Route towards becoming a **Net Zero Carbon Local Authority** by 2030

Approved: 12th February 2020

carmarthenshire.gov.wales

Cyngor **Sir Gâr**
Carmarthenshire
County Council

CONTENTS

FOREWORD

Climate change is recognised by many as one of the world's greatest threats. At the opening ceremony of the United Nations-sponsored climate talks in Katowice, Poland in December 2018, Sir David Attenborough called climate change *"our greatest threat in thousands of years"*, adding *"If we don't take action, the collapse of our civilisations and the extinction of much of the natural world is on the horizon."* Storm Callum in 2018 vividly demonstrated how Carmarthenshire is not immune from the effects of climate change.

At the meeting of the County Council on 20th February 2019 I was impressed by the question asked by Miss Coral Sylvan regarding what the Council is doing with respect to climate change. I don't recall somebody as young as eleven years old previously attending a meeting of the Council to challenge elected Members. Following an impassioned debate, Members unanimously resolved to declare a climate emergency and committed to become a net zero carbon local authority by 2030.

Leading the Council's climate change strategy has been included in my portfolio of responsibilities as Executive Board Member for Communities and Rural Affairs, and I recognise that it is a huge challenge that will require action by all Services within the Council and by many other bodies locally, nationally and internationally.

As a starting point, this action plan outlines a pragmatic route towards the Council becoming a net zero carbon local authority by 2030. It is intended to be a living document and will evolve over time. This is a long-term plan for the next ten years and as such more proposals will be added as it develops. Further technological breakthroughs will inevitably come forward in due course, but the most important thing is that the Council has started on this important path.

We want everyone in the community to play a part in this important work and look forward to working both on the emissions from our own activities and more widely with partners to bring this about.

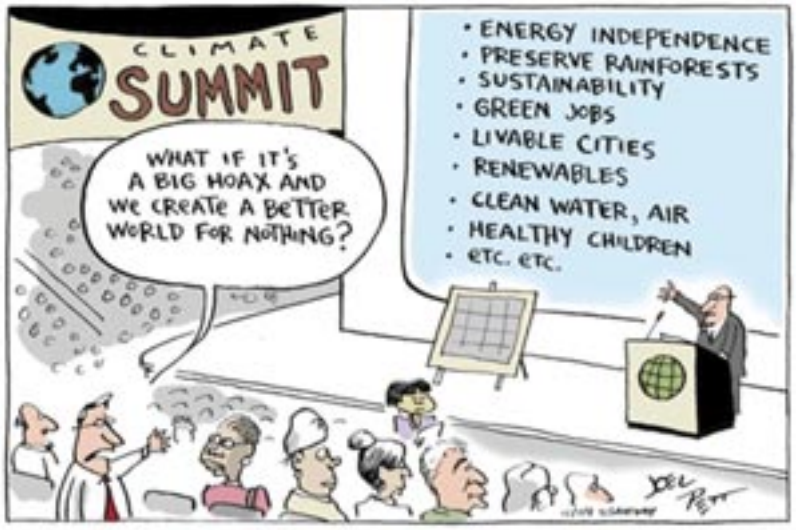
Please note that hyperlinks are provided throughout this document, where the text appears underlined, that direct the reader to further web-based information.

Cllr Cefin Campbell
Executive Board Member for Communities and Rural Affairs

1. BACKGROUND

In October 2018, the Intergovernmental Panel on Climate Change (IPCC) published a Special Report on the impacts of global warming of 1.5˚C. The IPCC found that a 1.5˚C world would have significantly lower climate-related risks for natural and human systems than a 2˚C world, and that global carbon emissions would need to reach net zero around 2050 to have no, or limited, overshoot beyond 1.5˚C of climate change. Behind this report is a huge body of scientific research and analysis with near unanimous agreement amongst the world's scientific community.

Consistent IPCC reports and United Nations Framework Convention on Climate Change summits have come and gone. They attract publicity and media attention at the time but action by world leaders to work towards the plans agreed at these meetings has been slow.



The IPCC Special Report of October 2018 was the strongest yet, effectively saying that the world had just 12 years to get a grip with this issue or irreparable damage will be done to our ecosystem.

This has led to a realisation that time is fast running out which resulted in a climate emergency being declared during 2019 by many organisations including Carmarthenshire County Council and over 250 other UK local authorities. The Welsh Government and UK Government have also declared a climate emergency.

2. NOTICE OF MOTION

The meeting of Carmarthenshire County Council on 20th February 2019 unanimously resolved that the following Notice of Motion submitted by Cllr. Aled Vaughan Owen be supported:

"…we propose that Carmarthenshire County Council:

1. Declare a climate emergency
2. Commit to making Carmarthenshire County Council a net zero carbon local authority by 2030
3. Develop a clear plan for a route towards being net zero carbon within 12 months
4. Call on Welsh and UK Governments to provide the necessary support and resources to enable effective carbon reductions
5. Work with Public Services Board and Swansea Bay City Deal partners to develop exciting opportunities to deliver carbon savings
6. Collaborate with experts from the private sector and 3rd sectors to develop innovative solutions to becoming net zero carbon."

3. NET ZERO CARBON LOCAL AUTHORITY BY 2030

3.1 OUTLINE APPROACH

When a council passes any motion, it reflects the importance that the organisation places on the issue and it signals its intent to address it; therefore, if a council passes a climate emergency motion the same can be said for this agenda. The use of the term "emergency" is significant and, by definition, this is not a normal motion. If that is the case, then the actions that a council takes should not be normal either.

Carmarthenshire County Council is a member of the Association for Public Service Excellence (APSE) and in 2019 joined APSE Energy – a collaboration of over 100 UK local authorities who are working towards the municipalisation of energy. APSE Energy was established to help support local authorities to make the most of their assets in the energy arena and to help them take a leadership role within it. The APSE Energy publication 'Local Authority Climate Emergency Declarations: Strategic and practical considerations for climate emergency declarations, targets and action plans' (June 2019) has informed the Council's approach. This recognises that whilst an emergency declaration deserves an appropriate response, a local authority cannot abandon everything to tackle climate change as there are other legal duties and responsibilities to fulfil as well as locally identified priorities it has committed to addressing.

A pragmatic approach, therefore, is being adopted for the route towards the Council becoming a net zero carbon local authority by 2030. This initially focuses on the carbon emissions that are presently measured by the Council; however, it is recognised that this approach needs to be sufficiently flexible to accommodate changing circumstances, including the reporting requirements yet to be introduced by Welsh Government as part of its ambition for a carbon neutral public sector by 2030. This initial focus is not intended to limit or preclude other potential wider actions to address the climate emergency and some of these are identified in **Appendix 3**.

The Council has, over a number of years, adopted proactive programmes to reduce its carbon emissions and previously reported performance in its Annual Reports. It is proposed that these reported emissions initially constitute the scope of the Council's commitment to become net zero carbon by 2030.

These carbon emissions are from:

(a) Non-domestic buildings;

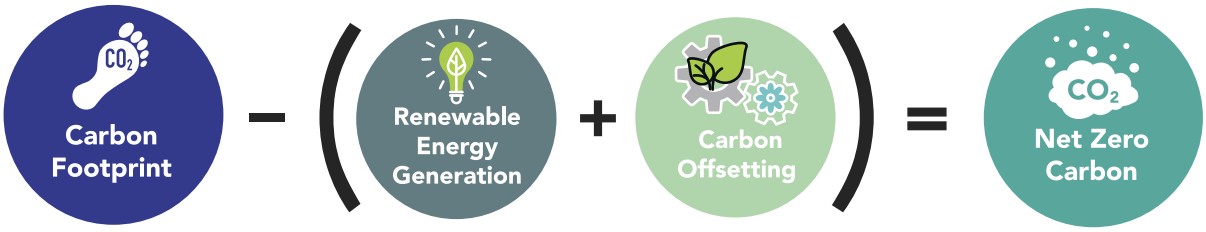
(b) Street lighting;

(c) Fleet mileage; and,

(d) Business mileage.

Whilst the Council is committed to significantly further reduce its carbon footprint, it recognises that however energy/carbon efficient its Services become it will inevitably still have a residual carbon footprint. This situation is acknowledged by the "Net" in the Net Zero Carbon equation as it enables this residual carbon footprint to be compensated for by the generation of renewable energy and/or via carbon offsetting (such as by the planting of trees).

