Agenda Item: 15

Meeting of:	**Cabinet**
Date of Meeting:	**Thursday, 05 September 2024**
Relevant Scrutiny Committee:	Corporate Performance and Resources
Report Title:	Carbon Management Plan 2024-2030
Purpose of Report:	To seek approval to adopt the Carbon Management Plan 2024-2030.
Report Owner:	Executive Leader and Cabinet Member for Performance and Resources
Responsible Officer:	Director of Corporate Resources
Elected Member and Officer Consultation:	Committee Reports – Legal Head of Finance/S151 officer Project Zero Board
Policy Framework:	This Report is a matter for Executive decision by Cabinet.

Executive Summary:

- As with the Council's response to the Covid pandemic in 2020, the approach to the climate and biodiversity emergencies requires a collaborative and outcome driven approach. The Carbon Management Plan 2024-2030 sets out the corporate carbon emissions for 2022/23 and activity required to ensure carbon emissions are reduced across all corporate Council activities. The plan has been produced collaboratively with key Council Service areas and contains actions required by those same service areas to ensure targets are owned by those having direct responsibility for the service area.

Recommendations

1. That Cabinet notes the progress made to date with actions from the first two iterations of the Carbon Management Plan.
2. That, subject to recommendation (3), Cabinet considers the content of the Council's third Carbon Management Plan (2024-2030) and agrees to its adoption as described in the body of this report and associated appendices.
3. That Cabinet refers this report and appendices to Corporate Performance and Resources Committee for their consideration, with any views being reported back to Cabinet for final consideration.

Reasons for Recommendations

1. To ensure that Members are aware of progress with carbon management across the Council and the annual reporting to Welsh Government.
2. To ensure that the new carbon management plan with its proposed targets is considered and adopted and thereafter embed and progress delivery of key actions.
3. To enable the Scrutiny Committee to consider the Plan and refer any comments to Cabinet for their consideration.

1. Background

1.1 This is the third iteration of the Vale of Glamorgan's Carbon Management Plan. The Council produced the first iteration of its Carbon Management Plan (in 2008) and the second iteration of the Vale of Glamorgan was adopted in 2018, there is a link provided in the background papers at the end of the report. The first two iterations of the plan were predominantly focused on reducing the building related carbon footprint. However since this time, greater emphasis is now on reducing organisation wide carbon emissions (including supply chains known as Scope 3 emissions).

1.2 Welsh Government have communicated ambitions for the public sector to be carbon neutral by 2030. This is ahead of the remaining sectors in Wales as the public sector is expected to take a leadership role in carbon reduction. The Council reports annually on its corporate carbon emissions in line with Welsh Government's reporting requirements, methodology and guidelines.

1.3 The Carbon Management Plan 2024-2030 aligns to the activities and reporting lines of the Welsh Government's reporting methodology and template.

1.4 The Carbon Management Plan 2024-2030 has been developed by the Decarbonisation & Energy Section with input from key service areas. Due to its breadth, it will be delivered from services across the organisation with actions assigned to different service areas. Actions will be monitored and reported twice yearly to Cabinet as part of the Project Zero regular updates.

2. Key Issues for Consideration

2.1 The Carbon Management Plan (Appendix A) sets out the contribution that will be made towards relevant aspects of the Council's Project Zero Challenge Plan (notably challenge C3.4) along with other challenges and steps.

2.2 The task of reducing carbon emissions is significant. However, the impact of not adapting our services to the future climate, and the significance of not reducing the operational carbon footprint should not be ignored. There are significant staff resourcing and funding pressures which will inevitably hamper the pace of change however the Council must do what it can with the resources available to deliver as many of the actions within the Plan period as possible. It is acknowledged that the actions identified in the Carbon Management Plan will not result in carbon neutrality by 2030 and as such, the Plan will develop and be added to over time as technologies, developments and resources become available.

2.3 The Council has been decarbonising its built asset estate successfully for 20 years and is delivering building projects (new build and retrofitting) which will continue to contribute to the decarbonisation of the Council's built estate. Due to the increased breadth of carbon emission reporting, projects in themselves will not be sufficient to meet the 2030 commitments as an organisation and for that reason, the Carbon Management's scope is greater in this version than previously, notably including actions regarding the supply chain. This Carbon Management Plan demonstrates that all parts of the Council have a role to play to support the goal of achieving net zero carbon by 2030.

