capture systems.

The plan demonstrates the extent to which Watlington relies on complementary strategies nationally (e.g. the government’s recent commitment to decarbonise electricity supply by 2035).

The aim of this plan is to identify actions WPC can take to exploit national strategies to make sure we play our part in the wider picture.

# Proposed Action by Sector

## Domestic

This includes the emissions from heating, lighting and operating resident’s homes. Based on 724 properties (of 1,227 in the parish) the principal energy source for heating is:

To achieve zero emissions in this sector will require some mix of:

* Retrofitting all fossil fuel powered homes (70% of households) with electricity based systems, preferably Air Source (ASHP) or Ground source Heat Pumps (GSHP)
* Improving insulation in all existing homes
* Ensuring all new homes are built to high efficiency standards with zero carbon heating systems.
* Having a zero carbon electricity supply (see below)

Installation of gas boilers in new homes has been banned from 2025 and it is expected that the sale of new gas boilers will be banned from 2035.

There are government incentives to install heat pumps and to insulate your home. These are likely to increase over time. Sale of homes with a rating worse than “EPC-C” is expected to be made illegal

**Proposal 2:**

* 1. WPC will use its role in planning to promote the highest insulation standards and non-carbon energy sources in all new builds and building modifications
  2. WPC will retrofit its own buildings to be carbon neutral by 2025 and use this as a showcase for homeowners and businesses
  3. WPC will work with WCAG and other partners to promote home insulation initiatives

Insulating a home can cut energy use, and hence emissions, by up to 0.5 tCO2e pa per house. The plan requires 60 houses per year to be installing significant insulation by 2030.

Converting a house heated by fossil fuels to ASHP cuts emissions by approximately 4 tCO2e pa. If fully implemented these could reduce emissions for this sector by up to 5%. Progress beyond that relies on homes retrofitting heat pumps which will require government incentives and/or proscription. The plan requires 50 fossil fuel houses to convert to ASHP each year by 2030.

## Cars and Vans

This includes the emissions from driving domestic cars and vans and represents 17% of our footprint.

Reducing this to zero requires some combination of:

* Reducing car use
* Replacing petrol / diesel vehicles with Petrol Hybrid Electric Vehicles (PHEV). Note that PHEVs reduce emissions by 2/3rds compared to petrol/diesel.
* Replacing petrol / diesel vehicles with Battery Electric Vehicles (BEV) AND having a zero carbon electricity supply to charge them

Sale of new petrol / diesel cars has been banned from 2030 and it is estimated that the cost of buying BEVs will reach parity with petrol / diesel by 2026. The running costs of BEVs is less per mile creating an incentive to switch. Concerns about switching include range, performance and availability of recharge points.

**Proposal 3:**

* 1. WPC will encourage early switching to BEVs by ensuring that every household has access to EV charging either at their own premises, at on-street parking locations or at “park and charge” locations for overnight recharging as well as through rapid charge points in public car parks for visitors.
  2. WPC will establish (either on its own or in partnership) a short term BEV rental scheme to introduce residents to the technology.

Replacing one petrol / diesel car with a BEV reduces emissions by 1.1 tCO2e pa. Once all vehicles in the parish are BEVs and electricity is decarbonised, this will remove this sector entirely and reduce our overall footprint by 17%. The plan requires an average of 150 new BEVs each year to 2029.

## Flights & Other Transport

This includes journeys by Watlington residents using trains, planes or ships. While train routes are increasingly electrified there are no zero carbon alternatives for most flights or ship journeys.

WPC have few levers to encourage reduction in travel or to encourage switching to alternative means and no action is proposed.

## Industrial & Commercial

This includes emissions from the non-residential sector: shops, offices and factories in the parish and is relatively low in the parish.

The challenges are likely to be similar to that for domestic premises and the actions are the same for that sector – working with the WBA to promote a move away from fossil fuel energy sources.

## Agriculture & Land Use

These are the emissions from farming and other land use activities. Once the sequestration (i.e. capture of carbon in growing things and soils) is taken into account this is a net 8% of our footprint.

WPC have few levers to encourage farmers to change their practices and must rely on national incentive schemes to make this happen.

**Proposal 4:**

* 1. WPC will work with developers and landowners to identify areas where high sequestration habitats (such as managed deciduous woodland) can replace low sequestration habitats.

This will reduce our carbon footprint by up to 7 tCO2e pa per hectare.

## Waste and F-Gasses

These smaller footprints will be dealt with by government (F-Gas) and SODC (Waste) interventions.

**Proposal 5:**

* 1. WPC will work with SODC on initiatives to reduce the waste generated by the town.

## Decarbonisation of Electricity

The big wins in lowering emissions are by replacing fossil fuels as the energy source for houses, firms and vehicles with electricity. This only reduces the carbon emissions to zero if the electricity used is itself not generated from fossil fuels.