This can be summarised thus:



3.2 CARBON FOOTPRINT

(a) Non-domestic buildings

Non-Domestic Buildings	2016/17	2017/18	2018/19	2018/19 v 2017/18	
	Result	Result	Result	Progress	% change
Consumption (kWh)	66,808,735	63,690,923	64,857,362	Declined	+1.8%
Carbon emissions (tCO_2e)	18,923	16,258	14,822	Improved	-8.8%

Notes:

(1) Whilst consumption (kWh) increased in 2018/19, carbon emissions (tCO_2e) decreased due to a reduction in the emission conversion factor for electricity. The continuing decarbonisation of the electricity distribution network (National Grid) will help to accelerate the reduction of carbon emissions from the Council's consumption of electricity.

(2) The performance data quoted in this document uses UK emission conversion factors issued by the Department for Business, Energy and Industrial Strategy (BEIS) where appropriate. These emission conversion factors are published annually, for example: https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2018

Council's core corporate property portfolio:

Property Type	Total
Admin Buildings / Offices	18
Car Parks	68
Care Homes	7
Commercial Properties	107
Community Centres	2
County Farms	24
Day Centres	6
Depots	6
Galleries & Theatres	4
Industrial Estates	20
Leisure Centres / Pool	4(1)
Libraries	14
Livestock Marts	3
Markets	2
Museums	4
Parks	22(2)
Primary Schools	95
Public Conveniences	11
Secondary Schools	12

Notes:

(1) Plus other pools within education establishments.

(2) Community asset transfers have been/are being discussed.

Energy consumed by the Council's non-domestic buildings (2018/19):

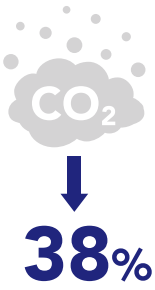
Utility	Consumption (kWh)	Carbon Emissions (tCO_2e)
Electricity	19,984,610	6,139
Gas	39,176,883	7,207
LPG	1,398,425	300
Oil	3,878,728	1,073
Kerosene	418,716	103
Total	**64,857,362**	**14,822**

Council's top energy consuming/carbon emitting buildings (2018/19):

Buildings	Consumption			Carbon Emissions (tCO_2e)
	Electric (kWh)	Gas (kWh)	Total (kWh)	
Carmarthen Leisure Centre	722,044	3,672,147	4,394,191	897
Ysgol Dyffryn Aman Leisure Centre	481,514	3,959,401	4,440,915	876
Parc Dewi Sant / Saint David's Park	807,421	2,218,002	3,025,423	656
Llanelli Leisure Centre	481,805	2,132,878	2,614,683	540
Queen Elizabeth High School	755,044	1,228,131	1,983,175	458
Llys y Bryn Care Home	235,390	1,446,621	1,682,011	338
Ysgol Maes y Gwendraeth	466,174	1,014,585	1,480,759	330
Ffwrnes Theatre	500,845	847,569	1,348,414	310
Ysgol Bro Dinefwr	503,656	812,441	1,316,097	304
Glan y Môr School	188,568	1,318,863	1,507,431	301
County Hall	533,111	621,271	1,154,382	278
Total	**5,675,572**	**19,271,909**	**24,947,481**	**5,289**

Progress so far

The Council has reduced carbon emissions from its non-domestic buildings by 38% since 2005/06 - from 23,733 tCO_2e to 14,822 tCO_2e.



Actions - Existing buildings

- The Council spends in-excess of £4m annually on energy for its non-domestic buildings. The procurement of energy has become increasingly complex with prices volatile and linked to both UK and global factors. In order to minimise risk, the Council procures its energy using Crown Commercial Services Framework Agreements, via the National Procurement Service (NPS), for the vast majority of supplies. All electricity procured via the NPS is from renewable energy sources, with 40% of this being sourced from within Wales in 2018/19.

  (**Note**: The consumption of this 'green' electricity is reflected in the (decreasing) UK emission conversion factor for electricity, and as a consequence the Council is currently unable to directly benefit from carbon savings resulting from its procurement of 'green' electricity as this would effectively be double-counting the carbon savings).

- To-date, the Council has invested over £2 million in some 200 energy efficiency projects financed under the interest-free Salix invest-to-save programme. This investment is projected to save over £7 million / 41,000 tCO_2e over the lifetime of the installed technologies. This investment, coupled with the Council's on-going property rationalisation, agile working and maintenance programmes, is producing financial and carbon savings in times of increasing utility prices.

- The Council is currently participating in the Welsh Government supported Re:fit Cymru programme in order to identify energy, and water, efficiency opportunities in non-domestic buildings including schools. Re:fit Cymru allows the Council to accelerate the roll-out of energy efficiency in a more comprehensive manner and at a greater pace than could be achieved using limited in-house resources. Unlike previous Salix projects, under the Re:fit Cymru programme a service provider is appointed via a national procurement framework and guarantees identified savings as part of an energy performance contract. A £2.5m interest-free loan has been secured from Welsh Government Wales Funding Programme to deliver a Re:fit Cymru (Energy Efficiency) Phase 1 project comprising over thirty buildings which is projected to save an estimated 690 tCO_2e every year.

Actions - New build

- The Council has a significant new build programme. All major new build projects incorporate renewable energy technologies where appropriate with solar photovoltaic (PV) installations being incorporated into many recent Modernising Education Provision 21st Century Schools projects and new housing developments. Battery storage is also being investigated and has been proposed for inclusion as part of the Glanmor new housing development.
- Other low or zero carbon technologies that have been installed and evaluated for future inclusion where viable include: Ground source heat pumps; Air source heat pumps (currently progressing a scheme to install heat pumps at flats within Llys yr Ysgol Sheltered Housing Complex to replace inefficient electric storage heaters); Biomass boilers; and, Solar thermal systems. In addition, and in order to minimise energy use from new buildings, a 'Fabric First' approach to energy efficiency is also being progressed and, where feasible, to achieve 'Passivhaus' certification.
- The 'Passivhaus' standard is a rigorous energy standard for buildings that provides a quality assurance for both energy and environmental performance. This involves designing buildings to meet the required performance standards and includes: very high levels of insulation; extremely high-performance windows with insulated frames; airtight building fabric; 'thermal bridge free' construction; and, a mechanical ventilation system with highly efficient heat recovery. 'Passivhaus' buildings have been shown to achieve a 75% reduction in space heating requirements, compared to standard practice for UK new build.
- In September 2015, the Council successfully delivered the first 'Passivhaus' educational facility in Wales for the redevelopment of the former Burry Port Infant School site. Further projects at Ysgol Trimsaran (September 2017) and Ysgol Parc y Tywyn (June 2018) have been built to achieve the 'Passivhaus' standard. Monitoring at these developments shows the buildings to be using only 15% of the annual gas consumption of a traditionally constructed school. This approach is now being considered for forthcoming projects. Welsh Government's 21st Century Schools funding formula does not cover the full cost of building new schools to the 'Passivhaus' standard; therefore, additional funding would need to be found to deliver this level of construction.
- Design specifications and briefs are continually reviewed and amended to reflect new technologies and energy efficient equipment, for example electric vehicle charging points are now being specified on current and future projects including Ysgol Cwm Tywi, Ysgol Pum Heol and new housing developments.

The 'SystemsLink' energy management software system has been procured in order to achieve better monitoring of the Council's energy consumption; better management of billing (potentially via paperless systems); and, to allow web-based access to individual sites. Accurate data is critical for planning, monitoring and reporting progress towards becoming net zero carbon; accordingly, 'smart' and sub-metering technology will be extended to ensure timely capture of energy consumption data.

Target

Appropriate carbon reduction target to be developed as part of annual review of action plan.

Actions to be undertaken

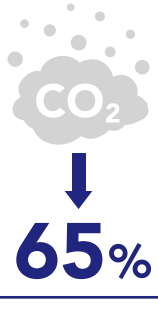
Ref	Action	Lead Officer	By When
NZC-01	Deliver Re:fit Cymru (Energy Efficiency) Phase 1 project to achieve energy/carbon savings	Head of Property	Apr 2021
NZC-02	Develop further phases of Re:fit Cymru (Energy Efficiency) project, or similar, to achieve accelerated energy / carbon savings	Sustainable Development Manager	On-going
NZC-03	Incorporate the 'Passivhaus' standard, where appropriate, in new building construction projects	Property Design Manager	On-going
NZC-04	Continually review and amend design specifications and briefs to reflect new technologies and energy efficient equipment	Property Design Manager	On-going
NZC-05	Extend 'smart' and sub-metering technology to ensure accurate and timely capture of energy consumption data	Various	On-going
NZC-06	Develop appropriate carbon reduction target for the Council's non-domestic buildings as part of annual review of action plan	Sustainable Development Manager	Mar 2021

(b) Street Lighting

Street Lighting	2016/17	2017/18	2018/19	2018/19 v 2017/18	
	Result	Result	Result	Progress	% change
Consumption (kWh)	5,718,531	4,873,979	4,202,381	Improved	-13.8%
Carbon emissions (tCO_2e)	2,569	1,874	1,291	Improved	-31.1%

Progress so far

The Council has reduced carbon emissions from its street lighting by 65% since 2011/12 - from 3,681 tCO_2e to 1,291 tCO_2e.