2.4 In this regard, the Carbon Management Plan explicitly sets out how each service area can contribute as much as possible to assist us reaching this goal. A number of service specific targets have been allocated to try and address this challenge.

2.5 It is recommended that Cabinet consider the Carbon Management Plan and endorse this Plan. Cabinet is also recommended to refer it to Corporate Performance & Resources Committee, to enable the views of the Committee to be considered and referred back in due course.

3. How do proposals evidence the Five Ways of Working and contribute to our Well-being Objectives?

3.1 The Carbon Management Plan aligns with the five ways of working.

- It sets out to embed **long term** and whole life thinking within all activity, **preventing** short term decision making. We are working to embed whole life and whole life carbon thinking.
- More **collaborative** approaches will ensure the plan is delivered efficiently; this plan has been written with contributions from all teams.
- **Integrated** within Project Zero challenges and established workstreams where possible; the activity for 24/25 has been aligned to the Project Zero Challenges and steps.

- Via the Project Zero Board and Project Zero learning café and other mechanisms we can ensure that all stakeholders can be **involved** and contribute to this agenda.

3.2 The Carbon Management Plan aligns to our wellbeing objectives[1]:

1. **Work with and for our communities** – whilst the plan focuses on our corporate carbon emissions and a 2030 timeframe, many of the recommendations made will assist in reducing our community and county wide emissions ahead of 2050.
2. **Support learning, employment and sustainable economic growth** – our plan will ensure that our schools and learning environments are as energy efficient as possible. Our procurement work will seek to ensure we support a local supply chain when procuring goods and services and our procurement is as sustainable as possible.
3. **Support people at home and in their community** - we will work with our partners to ensure our leisure and community centre facilities decarbonise. Our regeneration and neighbourhood services teams continue to support households to reduce their environmental impacts.
4. **Respect, enhance and enjoy our environment** – our plan supports our work in our parks, gardens and Countryside Parks to maximise carbon sequestration from the land.

[1] Annual Delivery Plan (valeofglamorgan.gov.uk)

4. Climate Change and Nature Implications

4.1 The Carbon Management Plan directly relates to the climate change and nature emergencies. The plan sets out how we seek to reduce our carbon emissions and improve biodiversity across the county by 2030.

5. Resources and Legal Considerations

Financial

5.1 The Carbon Management Plan sets out the estimated additional funding required to significantly reduce carbon emissions from our built environment. This cost is significant. The costs of reducing carbon across other activities will continue to be determined and costed into future proposals and updates.

5.2 At present it has only been possible to develop indicative costs for reducing the Council's building stock, this was estimated as requiring more than £40 million investment. Clearly at a time of financial constraint for the public sector, this presents a very real challenge. Delivery of the Carbon Management Plan will be considered as part of the Council's budget setting process and is also a consideration reflected in the development of capital schemes to ensure value for money and strategic alignment is demonstrated when undertaking works.

Employment

5.3 The Carbon Management Plan has been co-ordinated and produced by the Decarbonisation and Energy team within Property Section with input from all key service areas. However, significant staff and budget resources will be required right across the organisation if 2030 target is to be met as the challenge remains huge. With limited staff and budgets available funding opportunities will be pursued wherever they present themselves and pursue as many targets as we can within available resources.

Legal (Including Equalities)

5.4 There are no direct equal opportunities or legal implications associated with this report.

6. Background Papers

- Carbon Management Plan 2018-2022

THE VALE OF GLAMORGAN COUNCIL

OUR CARBON MANAGEMENT PLAN

2024 – 2030

The Vale of Glamorgan Council

Our Carbon Management Plan

2024 – 2030

Date: 5th September 2024

Foreword

Councillor Lis Burnett
Executive Leader and Cabinet Member for Performance and Resources

Councillor Bronwen E. Brooks
Deputy Leader and Cabinet Member for Sustainable Places

We are delighted that the Council has adopted our latest Carbon Management Plan, 2024 - 2030. Whilst our Council has many roles, our role in showing local leadership in addressing the very pressing issue of human driven climate change must rank as one of the most important. We are in no doubt of the size of the challenge. 'Our Carbon Management Plan 2024 - 2030' shows that for our Council, the challenge is shared across all Council Directorates. We hope that our example will encourage the wider community to reduce emissions, whether that be businesses, home occupiers or individuals. Whilst our Council has worked in the background to reduce emissions for many years, now is the time for our efforts to move to the next level. We are all on this journey together and we commend 'Our Carbon Management Plan 2024 - 2030' to you all.