To decarbonise the electricity consumed in Watlington requires some mix of the following:

* Changing the electricity suppliers used by residents to green energy suppliers.
* Increasing the amount of renewable energy in the UK mix nationally as well as locally
* Replacing gas as the “baseload” fuel source at times when the there is little wind and sun

**Proposal 6:**

* 1. WPC will include in its Neighbourhood Plan a policy to include deployment of renewable (e.g. solar panels and wind turbines & biomass), waste conversion (e.g. anaerobic convertors or waste incineration), district heating (e.g. GSHP) within the parish.
  2. WPC will consider positively, with a presumption for approval, any proposals for developments which incorporate the building of such generation capacity or nuclear power generation plants in the Parish or surrounding districts
  3. WPC will work with WCAG to investigate establishing a zero carbon Community Energy project in the parish.
  4. WPC will work with WCAG to investigate the large scale installation of domestic PV panels and the viability of a local micro grid.

Each MWh of electricity produced from renewable sources reduces our footprint by 0.44 tCO2e. A one ha PV array would reduce the footprint by 211 tCO2e pa (1.6% of our footprint).

# Next Steps

Achieving this ambitious plan will require concerted action across many years.

**Proposal 7:**

* 1. The CAAB will be reconstituted as a Project Board to deliver these proposals
  2. WPC will include at least one project from this plan on the major projects shortlist each year.
  3. WPC will advertise this plan to the community and report annually on progress toward it.
  4. WPC will review this plan every two years to ensure it is on track to achieve the target and to consider additional and emerging solutions.
  5. WPC will continue to support WCAG on initiatives designed to reduce emissions.
  6. All major initiatives taken by WPC will include an evaluation of their impact on carbon emissions.
  7. At the next revision, the Neighbourhood Plan will include policies and recommendations consistent with this strategy.

# Appendix A – Technical Note

1. **Watlington’s Carbon Footprint** has been calculated using two published sources, IMPACT (impact-tool.org.uk from University of Exeter) and CREDS Place Based Carbon Calculator ([www.carbon.place](http://www.carbon.place)). A “worst case” approach has been used to derive a detailed territorial and consumption footprint.
2. **The target** for carbon emissions by year have been created using the legally binding Climate Change Act milestone targets and assuming a straight line reduction between milestones.

The plan for carbon reduction makes the following assumptions:

1. **Domestic Energy**

Energy use is derived from the Energy Performance Certificates (EPCs) for Watlington that are published by the Government. The EPC database covers 53% of Watlington homes and provides data on energy sources and insulation needs.

The model assumes that Air Source Heat Pumps (ASHPs) are the preferred solution for Watlington. The other two large scale zero carbon technologies that are being proposed are unlikely to apply to small towns: Community heat networks are intended for high density demand in city centres and around major users like hospitals, Green hydrogen through the gas network relies on area wide deployment.

The model assumes roll out of ASHPs is at the same rate as nationally. It may be possible to improve on that with targeted encouragement by WPC but I have assumed that householder willingness, affordability concerns and the availability of cheaper technology and/or government loans are the critical factors.

The model uses EPC data on the insulation options required in Watlington homes (cavity wall, loft insulation etc.) and the roll out of these measures is at the national rate. Similar arguments for take up as for ASHPs apply.

1. **Cars & Vans**

The model uses census data on car ownership and assumes a rapid adoption of electric vehicles (ev) using the following assumptions from the DEMOS report (Climate Consensus Report October 2021):

* The difference in price between petrol/diesel and electric vehicles is eliminated by around 2026
* EV market share will jump to 40% in the first year that prices are equivalent and the full charging network exists, rising to 80% in the following year, and 100% in the year after that.
* Cars last on average 11 years, so even once 100% of sales are electric, it will take another decade or so for all cars on the road to be electric
* Assumption that Watlington will have a charging network by 2028 with 85% of vehicles having access to a private charging point at their home and 15% of vehicles needing access to a public charging point

1. **Flights**

Assumptions are in line with Committee on Climate Change 6th Carbon Budget ([Sixth Carbon Budget - Climate Change Committee (theccc.org.uk)](https://www.theccc.org.uk/publication/sixth-carbon-budget/).

* A 25% increase in air travel by 2050
* Offset by improved efficiency and replacing 25% of jet fuel with non-fossil alternatives.

1. **Other Transport**

Assumptions are in line with Committee on Climate Change 6th Carbon Budget.

1. **Industry & Commerce**

No increase in activity in the parish and a conservative reduction in emissions due to efficiency and switching to non-fossil fuel sources.

1. **Agriculture**

A conservative switch to non-fossil fuel vehicles and a switch to lower emission farming practices and crops.

1. **F-Gases**

These gasses used in refrigeration, extinguishers and health settings are the most harmful GHGs. The plan to phase them out is in line with the CCC’s 6th carbon budget.