Actions

- The Council has recently completed the conversion of over 80% of its 20,000 street lighting lanterns to low energy light-emitting diode (LED) lighting with interest-free funding secured under Welsh Government's Wales Funding Programme. The remaining street lights are low energy dimming lanterns which will also be changed to LED at end of life.
- The Council maintains approximately 4,300 community lights on behalf of the 72 town and community councils in Carmarthenshire. These pay the Council an annual fee for energy and for the maintenance of their lights. The stock owned by each town and community council varies in number up-to 500 lighting units. It is proposed to convert all of these street lighting columns to LED - any energy efficient, dimmable lanterns to be converted to LED at the end of their operational life. The Council has secured interest-free funding in the form of a loan from Welsh Government to replace these units with LED lights and is acting as banker for the project.

  The Council is also project manager and has been through a competitive tendering process to appoint a contractor for the replacement programme. Town and community councils will repay the Council over an eight-year period with agreements being put in place. The repayment of the loan by the respective town and community councils is off-set by the energy savings and after the eight year pay-back there will be significant savings for these councils.

Target

Appropriate carbon reduction target to be developed as part of annual review of action plan.

Actions to be undertaken

Ref	Action	Lead Officer	By When
NZC-07	Develop appropriate carbon reduction target for the Council's street lighting as part of annual review of action plan	Public Lighting Engineer	Mar 2021

(c) Fleet Mileage

Fleet Mileage	2016/17	2017/18	2018/19	2018/19 v 2017/18	
	Result	Result	Result	Progress	% change
Mileage (miles)	5,127,150	5,121,289	4,982,428	Improved	-2.7%
Carbon emissions (tCO2e)	3,790	3,852	3,856	Declined	+0.1%

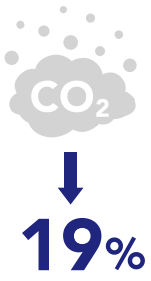
Notes:

(1) This indicator covers vehicles in the Council's fleet that obtain fuel from bunkered diesel stores in Council depots.

(2) Whilst overall mileage, and associated diesel consumption, reduced in 2018/19, carbon emissions increased due to an increase in the UK emission conversion factor for diesel.

Progress so far

The Council has reduced carbon emissions from its fleet mileage by 19% since 2012/13 - from 4,752 tCO_2e to 3,856 tCO_2e.



Actions

- The refuse and tipper / gritter fleets were renewed in 2016 and incorporate reduced emissions technology compliant with Euro 6 standards. They are amongst the most advanced commercial fleets in Wales for diesel powered vehicles.
- Fuel usage is monitored, and areas of driver behaviour challenged where necessary.
- All heavy goods vehicle (HGV) tyres are re-tread / re-grooved to gain maximum usage.
- Vehicles are regularly inspected and serviced in line with manufacturers' recommendations to ensure optimum performance and emission standards.
- Under-utilised vehicles are identified during fleet reviews and taken-out of circulation thus reducing fleet mileage.
- Route realignments carried-out for refuse collections and gritter routes have reduced HGV mileage.
- The Council was the first local authority in Wales to have electric vehicles in 2010, and currently has eight electric pool cars.
- In reviewing the most appropriate fuel powered vehicles for each of its Services, the Council recognises that electric vehicles may not always be the most suitable, for example the development of electric HGVs is still in its infancy for achieving the mileages required.

Target

Appropriate carbon reduction target to be developed as part of annual review of action plan.

Actions to be undertaken

Ref	Action	Lead Officer	By When
NZC-08	Review the most appropriate fuel powered vehicles for each of the Council's Services	Fleet Manager	On-going
NZC-09	Develop appropriate carbon reduction target for the Council's fleet mileage as part of annual review of action plan	Fleet Manager	Mar 2021

(d) Business Mileage

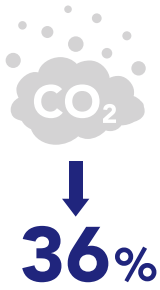
Business Mileage	2016/17	2017/18	2018/19	2018/19 v 2017/18	
	Result	Result	Result	Progress	% change
Mileage (miles)	4,186,640	3,948,586	3,846,615	Improved	-2.6%
Carbon emissions (tCO2e)	1,260	1,159	1,118	Improved	-3.5%

Note

This indictor covers work-related duties undertaken by Council staff in their own cars or using pool vehicles.

Progress so far

The Council has reduced carbon emissions from its business mileage by over 36% since 2012/13 - from 1,756 tCO_2e to 1,118 tCO_2e.



Actions

- The Council is currently reviewing its pool car provision to reduce business, or 'grey fleet', mileage. This includes an evaluation of whether increasing the number of pool cars will reduce mileage claims and act as a deterrent against potentially unnecessary journeys thus reducing mileage and associated carbon emissions.
- The Council is aiming to increase the number of its electric pool cars (currently eight) as an alternative to existing diesel-powered cars.
- Grant funding from the Office for Low Emission Vehicles (OLEV) has recently been secured to install 26 electric charging points for public use throughout the County. The installation of more electric vehicle charge points, including potentially at the Council's Trostre Depot, will encourage greater use of electric pool cars which are currently under-used due to a lack of charging facilities for longer journeys. An electric vehicle strategy for the County is being produced.
- Staff pool bicycles are provided in and around Carmarthen to help reduce business mileage associated with short journeys. In addition, the Council operates a staff cycle-to-work scheme with over 600 bicycles being purchased to-date. Some of these bicycles are also used for business journeys.

Target

Appropriate carbon reduction target to be developed as part of annual review of action plan.

Actions to be undertaken

Ref	Action	Lead Officer	By When
NZC-10	Undertake a review of the Council's pool cars to identify opportunities for carbon reduction	Head of Transportation & Highways	TBC
NZC-11	Finalise electric vehicle strategy for the County	Transport Strategy & Infrastructure Manager	TBC
NZC-12	Develop appropriate carbon reduction target for the Council's business mileage as part of annual review of action plan	Head of Transportation & Highways	Mar 2021

3.3 RENEWABLE ENERGY GENERATION / CARBON OFFSETTING

To-date, over 1.15 megawatt (MW) of solar PV has been installed on the roofs of various Council buildings including schools.

Over recent years, the Council has sought to significantly increase the amount of renewable electricity it generates but has been frustrated by the limited capacity of the local electricity distribution network (National Grid). Previous applications to the electricity distribution network operator - Western Power Distribution – for connecting to the electricity network have resulted in inflated, unviable costs due to significant reinforcement costs having to be met by prospective developers, such as the Council.

Therefore, whilst the Council's preferred primary method of compensating for its residual carbon footprint is to significantly increase the amount of renewable energy generated on its land, this is dependent on enhancements to the capacity of the local electricity distribution network. Unfortunately, this is beyond the direct control of the Council and discussions are ongoing with Western Power Distribution and Welsh Government to seek the necessary improvements.

Carbon offsetting involves compensating for carbon dioxide (CO_2) emissions arising from industrial or other human activity, by participating in schemes designed to make equivalent reductions of CO_2 in the atmosphere. Because one unit of CO_2 has the same climate impact wherever it is emitted, the benefit is the same wherever it is reduced or avoided. Achieving verified carbon reductions could include protecting rainforests in Sierra Leone or potentially local tree planting. This can be a complex issue and represents the option of last resort unless tree-planting / peatland enhancement on Council controlled land is deemed to qualify for carbon offsetting. (**Note**: This to be confirmed when Welsh Government publishes its Land Use guidance as part of carbon neutral public services reporting framework).

The Council is working with Welsh Government Energy Service to explore and deliver opportunities for large scale renewable energy projects. The Energy Service supports the public sector in Wales to bring tangible projects to fruition and advises on energy-related issues.