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Executive Summary

The Vale of Glamorgan Council has the committed aim of achieving 'Net Zero' by 2030. This aligns with the aims of the Welsh Government. Yet many of the daily activities of the Council create carbon emissions including how we heat our buildings, how we travel to and for work, the water we use across our estate, and the goods and services that we procure. In 2022/23 our overall emissions were 69 thousand tonnes, the Council's buildings only accounting for 11% of emissions whilst our procurement (supply chain) accounted for 79% of the emissions. Some reporting areas carry more uncertainty within the reporting figures than others, e.g. procurement or goods from others versus metered energy consumption.

This Carbon Management Plan breaks down our emissions by area, explains the steps that we have already taken to decarbonise, and sets out a series of actions that will continue our journey towards net zero. An underlying plan then sets out the more detailed steps to achieve our targets. The plan also sets out how the accuracy of reporting within areas can be improved, as accurate measurement is crucial to driving meaningful change. As emissions are created by activities that take place across the whole council, all directorates have contributed to the development of this plan.

The reporting methodology for carbon emissions is provided by the Welsh Government and includes areas of activity that result in emissions of greenhouse gases that the Council (in common with most other public bodies) has not actively considered previously. Monitoring of the emissions associated with our buildings is relatively mature whilst accounting for other areas, such as through our procurement activity, are less advanced.

Improving energy efficiency protects the Council from future energy cost variations and can result in a raft of other benefits. However, capital investment must be accelerated in order to achieve the net zero target by 2030. Whilst it is impossible to provide a precise figure it is estimated that in excess of £50 million will be required to improve our building stock to net zero. This figure could easily eventually be significantly higher. The decarbonisation of our buildings assets is of course just one part of the Council's Project Zero strategy.

The Carbon Management Plan 2024-2030 is crucial to the delivery of the Council's Climate Change Challenge Plan and dovetails with the action plan developed by the Project Zero Board. The Carbon Management Plan essentially concentrates on measurement, reporting and delivering of carbon reduction supporting the many other actions within the Climate Change Challenge Plan.

It is the intention to report progress annually in respect of the actions identified in this plan and that quantifiable decarbonisation is demonstrated through our annual submissions to WG, not a separate reporting mechanism.

1. Background

An eminent physicist in the mid-1800s, John Tyndall demonstrated to the Royal Society the results of his experiments showing that carbon dioxide (CO_2) and water vapour within the atmosphere act as greenhouse gases. Greenhouse gases play an important role in keeping the planet habitable: without them it has been calculated that the earth would be 33°C colder. Yet industrialisation and current practices have resulted in too high a concentration of greenhouse gases, leading to an increase in global surface air and sea temperatures. The annual average global temperature for 2023 was warmer than any previous pre-industrial levels and approaching the 1.5°C target[1]. Ocean temperatures also have broken records: in February 2024 the average global sea surface temperature hit 21.06 degrees Celsius[2]. The higher temperatures are leading to more intense weather extreme events around the world. Flooding events, forest fires and extended droughts are becoming more common.

It is over 30 years since the 1992 Earth Summit (the United Nations Conference on Environment and Development) in Rio. And following that summit a series of Conferences of the Parties (COPs), with the first in Berlin in 1995, has taken place. COP21 in 2015 saw the Paris Agreement: a legally binding international treaty with its overarching goal to keep global temperature increase to well below 2°C and to pursue efforts to prevent global temperature rising by 1.5°C. In 2023 the UN Secretary General-General António Guterres stated in the build-up to COP28 "***My message is clear, Act now to limit global temperature rise to 1.5 degrees Celsius, protect people from climate chaos, and end the fossil fuel age."***

The gravity of the situation has been recognised by both the Council and the Welsh Government with both declaring a climate emergency in 2019 along with commitments to reach net zero by 2030.

While this plan sets out actions that relate mainly to our own operations to 2030, our actions to decarbonise need to be holistic and consider the impact on the wider Vale, Wales and the planet rather than simply the emissions directly associated with the Council. All aspects of our actions need to be considered. For example, the disposal of council assets (which can be justified for many operational and financial reasons) will often result in a reduction in the council's net emissions but could end up being operated by an organisation that operates the building far less efficiently. As far as the planet is concerned emissions from that asset may have increased[3]. Similarly, disposal of vehicles with several years of operation left within them could be operated by another organisation whilst the council purchases electric vehicles (and associated embodied energy through manufacture) meaning that in moving the council closer to net zero, global emissions might increase. This is a very difficult concept for all organisations to grapple with and there is no easy solution, and we have to be aware of the repercussions of our well-intentioned actions.