1. **Waste Disposal**

It is assumed that SODC’s plan to achieve net zero in their own operations (including their supply chain) by 2025 will deliver this part of the plan.

1. **Carbon Sequestration**

The landscape in the parish currently sequesters about 8.8% of our total emissions.

The sequestration model uses data from English Nature (NERR094 Carbon Storage and Sequestration by Habitat (2nd) 2021 19-4-21) and estimates of current land use.

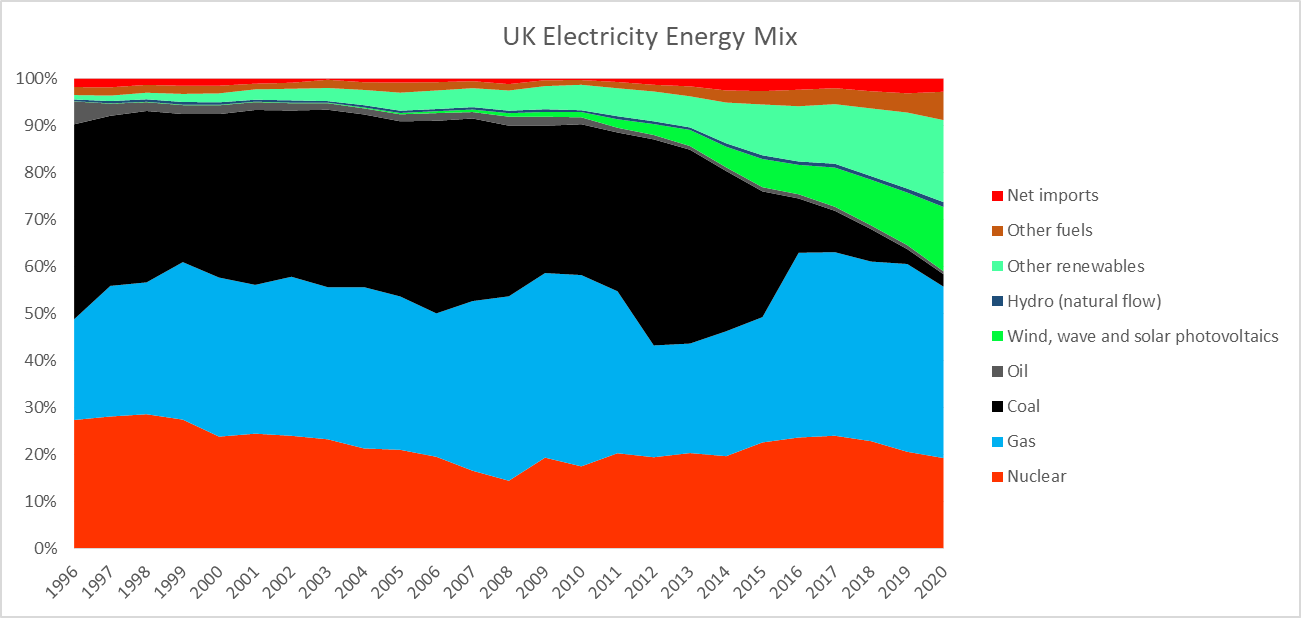
The plan assumes that 4 hectares across the parish are planted with deciduous woodland and that 4 km of hedgerows are restored. Increasing the sequestration to 9.2% of our current footprint.

1. **Carbon Capture**

The plan assumes that the new carbon capture technologies proposed by the Government work at scale and are successfully deployed from 2029 in line with the CCC 6th Carbon budget. Their contribution to Watlington’s plan is on a per capita basis.

1. **Electricity Supply**

The UK has successfully reduced the amount of carbon produced to generate electricity by increasing the contribution from renewables and by replacing high carbon coal with lower carbon gas. However, 40% of UK electricity is still from fossil fuels.



The plan is based on the government’s plan to achieve net zero generation by 2035 laid out in the CCC's 6th Carbon Budget report. The plan includes:

* Replacement of nuclear plants with new plant retaining 10 GW of capacity
* Phasing out coal by 2024
* Replacing "unabated" gas generation with Carbon Capture & Storage and hydrogen at scale by 2035
* Increasing renewables to 60% by 2030, 70% by 2035 and 80% by 2050
* Increasing wind generation from 265 TWh in 2035 and to 430 TWh by 2050
* Increasing solar from 10 TWh in 2019 to 60 TWh in 2035 and 85 TWh by 2050
* Storing energy from variable renewables via green hydrogen and pumped hydro schemes

The plan does not explicitly include the impact of local PV installation or community energy schemes as proposed. They are assumed to be part of the overall move to decarbonise electricity supply.

1. **Housing Growth**

The plan reflects the growth in housing in the Town from sites A, B and C and does not include any growth beyond that.