The Energy Service is currently undertaking a review of the Council's land to identify potential opportunities for ground-mounted solar PV and wind turbines. A similar exercise was previously undertaken with the Building Research Establishment and Parsons Brinkerhoff – whilst potential sites were identified, these were not then financially viable due to local grid constraints. Major renewable energy projects typically take several years to develop to completion (**Note**: 'Energy Generation in Wales 2018', October 2019, sets out the current energy generation capacity of Wales and analyses how it has changed over time).

Actions

- As mentioned previously, 100% of the electricity the Council procures via the NPS is from renewable energy sources.
- In April 2015, the Executive Board accepted a tender for an ambitious and innovative programme to install solar PV systems on all the Council's suitable Housing and non-domestic buildings. This was a no-cost community 'rent-a-roof' model with the option for the Council, and local community, to directly invest if desired. Unfortunately, subsequent UK Government announcements of major, immediate cuts to feed-in-tariff subsidies resulted in the programme for the Council's Housing stock being abandoned in September 2015. Whilst a programme of solar PV installations on non-domestic buildings was completed, this was greatly reduced compared to that originally proposed due to the removal of UK pre-registration process to enable schemes to secure favourable feed-in-tariff rates and compounded by severe local capacity issues on the National Grid.
- Since 2015, whilst there has been a demise in feed-in-tariff subsidies for new solar PV installations, the cost of solar PV systems has continued to decline, and battery technology has emerged as a potential mainstream application. Coupled with the rising cost of electricity it seems inevitable that there will be a viable solar solution – it appears to be just a question of when. The Council continues to monitor the situation to assess whether the market has sufficiently stabilised to consider re-introducing a Housing-based solar project.

Target

Appropriate target for renewable energy generation to be developed as part of annual review of action plan.

Note: A significant increase in the generation of renewable energy will be required to compensate for the Council's residual carbon footprint.

Actions to be undertaken

Ref	Action	Lead Officer	By When
NZC-13	Work with Welsh Government Energy Service to explore and deliver opportunities for large scale renewable energy projects	Sustainable Development Manager	On-going
NZC-14	Work with National Procurement Service (NPS) to support greater procurement of energy from locally generated renewable energy projects	Sustainable Development Manager	On-going
NZC-15	Explore the feasibility of tree-planting, and other such measures, on Council controlled land to contribute towards carbon offsetting	Strategic Asset Manager	On-going
NZC-16	Develop appropriate target for renewable energy generation as part of annual review of action plan	Sustainable Development Manager	Mar 2021

3.4 WORKING WITH WELSH GOVERNMENT

The Environment (Wales) Act 2016 sets a target for Welsh Government to reduce greenhouse gas emissions by at least 80% (on 1990 levels) by 2050. Welsh Government declared a climate emergency on 29th April 2019 and, as a response, accepted the recommendations from the UK Committee on Climate Change for emission reduction of 95% by 2050 with ambition to be net zero (**Note**: For Wales / Carmarthenshire carbon emissions see 'UK local authority and regional carbon dioxide emissions national statistics: 2005-2017', June 2019).

'Prosperity for All: A Low Carbon Wales' (March 2018) sets out the Welsh Government's approach to cut carbon emissions and increase efficiency in a way that maximises wider benefits for Wales, ensuring a fairer and healthier society. It sets out 100 policies and proposals that directly reduce emissions and support the growth of the low carbon economy.

Since 2010, the Council has been a participant under the mandatory UK-wide Carbon Reduction Commitment (CRC) Energy Efficiency Scheme. Consequently, it has been required to purchase non-refundable allowances for each qualifying tonne of carbon arising from its electricity and gas consumption. The Council paid £258,396 under this Scheme based on its emissions for 2018/19. Whilst the Council's emissions have continued to reduce, the level of 'tax' levied for each tonne of carbon emitted increases annually to further incentivise carbon reduction. The CRC Energy Efficiency Scheme was abolished following the 2018/19 compliance year, however this cost will not disappear as the Climate Change Levy will be raised to compensate. Welsh Government is to consult on options for a successor to the CRC Scheme (Policy 19, 'Prosperity for All: A Low Carbon Wales').

Welsh Government has an ambition for a carbon neutral public sector by 2030, and will be supporting the public sector to baseline, monitor and report progress towards carbon neutrality (Policy 20, 'Prosperity for All: A Low Carbon Wales'). Based on recent carbon foot-printing undertaken by Natural Resources Wales and NHS Wales, Welsh Government proposes to prioritise the following four key themes to meet this ambition: (1) Mobility and Transport; (2) Procurement; (3) Land Use; and, (4) Buildings. Aether Ltd has secured the contract to develop the reporting guidance, and the Council is one of several Public Bodies that have agreed to become 'early adopters' and work with Welsh Government to establish consistent, Wales-wide methodologies for carbon emissions reporting.

The final set of documentation is to be delivered to the Welsh Government by the end of 2019/20 and will be circulated to all Public Bodies as soon as possible after receipt. This will assist in baselining carbon emissions, developing plans and monitoring progress towards emissions reduction targets.

Actions to be undertaken

Ref	Action	Lead Officer	By When
NZC-17	Collaborate with Welsh Government and other 'early adopter' Public Bodies to introduce carbon reporting as part of the ambition to achieve a carbon neutral Welsh public sector by 2030	Sustainable Development Manager	Jun 2020

3.5 WORKING WITH CARMARTHENSHIRE PUBLIC SERVICES BOARD / SWANSEA BAY CITY DEAL PARTNERS

The Well-being of Future Generations (Wales) Act 2015 established a statutory board, known as a Public Services Board (PSB), in each local authority area in Wales. The PSB is a collection of public bodies working together to improve the well-being of their county. The Carmarthenshire Public Services Board's (PSB's) Healthy Environment Delivery Group is currently undertaking a Climate Change and Environmental Risk Assessment for Carmarthenshire in order to develop clear and defined actions that can be taken by individuals, communities and organisations.

Building upon previous joint working, Carmarthenshire PSB will shortly be holding a workshop to establish how member organisations are responding to climate change, outlining current and planned activity within their organisations, and to identify opportunities for collaboration across PSB partners.

The Swansea Bay City Deal programme includes eleven projects across four key themes of Economic Acceleration; Life Science and Well-being; Energy; and, Smart Manufacturing. These include Llanelli's Wellness and Life Science Village and Homes as Power Stations projects.

The Welsh Government Energy Service is proposing to develop a Regional Energy Plan for Swansea Bay City Region based on recent work produced by the Institute of Welsh Affairs (IWA) and Regen.

Actions to be undertaken

Ref	Action	Lead Officer	By When
NZC-18	Work with Carmarthenshire Public Services Board's (PSB's) Healthy Environment Delivery Group to undertake a Climate Change and Environmental Risk Assessment for the County	Corporate Policy and Partnership Manager	On-going
NZC-19	Work with Carmarthenshire PSB partners to identify and develop opportunities for collaboration regarding carbon reduction	Sustainable Development Manager	On-going
NZC-20	Work with Welsh Government and Swansea Bay City Region partners to establish a Regional Energy Plan for South West Wales	Head of Regeneration	On-going

3.6 COLLABORATION WITH EXPERTS FROM THE PRIVATE SECTOR AND 3RD SECTORS

The Well-being of Future Generations (Wales) Act 2015 requires public bodies in Wales to think about the long-term impact of their decisions, to work better with people, communities and each other, and to prevent persistent problems such as poverty, health inequalities and climate change. The Act requires public bodies to implement five key ways of working in future decision-making: looking to the long-term; taking an integrated approach; involving a diversity of the population; working with others in a collaborative way; and, understanding the root causes of issues to prevent them from occurring.

The Council works in close collaboration with a vast range of partners. The following are examples of some of the private sector and 3rd sector organisations that it proposes to work with to deliver this action plan (this is not an exhaustive list):

Private Sector	3rd Sector
Council's contractors, including Ameresco - preferred service provider for the Council's Re:fit Cymru (Energy Efficiency) Phase 1 project	Carmarthenshire Association of Voluntary Services Ynni Sir Gâr	Carmarthenshire Energy

For example, the Carmarthenshire Association of Voluntary Services (CAVS) has recently established a Carmarthenshire 3rd Sector Environment Network. This Group is intended as a forum for CAVS to feedback to the 3rd sector on how the Carmarthenshire PSB's Healthy Environment Group is progressing etc.