In many cases evaluating the full impact of our actions can fall into the 'too difficult' category and would lead to a paralysis of action. However, there are cases when that sort of analysis, e.g. where we can compare the embodied energy and effectiveness of building products, and other goods purchased can be carried out. If it can be done then ideally that analysis should be carried out and inform decision/procurement action taken.

[1] WMO confirms that 2023 smashes global temperature record
[2] Ocean temperature hit record high in February 2024, EU scientists say | Reuters
[3] AR6 Synthesis Report: Summary for Policymakers Headline Statements (ipcc.ch)

The Council's first Carbon Management plan was adopted in 2008. A council wide Carbon Trust sponsored approach was taken in producing this strategy and implementation plan. Toolkits developed by the Carbon Trust were used to evaluate emissions associated with council buildings, fleet vehicle use, business mileage and street lighting. The key analysis compared the business-as-usual case with the trajectory that took us to a 20% reduction in emissions by 2016/17. This target was achieved by 2015/16 with a reduction of 21.3%. When the second Vale of Glamorgan Council Carbon Management Plan (CMP) was adopted in 2018, the knowledge of the scale of the climate crisis was growing: the level of the major greenhouse gas, carbon dioxide was 409 ppm (parts per million) compared with 280 ppm that was present in the atmosphere over the past 400,000 years. By 2022/23 the level was 419 ppm. The second Carbon Management Plan (2018 – 2023) reflected our Council Values and related to the Well Being of Future Generations Act 2015. These relationships and links still apply to this third Carbon Management Plan.

Our aim is to achieve the greatest reduction in CO_2 emissions for each pound spent, but making sure that where possible we account for embodied carbon and other impacts, in other words our approach to carbon reduction is wholistic. Other factors could also impact our decisions, such as whether grant monies were available for particular measures, or for instance that action was forced through maintenance requirements, in which case we should aim use that maintenance opportunity to improve the efficiency even though normally that measure would not have been at the top of the list.

This Carbon Management Plan 2024-2030 needs to be fully integrated with the Project Zero Action Plan to ensure alignment of actions.

This Carbon Management Plan highlights the scale of the challenge, the difficulties of measuring and reporting against the challenge and the activities and actions that are known to address these challenges.

Glossary: throughout the document green boxes, such as this, provide definitions for the terms being discussed.

2. Council Structures

The Vale of Glamorgan Council works to align all activity to Prosperity for All: A Low Carbon Wales[4], which sets out the Welsh Government's approach to cutting emissions and increasing efficiency in a way that maximises wider benefits for Wales.

In 2019 the Vale of Glamorgan Council declared a climate emergency. Project Zero was subsequently formed to drive the work of the Council forward around the climate agenda. The importance of addressing the climate and nature emergencies was recognised in The Vale of Glamorgan Corporate Plan 2020-2025, and related annual delivery plans. In addition, the Council is part of the Vale Public Services Board (PSB), and is a signatory of the Vale PSB Climate Emergency Charter.

In addition, there are a number of Council strategies and policies that directly support and feed into the Council's climate work such as the work being undertaken to develop the Council's Green Infrastructure Strategy, the Waste Management Strategy and the Procurement Policy and Strategy.

This section sets out existing structures and processes which will support the successful implementation of our decarbonisation work.

Project Zero

Project Zero[5] is the Vale of Glamorgan Council's response to the climate change emergency. It brings together the wide range of work and opportunities available to tackle the climate emergency and helps to reduce the Council's carbon emissions to net zero by 2030 and encourage others to make positive changes.

Climate change: Climate change refers to long-term shifts in temperatures and weather patterns. Such shifts can be natural, due to changes in the sun's activity or large volcanic eruptions. But since the 1800s, human activities have been the main driver of climate change, primarily due to the burning of fossil fuels like coal, oil and gas. Burning fossil fuels generates greenhouse gas emissions that act like a blanket wrapped around the Earth, trapping the sun's heat and raising temperatures. The main greenhouse gases that are causing climate change include carbon dioxide and methane. These come from using gasoline for driving a car or coal for heating a building, for example. Clearing land and cutting down forests can also release carbon dioxide. Agriculture, oil and gas operations are major sources of methane emissions. Energy, industry, transport, buildings, agriculture and land use are among the main sectors causing greenhouse gases.

Our Climate Change Challenge Plan (2021-2030)[6] groups 18 challenges framed across three areas:

- **Demonstrate strong leadership** – which is integral to all the steps and asks that the Council leads by example.
- **Fulfil our responsibility to current and future generations** – these are the areas where we help shape the activities of others through our policies and services and where we can have a significant influence on the actions of others.

[4] low-carbon-delivery-plan_1.pdf (gov.wales)
[5] Project Zero | Participate Vale (valeofglamorgan.gov.uk)
[6] Project Zero Challenge Plan (valeofglamorgan.gov.uk)

- **Make a difference now** – this refers to how the Council operates as an organisation, an employer, buildings and landowner and landlord.

While Project Zero sits at the centre of the organisation, the Project Zero Board brings together senior leads from across all directorates to steer the organisation as a whole; to lead on decarbonisation within their directorates, and to ensure that cross-directorate ways of working are maximising the effectiveness of the programme.

A review of the 18 challenges within the Climate Change Challenge Plan, and how they are to link to this Carbon Management Plan is provided in Appendix A. This review sets out the activity which contributes directly to our corporate carbon emissions and the activities detailed within this Carbon Management Plan. Appendix A also highlights the Project Zero challenges which will help secure a low carbon future across the county, contributing to our 2050 commitments; some biodiversity and climate resilience work provides benefits which are not evidenced as corporate carbon savings. Investment therefore must remain across all Project Zero challenges with an awareness of the split between corporate emissions targets for 2030 and wider, county benefits towards 2050.

This Carbon Management Plan 2024-2030 will impact all areas of the council's work, with the aim of directly reducing our corporate carbon emissions (the primary focus of this plan) as well as learning from wider community decarbonisation initiatives. It is not intended as a substitute for the decarbonisation initiatives embedded in existing Council documents, but rather as a central point to consolidate and set out the route map and priorities for decarbonisation across the organisation.

It is therefore proposed that progress on the Carbon Management Plan is aligned with Project Zero reporting. Information from the work of the Carbon Management Plan will be reflected in Project Zero reports.

Local Area Energy Planning

The Local Area Energy Plan (LAEP) needs to be considered in the context of this Carbon Management Plan. The LAEP is a process considering the whole energy system which has the potential to inform, shape and enable key aspects of the transition to a Net Zero carbon energy system. Plans are being produced simultaneously at a regional and local level, led by The Cardiff Capital Region (CCR). Alongside a stakeholder group which includes industry representatives, housing developers, transport providers, distribution network operators and public service providers. The Council has worked at a strategic level to determine what changes are required in the local energy system, where, when and by whom. The plan focusses on the long-term vision for the County, including tangible actions to take forward and move towards a Net Zero energy system. The process in developing the LAEP for the Vale of Glamorgan has followed guidance from The Energy Systems catapult, with a system boundary as set out in Figure 1.