This action plan covers the next ten years and further technological breakthroughs will no doubt come forward in due course such as local low carbon transport, power and heat solutions through hydrogen and fuel cells.

Actions to be undertaken

Ref	Action	Lead Officer	By When
NZC-21	Work with the Council's contractors to explore innovative approaches to carbon reduction	Various	On-going
NZC-22	Participate in the Carmarthenshire 3rd Sector Environment Network established by Carmarthenshire Association of Voluntary Services (CAVS)	Various	On-going
NZC-23	Work with Ynni Sir Gâr, and others, to deliver and support local renewable energy projects	Sustainable Development Manager	On-going

3.7 INTEGRATION AND COMMUNICATION

The Council has adopted a corporate approach to draft this action plan with meetings chaired by Cllr Cefin Campbell and attended by various Officers. Representatives from Welsh Government Energy Service, Welsh Local Government Association and APSE Energy have also attended these meetings.

It is recognised that Staff, and Member, awareness and buy-in will be required to enable the Council to successfully deliver significant carbon reductions. This will require specific training and communications. Initially, it is proposed to undertake a Staff survey to identify how individuals can contribute to the Council's commitment to become a net zero carbon local authority.

Draft templates for undertaking Integrated Impact Assessment (IIA) on Council proposals and decisions have been agreed for a period of testing before introduction during 2020. IIA includes requirements to assess impact as required through:

- Well-being of Future Generations (Wales) Act 2015
- Public Sector Equality Duty and the Equality Act 2010
- Welsh Language (Wales) Measure 2011 and Welsh Language Standards
- United Nations Convention on the Rights of the Child 1989, and Rights of Children and Young Persons (Wales) Measure 2011
- General Data Protection Regulation 2016

During the testing phase the inclusion of Environment (Wales) Act 2016 impact assessment requirements will help to put climate change / carbon reduction within the DNA of the Council.

In September 2019, millions of young people, and adults, throughout the world took part in the global 'Climate Strike' inspired by the young Swedish activist Greta Thunberg. The Council is a partner in Walk the Global Walk, an international learning opportunity for schools, which aims to support young people to take action for the United Nations Sustainable Development Goals. In 2019/20, all 12 of the County's secondary schools plus two primary schools have signed-up and will focus on Sustainable Development Goal 13: Climate Action.

Year 7 @glanymorschool ready to carry on tackling #sdg13 @wtgw2018! Plenty of ideas generated today! Let's take action now @GoalWales!

The Council, together with Dolen Cymru Lesotho (the other Welsh partner in the project), are supporting pupils to learn about climate change and take action in their schools and communities by providing:

- A bilingual resource pack and workshop for teachers
- Leadership training and support for 'Global Goalkeepers' (pupil ambassadors)
- Participation in a model UN Climate Change conference and debate
- Participation in the 'Global Walk', a high-profile Climate Action event around Carmarthen town.

Performance on progress towards becoming a net zero carbon local authority by 2030 will be reported annually, together with annual reviews of the action plan.

Actions to be undertaken

Ref	Action	Lead Officer	By When
NZC-24	Undertake Staff survey to identify how individuals can contribute to the Council's commitment to become a net zero carbon local authority	Media and Marketing Manager	May 2020
NZC-25	Incorporate climate change / carbon reduction in Integrated Impact Assessment process to be introduced by Council	Corporate Policy and Partnership Manager	TBC
NZC-26	Support the 'Walk the Global Walk' project in the County's schools to promote awareness of climate change	Officer for International School Linking	On-going
NZC-27	Review action plan following publication of Welsh Government guidance regarding new national carbon reporting framework	Sustainable Development Manager	Mar 2021
NZC-28	Publish performance reports on progress towards becoming a net zero carbon local authority by 2030	Sustainable Development Manager	Annual

APPENDIX 1

ACTION PLAN

CARBON FOOTPRINT – NON-DOMESTIC BUILDINGS			
Ref	**Action**	**Lead Officer**	**By When**
NZC-01	Deliver Re:fit Cymru (Energy Efficiency) Phase 1 project to achieve energy/carbon savings	Head of Property	Apr 2021
NZC-02	Develop further phases of Re:fit Cymru (Energy Efficiency) project, or similar, to achieve accelerated energy / carbon savings	Sustainable Development Manager	On-going
NZC-03	Incorporate the 'Passivhaus' standard, where appropriate, in new building construction projects	Property Design Manager	On-going
NZC-04	Continually review and amend design specifications and briefs to reflect new technologies and energy efficient equipment	Property Design Manager	On-going
NZC-05	Extend 'smart' and sub-metering technology to ensure accurate and timely capture of energy consumption data	Various	On-going
NZC-06	Develop appropriate carbon reduction target for the Council's non-domestic buildings as part of annual review of action plan	Sustainable Development Manager	Mar 2021

CARBON FOOTPRINT – STREET LIGHTING			
Ref	**Action**	**Lead Officer**	**By When**
NZC-07	Develop appropriate carbon reduction target for the Council's street lighting as part of annual review of action plan	Public Lighting Engineer	Mar 2021

CARBON FOOTPRINT – FLEET MILEAGE			
Ref	**Action**	**Lead Officer**	**By When**
NZC-08	Review the most appropriate fuel powered vehicles for each of the Council's Services	Fleet Manager	On-going
NZC-09	Develop appropriate carbon reduction target for the Council's fleet mileage as part of annual review of action plan	Fleet Manager	Mar 2021

CARBON FOOTPRINT – BUSINESS MILEAGE			
Ref	**Action**	**Lead Officer**	**By When**
NZC-10	Undertake a review of the Council's pool cars to identify opportunities for carbon reduction	Head of Transportation & Highways	TBC
NZC-11	Finalise electric vehicle strategy for the County	Transport Strategy & Infrastructure Manager	TBC
NZC-12	Develop appropriate carbon reduction target for the Council's business mileage as part of annual review of action plan	Head of Transportation & Highways	Mar 2021

RENEWABLE ENERGY GENERATION / CARBON OFFSETTING			
Ref	**Action**	**Lead Officer**	**By When**
NZC-13	Work with Welsh Government Energy Service to explore and deliver opportunities for large scale renewable energy projects	Sustainable Development Manager	On-going
NZC-14	Work with National Procurement Service (NPS) to support greater procurement of energy from locally generated renewable energy projects	Sustainable Development Manager	On-going
NZC-15	Explore the feasibility of tree-planting, and other such measures, on Council controlled land to contribute towards carbon offsetting	Strategic Asset Manager	On-going
NZC-16	Develop appropriate target for renewable energy generation as part of annual review of action plan	Sustainable Development Manager	Mar 2021

WORKING WITH WELSH GOVERNMENT			
Ref	**Action**	**Lead Officer**	**By When**
NZC-17	Collaborate with Welsh Government and other 'early adopter' Public Bodies to introduce carbon reporting as part of the ambition to achieve a carbon neutral Welsh public sector by 2030	Sustainable Development Manager	Jun 2020

WORKING WITH CARMARTHENSHIRE PUBLIC SERVICES BOARD & SWANSEA BAY CITY DEAL PARTNERS			
Ref	**Action**	**Lead Officer**	**By When**
NZC-18	Work with Carmarthenshire Public Services Board's (PSB's) Healthy Environment Delivery Group to undertake a Climate Change and Environmental Risk Assessment for the County	Corporate Policy and Partnership Manager	On-going
NZC-19	Work with Carmarthenshire PSB partners to identify and develop opportunities for collaboration regarding carbon reduction	Sustainable Development Manager	On-going
NZC-20	Work with Welsh Government and Swansea Bay City Region partners to establish a Regional Energy Plan for South West Wales	Head of Regeneration	On-going