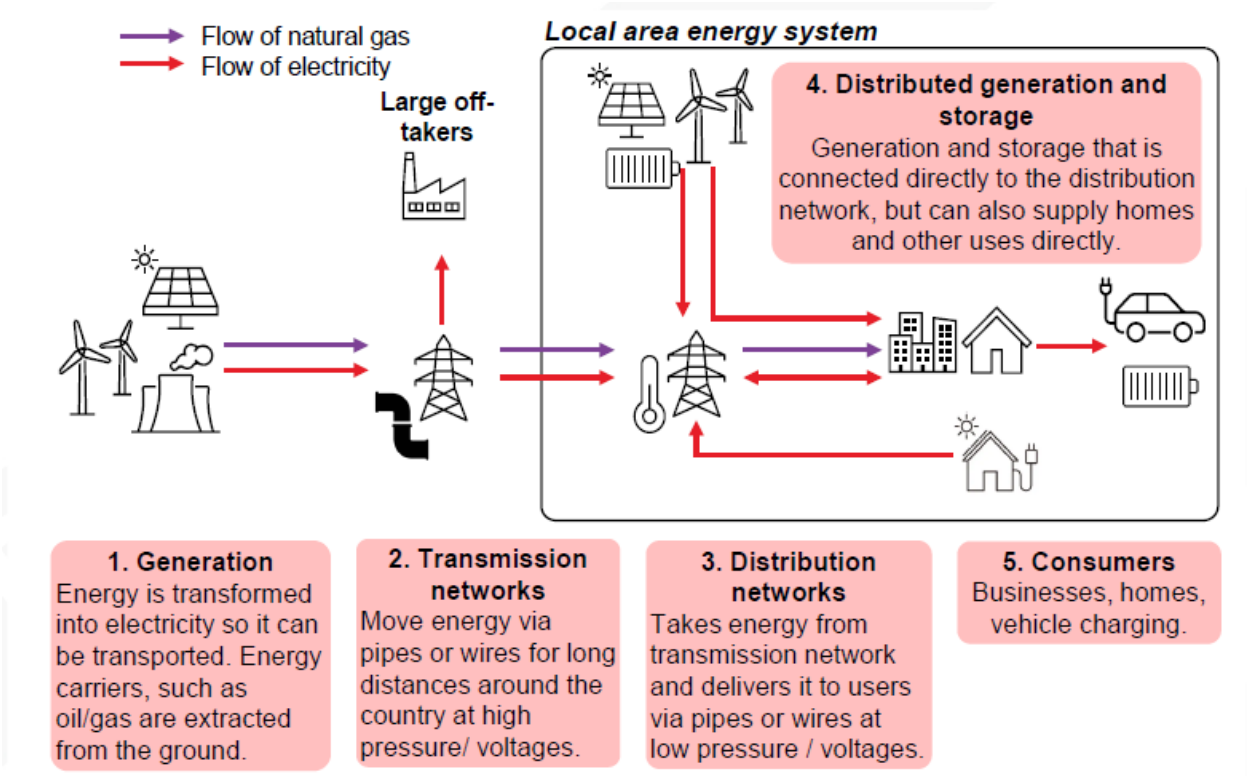

Figure 1 – Schematic of electricity and gas transmission and distribution network and the system boundary for LAEP

The Local Action Energy Planning (LAEP) defines a long-term vision for an area but should be updated approximately every 3–5 years (or when significant technological, policy or local changes occur) to ensure the long-term vision remains relevant. The Vale of Glamorgan LAEP therefore represents the vision for a future net zero energy system for the entire county.

A draft LAEP for the Vale of Glamorgan was being finalised during April and May 2024. It is anticipated the plan will then be presented to cabinet at the end of June/ beginning of July. Alongside other LAEP documents in the region, The Vale of Glamorgan LAEP will be presented to the South East Wales Corporate Joint Committee ("SEWCJC") Governance process at the end of July. Following cabinet process, The Council will continue to work alongside stakeholders, The Cardiff Capital Region (CCR) and Welsh Government to deliver the actions the LAEP has identified.

Local Action Energy Planning (LAEP): sets out the changes required to transition an area's energy system to net zero carbon emissions against a specified time. By exploring a range of technologies and scenarios through whole energy system modelling and analysis, the most cost-effective preferred pathway to net zero can be identified. The process follows standardised guidance defined by the Energy Systems Catapult.

Measuring our carbon emissions

How we measure and report our carbon emissions has changed over the years, as global reporting methodologies have standardised and been driven by requirements now set by the Welsh Government. In 2019 the Welsh Government introduced mandatory carbon reporting for all public sector bodies, using a methodology and reporting template pre-set by them. Since the 2019/20 period year this methodology has been refined, with the 2022/23 reporting metrics shown within Section 3 of this document.

In summary the datasets headings (within which are activity areas) that make up our 2022/23 corporate carbon footprint are shown below in Table 1, with the definition of an activity shown in the box.

2022/23 Dataset headings	2022/23 Data descriptions and units data is reported in
Buildings	Use of electricity, gas, water, biomass, LPG, f-gas. Units: kWh, litres, m^3
Streetlights	Use of electricity. Units: kWh
Fleet and mobile equipment	Litres of fuel used and km travelled
Waste: organisational and municipal	Waste stream type, Units: tonnes
Land use	By land use type, units: hectares
Business travel	Mode of transport, fuel type, mileage
Commuting	Mode of transport, fuel type, mileage
Home working	Percentage of working hours at home x FTE
Supply chain	Spend / SIC code / Emissions factors

Table 1 – Table summarising 2022/23 datasets of WG NZC reporting template

Activity: an action that leads either directly or indirectly to emissions of greenhouse gases. Examples include combustion of fossil fuels for heat, generation of electricity, transport, treatment of waste and wastewater, and industrial processes. Activity data is the measure of how much of this activity is taking place and has a variety of different units e.g. kWh, passenger kilometres, tonnes of waste etc.