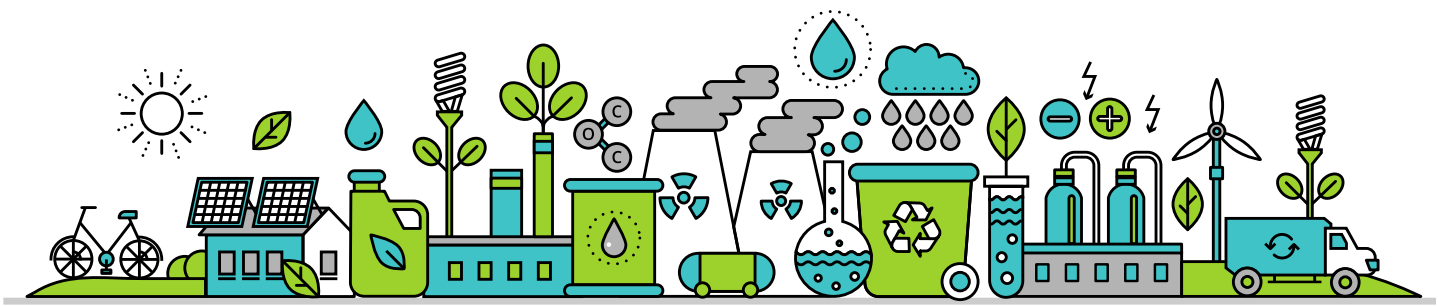
COLLABORATION WITH EXPERTS FROM THE PRIVATE SECTOR AND 3RD SECTORS			
Ref	**Action**	**Lead Officer**	**By When**
NZC-21	Work with the Council's contractors to explore innovative approaches to carbon reduction	Various	On-going
NZC-22	Participate in the Carmarthenshire 3rd Sector Environment Network established by Carmarthenshire Association of Voluntary Services (CAVS)	Various	On-going
NZC-23	Work with Ynni Sir Gâr, and others, to deliver and support local renewable energy projects	Sustainable Development Manager	On-going

INTEGRATION AND COMMUNICATION			
Ref	**Action**	**Lead Officer**	**By When**
NZC-24	Undertake Staff survey to identify how individuals can contribute to the Council's commitment to become a net zero carbon local authority	Media and Marketing Manager	May 2020
NZC-25	Incorporate climate change / carbon reduction in Integrated Impact Assessment process to be introduced by Council	Corporate Policy and Partnership Manager	TBC
NZC-26	Support the 'Walk the Global Walk' project in the County's schools to promote awareness of climate change	Officer for International School Linking	On-going
NZC-27	Review action plan following publication of Welsh Government guidance regarding new national carbon reporting framework	Sustainable Development Manager	Mar 2021
NZC-28	Publish performance reports on progress towards becoming a net zero carbon local authority by 2030	Sustainable Development Manager	Annual

APPENDIX 2

CARBON REDUCTION SUMMARY

Key Measures of Success	2016/17	2017/18	2018/19	2018/19 v 2017/18	
	Result	Result	Result	Progress	% change
Non-Domestic Buildings					
Consumption (kWh)	66,808,735	63,690,923	64,857,362	Declined	+1.8%
Carbon emissions (tCO_2e)	18,923	16,258	14,822	Improved	-8.8%
Street Lighting					
Consumption (kWh)	5,718,531	4,873,979	4,202,381	Improved	-13.8%
Carbon emissions (tCO_2e)	2,569	1,874	1,291	Improved	-31.1%
Fleet Mileage					
Mileage (miles)	5,127,150	5,121,289	4,982,428	Improved	-2.7%
Carbon emissions (tCO_2e)	3,790	3,852	3,856	Declined	+0.1%
Business Mileage					
Mileage (miles)	4,186,640	3,948,586	3,846,615	Improved	-2.6%
Carbon emissions (tCO_2e)	1,260	1,159	1,118	Improved	-3.5%
TOTAL					
Consumption (kWh)	72,527,266	68,564,902	69,059,743	Declined	+0.7%
Mileage (miles)	9,313,790	9,069,875	8,829,043	Improved	-2.9%
Carbon emissions (tCO_2e)	26,542	23,143	21,087	Improved	-8.9%



HOW MUCH RENEWABLE ENERGY WOULD BE NEEDED TO REACH NET ZERO CARBON?

Carbon Footprint 2018/19 minus Renewable Energy Generation equals Net Carbon Zero		
Non-Domestic Buildings carbon emissions (tCO_2e) 14,822	41 Wind Turbines or 175,450 Solar PV Panels	= 0 (tCO_2e)
Street Lighting carbon emissions (tCO_2e) 1,291	4 Wind Turbines or 15,282 Solar PV Panels	= 0 (tCO_2e)
Fleet Mileage carbon emissions (tCO_2e) 3,856	11 Wind Turbines or 45,644 Solar PV Panels	= 0 (tCO_2e)
Business Mileage carbon emissions (tCO_2e) 1,118	3 Wind Turbines or 13,234 Solar PV Panels	= 0 (tCO_2e)
Total carbon emissions (tCO_2e) 21,087	59 Wind Turbines (29.5 MW) or 249,610 Solar PV Panels (62.4 MW)	= 0 (tCO_2e)

Comparators:

Equivalent number of 500 kW wind turbines (~362 tCO_2e/year | ~1,180 MWh/year) (capacity of wind turbine at Nant y Caws)

Equivalent number of individual 250 W solar PV panels (~0.08448 tCO_2e/year | ~275 kWh/year)

Average distance from Earth to the Moon = 238,855 miles | Equatorial circumference of Earth = 24,901 miles

Renewable electricity generated by Council solar PV systems in 2018/19 = 979,071 kWh (~300 tCO_2e)

Notes:

(1) Welsh Government will be introducing a new national carbon reporting framework in April 2020; consequently, the above performance data may not be directly comparable after this date.

(2) The equivalent number of wind turbines and solar PV panels is based on a high-level calculation that will change year-on-year with changes in the UK emission conversion factor for electricity. Whilst this metric is used to help demonstrate the scale of the task, it is purely meant for illustrative purposes only as it is dependent on many external variables.

APPENDIX 3

CLIMATE EMERGENCY

The initial focus of this action plan for a route towards becoming a net zero carbon local authority is not intended to limit or preclude other potential wider actions that contribute towards addressing the climate emergency.

Some of these actions are identified below (this is not an exhaustive list):

Housing

- Following comprehensive energy efficiency measures carried out as an integral part of the Carmarthenshire Homes Standard / Carmarthenshire Homes Standard Plus (CHS+), Welsh Government's current Welsh Housing Quality Standard target of an average Standard Assessment Procedure (SAP) rating of 65 has been achieved. The Council has not set its own target pending further guidance and targets from Welsh Government in 2020.
- The Council will continue to assess whether the market has sufficiently stabilised to consider re-introducing a Housing-based solar PV project.
- The Council made a commitment in 2016 to create an additional 1,000 affordable homes by 2021. The original plan used a range of ways to ensure that there are affordable homes within the County, for example by buying homes from the open market, bringing empty homes back into use, renting houses through 'Simple Lettings', using Planning obligations / Section 106 agreements, and by working with partners. Within the first three years, there are 700 more affordable homes in the County and a confidence that the target will be reached by 2021.
- The 'Homes as Power Stations' project aims to deliver smart, low carbon, energy-efficient homes through a co-ordinated approach across the Swansea Bay City Region. The project will deliver a programme of new build developments, the retro-fitting of existing buildings and local supply chain development support. The aims of the project are to: help tackle fuel poverty, cut carbon emissions, and meet the need for more housing. The project will monitor the health and well-being aspects of warmer homes and the impact on fuel poverty.
- The Council has recently agreed to build an additional 900 new council homes by 2029/30. These new homes are to incorporate environmentally-friendly features such as solar panels and Welsh timber, which would both be sourced and manufactured locally. The homes are designed to save the occupier up-to £1,000 a year on energy bills with walls insulated with recycled newspaper, and the wooden windows achieving the 'Passivhaus' standard.
- 'Cartrefi Croeso' has been established by the Council to develop new homes for sale and to rent.

Planning

- Carmarthenshire's Local Development Plan (LDP) is currently being revised and will run until 2033. The LDP will outline where and how development will take place within the County, through a number of planning policies. There is an overarching climate change policy in the LDP, which is supplemented by specific policies outlining how new development must consider topics such as renewable energy, sustainable design, flooding, active travel, public transport, green infrastructure and air quality.
- Wind and Solar Energy Supplementary Planning Guidance was adopted in June 2019. A Renewable Energy Assessment has been commissioned with a view to identifying areas across the County with the suitable conditions for various renewable energy schemes.

- A green infrastructure assessment has recently been undertaken, in which all green infrastructure assets across the County have been mapped. This will help identify areas where tree planting schemes could be implemented and quantify in area (for monitoring and reporting purposes) green infrastructure across the County.
- There is an intention to introduce a new policy into the LDP regarding electric charging points for new developments to increase this provision in both residential and non-residential development.
- Peatlands are among the most valuable ecosystems on Earth. They are critical for preserving global biodiversity, provide safe drinking water, minimise flood risk and help address climate change. Peatlands are the largest natural terrestrial carbon store – storing more carbon than all other vegetation types in the world combined. Conversely, damaged peatlands are a major source of greenhouse gas emissions. Peatland restoration can, therefore, bring significant emissions reductions. The Council has been running the Carmarthenshire Bogs Project with funding from Natural Resources Wales, Welsh Government and Heritage Lottery Fund (a national peatland project has taken on some of this work during 2018/19). This project aims to conserve five sites in the County where peat is, or should be, forming.
- Consistent with national policy, Planning Ecology responses advise on the need to conserve peat sites when these form a part of a development proposal. It also advises on the retention and management of semi-natural habitats – many of which have the capacity to store carbon if appropriately managed - in line with the LDP policies and national policy.
- The Council facilitates the Carmarthenshire Nature Partnership (formerly Carmarthenshire Biodiversity Partnership) which comprises over 15 organisations including the Council, government, and non-government wildlife bodies, wildlife charities and voluntary groups - all working together to conserve and enhance Carmarthenshire's biodiversity.

Waste and Environmental Services

- The Council operates a two-weekly waste collection system alternating general household waste and recycling collections over consecutive weeks, with weekly food recycling. An additional, chargeable, two-weekly collection of garden waste is also provided.
- The County currently has a recycling rate of some 59% and needs to achieve 70% by 2025. To help increase participation in food waste recycling, food bin liner bags are to be provided to all households from October 2019 onwards. A conscious decision was taken to supply degradable starch bags as opposed to plastic bags. Control measures also have recently been introduced at household waste recycling centres to improve levels of recycling at these facilities.
- The Council continues to work with schools, local groups and fast-food restaurants in relation to reducing waste and encouraging more recycling.
- The Council has recently undertaken a rationalisation exercise of its kerbside waste collection rounds that has saved some 9% per annum in terms of distance travelled for the waste collection fleet.
- The Council is currently undergoing a review of the kerbside waste collection system in preparation for a new vehicle fleet in 2021. Irrespective of the new system chosen for collection, new refuse collection vehicles will be required to replace the existing fleet. In choosing the new vehicles, the most efficient fleet will be procured that will meet the service needs and specification.
- CWM Environmental Ltd is the Councils' waste disposal and treatment company. CWM's main site at Nant y Caws, Carmarthen currently has a wind turbine and a landfill gas off-take system that can generate energy. Exploration is currently underway to assess whether there is potential for further renewable energy development at the site.

- The Council is committed to reducing its use of single-use plastics and to continue raising awareness of environmental issues in accordance with the policies it adopted on 18th April 2018 and on 10th July 2019.

Procurement

- Sustainable procurement has been identified as a key priority for a number of years and the Council adopted a Sustainable Risk Assessment (SRA) template in order to embed sustainability at a practical level. Since 2008 the Council has utilised the Welsh Government approved SRA tool to identify and capture sustainable gains across contracting activity. This tool helps to consider how sustainability issues can be addressed in the specification, drafting and tender stage of the procurement process, thus incorporating the SRA into the procurement contracting process. The SRA process is intended to ensure that environmental, social and economic issues are assessed, understood and managed in all key procurement decisions that relate to the procurement of goods and services.
- Carmarthenshire PSB's Prosperous People and Places Delivery Group is considering opportunities for food procurement across the public sector organisations in Carmarthenshire. The focus on the public sector procurement of local food is viewed by partners as a key priority which could have economic wealth and health impacts for the local community. The Group has secured LEADER funding to appoint a third-party to undertake a mapping exercise of current food producers in Carmarthenshire and the region. The aim is to identify what is available and what gaps exist within the current food provision within the County. A further bid has been made to the Foundational Economy Challenge Fund to appoint a Project Officer to liaise with the PSB partners to challenge current ways of working and to identify best practice for future approaches to food procurement.
- The Council is represented on regional procurement networks and engages and consults with various groups such as Eunomia, WRAP Cymru and the Welsh Local Government Association to ensure that climate change considerations are incorporated within strategic procurement documentation and associated best practice guidance to ensure that all specifications, tender documents and award criteria address climate emergency commitments.

Transportation and Highway

- Bwcabus is a flexible, bookable local bus service, designed to meet the needs of rural residents. The Bwcabus rural transportation model operates within a specific zone providing both fixed route services and pre-booked demand responsive journeys, allowing the possibility to travel where and when required.
- The Carmarthen Park and Ride service runs every 30 minutes from 7.30 am to 6.25 pm, Mondays to Friday. The service starts at Nant-y-Ci car park and stops at Carmarthen Bus Station, before moving on to Spilman Street and St Peters. The service also extends to Glangwili General Hospital before returning to Nant-y-Ci.
- The possibility of working with public transport providers to secure (Staff) travel discounts to encourage greater use of public transport is to be explored.
- The County's electric vehicle charging network is actively being expanded.
- Carmarthenshire's ambition is to become the 'Cycling hub of Wales'. Together with an extensive 3,487 kilometres road network, the second longest in Wales, many cycle routes are improving the opportunities for cyclists.

Education

- The Eco-Schools programme is an international initiative that enables sustainable development to be a major part of the life and ethos of schools. The Programme gets everyone in the school community involved in improving the school environment and encouraging good citizenship. Pupils study topics including waste, litter, energy, water, transport, healthy living and global citizenship. All schools in Carmarthenshire are registered on the Eco Schools programme. At September 2019, 55 schools were on Platinum Award (the highest level awarded to schools active over 8 years); 9 schools on Green Flag x3; 15 schools on Green Flag x2; 13 schools on Green Flag x1, 13 schools on Silver Level; 1 school on Bronze Level; and, 1 school registered only.

Regeneration

- Carbon reduction is at the heart of the £1.3 billion Swansea Bay City Deal, which is being delivered by the four Swansea Bay City Region local authorities, including Carmarthenshire, with the two regional health boards and two regional universities.
- Among the projects forming part of the City Deal programme of investment is a pan-Region 'Homes as Power Stations' project. Under this Project, the retro-fitting of 7,500 homes with state-of-the-art energy-efficiency technology will complement the construction of 3,500 new, highly energy efficient homes over a five-year period. As well as helping the Region cut its carbon emissions, this Project will also tackle fuel poverty and meet the need for more housing, while benefitting supply chain businesses throughout Carmarthenshire and South West Wales as a whole.
- Also due to be part-funded by the City Deal is the Pembroke Dock Marine project that will considerably boost the Region's 'blue economy' through major investment in the advancement of marine energy. Made up of elements including a Marine Energy Test Area and a Pembrokeshire Demonstration for marine energy developers to trial, de-risk and commercialise their devices, this Project will also include infrastructure upgrades at Pembroke Port and a Marine Energy Engineering Centre of Excellence where industry and academia can co-locate. This will place South West Wales at the forefront of a growing global industry that's projected to be worth £76 million by 2050.
- A remodelled Neath Port Talbot City Deal business case also places considerable emphasis on zero carbon fuel. Plans include a Swansea Bay Technology Centre that would transmit excess energy from solar and other renewable means to a nearby Hydrogen Centre that would then use this energy to make zero carbon fuel for council vehicles. Other elements forming part of this business case include the establishment of an electric vehicle charging route map, supplemented by air quality modelling and real-time monitoring. A National Steel Innovation Centre is also planned, where research and development will be anchored into future steel-making across the Swansea Bay City Region to further reduce carbon emissions.
- Sustainability will also be a core principle of all other City Deal projects, including Llanelli's Wellness and Life Science Village and future phases of Yr Egin creative and digital hub at the University of Wales Trinity Saint David in Carmarthen. In October 2019 the Department for Business, Energy and Industrial Strategy (BEIS) agreed to fully fund a heat network feasibility study to explore options for low carbon heat to be supplied to the Llanelli Wellness and Life Science Village.
- The 'Moving Rural Carmarthenshire Forward' plan (June 2019) is a comprehensive look at the issues facing the County's rural communities, and a focus on what is needed to ensure support for these towns and villages to sustain and thrive. Initiatives being looked at include making innovative use of vacant or unused agricultural buildings to create hubs for entrepreneurs and improving broadband provision so that digital

connectivity isn't a barrier to rural development. A Carmarthenshire 'brand' could also be developed to support and grow the County's diverse agriculture and food production sector, encouraging communities to buy local to create a re-circulating 'Carmarthenshire Pound', and boosting the County's growing tourism sector. The Council's commitment to reduce carbon emissions and use of plastics also feature as part of the Plan, with proposals to work with partners and agencies to create a more sustainable environment, with new infrastructure including an investment in rapid charging points for electric vehicles. The Plan also details a 'Ten Rural Towns' initiative to ensure market towns, from Llandovery to St Clears, are more economically, socially, environmentally and culturally sustainable for the future.