As an example of how we measure emissions, in our buildings and streetlights, the kWh, (kilowatt hour) is the unit of energy at the point of use that is reported on. Reporting the number of kWhs used is the best indication of how energy use has reduced either through reduced activity, switching of fuel sources or through improved energy efficiency. How the kWh translates into carbon dioxide emissions depends on the emission factor at any one time.

Emission factor: the average emissions of a given greenhouse gas (GHG) for particular activity. Emission factors are also expressed as the average combination of GHGs for a particular activity, usually in units of $kgCO_2e$. Local authorities within Wales use the emission factors provided within the Welsh Government Reporting tool which are published annually by the UK government.

Greenhouse Gas (GHG): a gas in our atmosphere that absorbs and emits radiation within the thermal infrared range. There are naturally occurring greenhouse gases in our atmosphere which maintain surface temperatures in a range conducive to life. Welsh Public Sector Net Zero Carbon Reporting Guide: Version 3 Welsh Government 2023 3 However, since the industrial revolution, anthropogenic sources of GHGs have increased hugely, leading to 40% increase in atmospheric concentration of carbon dioxide. This is causing increases in surface temperatures and is the main cause of climate change. There are seven GHGs covered by the Kyoto Treaty, but the main ones related to public sector activity are carbon dioxide (CO2), methane (CH4) and nitrous oxide (N2O), and action needs to be taken to reduce emissions of these

In relation to measuring emissions, the council's first CMP in 2008 concentrated on reviewing buildings, street lighting and transport. At that time there were only automatic meter reading devices on the larger supplies (>100kW peak electricity). In 2008 the emission factor (see definition box above) for kWh electricity from the mains was approximately 0.53 kg CO_2/kWh.

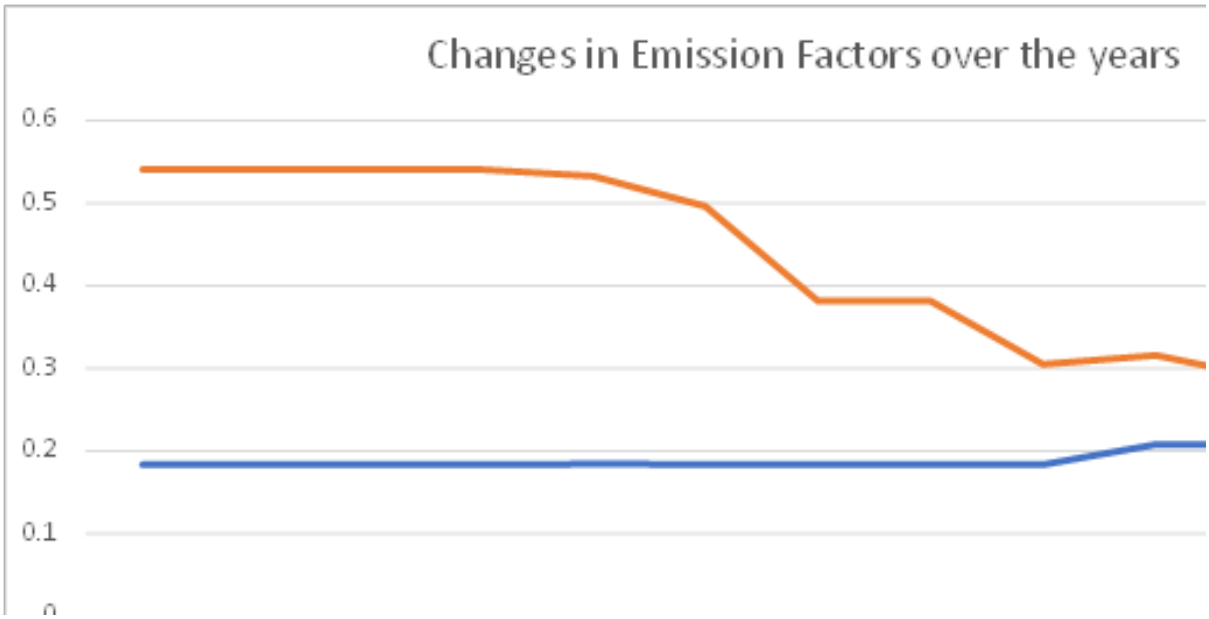

Figure 2 – Changes in Grid Electricity and Natural Gas carbon emission factors 2010/11 to 2022/23