- The Council will continue to explore opportunities to minimise carbon as part of future direct builds of both premises and infrastructure, alongside opportunities that may be presented by hydrogen energy.

Finance

- The Council is the administering authority for the £2.7 billion Dyfed Pension Fund.
- The Fund is a long-term investor responsible for looking after the interests of beneficiaries over many decades into the future and recognises climate change and investment in fossil fuels as a significant risk factor for pension fund investments.
- The Fund takes the approach to engage actively and productively with companies in the sector through its participation in the Local Authority Pension Fund Forum. Also, via the Fund's investment managers, the Fund votes on resolutions at global AGMs seeking transparency and disclosure of climate risks and setting emission reduction targets. In this manner the Fund's view is directly communicated to individual boards.
- The Dyfed Pension Fund has an increasing level of investment in renewable and low carbon energy production via pooled funds and will continue to make such investments where the risk/return profile fits the pension fund's investment strategy. The Fund also has investments in the BlackRock UK Strategic Alternative Income Fund where some of the core strategies are in the renewable energy sector and a number of different sectors that have a direct impact on local communities including healthcare and social housing. During 2019/20 the Pension Committee will also be considering an investment in other low carbon tracker funds.
- The Fund has a comprehensive Investment Strategy Statement which is currently being reviewed.
- The Council welcomes the recent open letter from the Future Generations Commissioner for Wales and others regarding divestment and is in dialogue with Friends of the Earth Cymru on this matter.

Information and Communications Technology (ICT)

- The Council continues to introduce ICT good practice to actively help reduce carbon emissions, including:
    - Reducing energy consumption at its Data Centres and across its Network through the virtualisation and rationalisation of hardware and the adoption of energy efficient servers and ICT infrastructure;
    - Facilitating a reduction in staff travel through the implementation of agile working practices across the Authority including the use of laptops and online video conference meetings and calls ('Skype for Business');
    - Reducing printing across the Authority by facilitating the adoption of paperless working through better use of technology; and,

- Applying centrally administered powered management systems to ensure all devices such as laptops and PCs are powered-down over night and when not in use during the day.

Civil Contingencies

- The Council's civil contingency role aims to help mitigate the effects of climate change by writing and testing contingency plans for the various risks involved. These risks include:
  - More extreme weather events causing severe fluvial flooding, such as Storm Callum in 2018;
  - Raising sea levels causing an increase in coastal flooding; and,
  - Hotter, dryer summers causing: water shortages; an increase in 'wild fires'; and, effects on the health of the population (especially the elderly).

  Further information on the risks within Carmarthenshire can be found in the 'Dyfed-Powys Community Risk Register' (**Note**: 'UK Climate Change Risk Assessment 2017 Evidence Report – Summary for Wales' summarises the Wales-specific evidence included in the 'UK Climate Change Risk Assessment Evidence Report').
- The Council is a member of the Dyfed-Powys Local Resilience Forum (LRF) whose members include the Emergency Services, Health Bodies, other Local Authorities, Government Agencies and Utility Companies. The Dyfed-Powys LRF members work together to ensure arrangements are in place to help mitigate the effects of any emergencies including those caused by climate change.

  The role of the Council during emergencies includes providing support for the emergency services, support and care for the local and wider community and co-ordination of the response by organisations other than the emergency services. As time goes on, and the emphasis switches to recovery, the Council takes a leading role in rehabilitating the community and restoring the environment.

APPENDIX 4

GLOSSARY OF TERMS

Units of measurement

A carbon footprint is measured in **tonnes of carbon dioxide equivalent (tCO2e)**. The carbon dioxide equivalent (CO_2e) allows the different greenhouse gases to be compared on a like-for-like basis relative to one unit of CO_2. CO_2e is calculated by multiplying the emissions of each of the six greenhouse gases by its 100 year global warming potential.

A carbon footprint considers all six of the Kyoto Protocol greenhouse gases: Carbon dioxide (CO_2), Methane (CH_4), Nitrous oxide (N_2O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs) and Sulphur hexafluoride (SF_6).

Source - https://www.carbontrust.com/resources/guides/carbon-footprinting-and-reporting/carbon-footprinting/

A kilowatt hour (kWh) is a measure of how much energy is being used. It doesn't mean the number of kilowatts used per hour. It is simply a unit of measurement that equals the amount of energy one would use to keep a 1,000 watt appliance running for an hour, for example:

- One 100 watt light bulb would take 10 hours to rack-up 1 kWh of energy.
- One 2,000 watt appliance would use 1 kWh in just half an hour.
- One 50 watt item could stay on for 20 hours before it used 1 kWh.

Source - https://www.ovoenergy.com/guides/energy-guides/what-is-a-kwh-kw-and-kwh-explained.html

Explanations

Terminology related to climate change can be difficult to understand especially for those with infrequent contact with the topic. Below are some terms which are commonly used:

Carbon Accounting - Carbon accounting covers a wide range of different practices and means different things to different groups of people but can generally be split into two categories: physical carbon accounting (which looks at quantifying physical amounts greenhouse gas emissions to the atmosphere), and financial carbon accounting (which looks at giving carbon a financial market value). Physical carbon accounting can be used to help companies and countries work out how much carbon they are emitting into the atmosphere, this is known as a greenhouse gas inventory. Once it has been established how much carbon is being emitted, reduction targets can be set. This method is also important for helping to assign responsibility to different parties for their associated carbon emissions.

Carbon accounting provides the tools to not only quantify and measure carbon emissions but also to help make informed decisions with regards to mitigation strategies. How much carbon is being emitted? Who is responsible for these emissions? Which methods should we employ to achieve the biggest carbon reductions? Are there strategies or policies which appear 'green' but actually increase our carbon emissions? Carbon accounting can help to answer all these questions, but it can be a complex process. **Source – https://www.ed.ac.uk/sustainability/what-we-do/climate-change/case-studies/climate-research/carbon-accounting**

Net Zero Carbon – It is clear from the science that the amount of CO_2 in the atmosphere resulting from human activity largely determines the extent of global warming. This means that to prevent catastrophic climate change, CO_2 emissions need to be reduced to zero. The science led to governments worldwide agreeing to achieve a balance between emissions and removal of greenhouses gases, in the Paris Agreement. 'Net zero' refers to achieving an overall balance between emissions produced and emissions taken out of the atmosphere. Like a bath with the taps on, an approach to achieving this balance can either be to turn down the taps (the emissions) or to drain an equal amount down the plug (removals of emissions from the atmosphere, including storage for the emissions such as 'carbon sinks' i.e. anything that absorbs more carbon than it releases as carbon dioxide. European forests are currently a net carbon sink as they take in more carbon than they emit). Source - http://www.lse.ac.uk/ GranthamInstitute/news/what-is-net-zero/

Carbon Neutral - Carbon neutrality means annual zero net anthropogenic (human caused or influenced) CO_2 emissions by a certain date. By definition, carbon neutrality means every tonne of anthropogenic CO_2 emitted is compensated with an equivalent amount of CO_2 removed (e.g. via carbon offsetting). Source – https://www.wri.org/blog/2015/12/cop21-glossary-terms-guiding-long-term-emissions-reduction-goal

Carbon Offsetting - Put simply, offsetting means securing carbon credits equivalent to one's carbon impact. This means compensating for every tonne of CO_2 emitted by ensuring there is one tonne less in the atmosphere. Because one unit of CO_2 has the same climate impact wherever it is emitted, the benefit is the same wherever it is reduced or avoided. Achieving verified carbon reductions could include protecting rainforests in Sierra Leone or potentially local tree planting. Source - https://climatecare.org/carbon-offsetting/

The Council has committed to become a 'Net Zero Carbon' local authority whilst the Welsh Government has an ambition for a 'Carbon Neutral' Welsh public sector. Within the confines of this document both these terms are inter-changeable.

Hyperlinks are provided throughout this document, where the text appears underlined, that direct the reader to further web-based information.

Update:

Background information produced by the BBC – What is climate change? A really simple guide