Emission factors will have had a major effect on the overall reported CO_2 emission total with emissions from (grid) electricity use just over half what they were at the start of CRC in 2010. **To re-iterate, these emission factors can increase or decrease and are published by UK Government and selected for the WG reporting template annually.**

Timeline of Carbon Reporting Measurement

The Carbon Reduction Commitment (CRC) programme started in 2010, a UK government scheme that mandated that large UK public and private organisations had to report on their carbon emissions and purchase carbon emissions allowances to cover those emissions. Qualification was based on the amount of mandatory half hourly metered electricity used during qualifying years. Most local authorities in Wales (18/22) qualified and became participants. It came with its own rules to provide some level of consistency in measurement across the participating organisations. Some supplies were omitted (for instance gas supplies with annual consumption less than 73,000 kWh).

Street lighting was included within CRC, but transport was not. However, from 2011 streetlighting was then excluded from CRC if it were measured in one way, only to be re-introduced with Phase 2 of the CRC scheme which started in 2014 regardless of the measurement method.

Estimated readings within CRC acquired a 10% uplift (and at the time the CRC scheme attracted a £16 per tonne of CO_2 charge) and so that provided the incentive to introduce automatic meter reading (AMR) to nearly all of our gas and electricity supplies. This meant that we could account for the kWh used via our supplies with high accuracy.

This timeline demonstrates how over the past decade measurement variations has impacted our decarbonisation reporting:

2010	Within the Carbon Reduction Commitment (CRC) Scheme, emissions from Buildings and Street lighting were included in the figures. A 10% emission uplift was applied for estimated readings.
2011	Street lighting was removed from the reporting figures as the purchase of allowances are be avoided when street lighting electricity consumption was measured in a particular way.
2014	Street lighting re-introduced within the totals as rules for phase 2 of the CRC scheme meaning that street lighting was included regardless of the measurement method. The conversion factor for kWh to tonnes of carbon dioxide drops very slightly for electricity.
2014 - 2022	There was a steady drop in the electricity emissions factor (kWh to tonnes CO_2 emitted) over the years.
2018	Last reporting year for CRC phase 2.
2019	On the 29th April 2019 the Welsh Government declared a climate emergency[7] (with the Vale of Glamorgan Council following with its own declaration on 29th July 2019)[8]. The Welsh Government introduced mandatory net zero carbon reporting for all Local Authorities and public sector bodies in Wales.
2019	This was the first net zero carbon reporting year. The required reporting became far wider in scope than anything previous, including that of the CRC scheme. The scope of the carbon report included buildings, street lighting, commuting, vehicle fleet energy use, staff business travel, waste including recycling, landfill, composting and incineration, supply chain emissions and land use emissions/sequestration. Generation via renewables was also reported. In this reporting year each authority uses the UK government emission guidance which possibly leads to inconsistency in reporting. Final emission factors are made up of several components.
2021	The Welsh Government reporting template was updated and included emission factors from this reporting year forward. They included direct emissions (e.g. emissions from burning gas in a boiler) and indirect emissions (e.g. the emissions from the power station that generates grid electricity), transmission and distribution (reflecting the losses within cabling for delivering electricity from power station to end user) and 'well to tank' (WTT) emissions (the emissions associated with extracting the fuel from source to the power station). For the first time in the Council's reporting WTT values are added to the natural gas conversion factor lifting it from 0.18254 to 0.214 kg CO2/kWh. This results in a 17% increase in the emissions associated with natural gas use even if the same amount of gas were used in the previous year.
2022	Included in the net zero carbon reporting are F gases and anaesthetic gases for the first time. In 2022 the data readily available for these gases was limited. The figures reported made little difference to the overall figures, but it is likely that as accounting for F gases becomes embedded the figures will rise. The emission conversion factor for each kg of CO2 produced by the grid use of a kWh of electricity is over 50% lower than in 2010. This is due to the shift from coal to natural gas fired power generation and to the addition of renewable generation to the grid mix.

Table 2 – Table showing timeline of carbon reporting methodologies 2014 to present

[7] Welsh Government makes climate emergency declaration | GOV.WALES
[8] 19-07-29 (valeofglamorgan.gov.uk)

It is clear from the above that since 2010 the scope on what the council reports has changed significantly. The conversion factors that are outside of the direct control of the council have also changed which makes comparison year on year very difficult (if not impossible). The Council is required to report to Welsh Government on our 'Net Zero' journey using the Welsh Government Methodology[9], but we should be aware that these reporting requirements have altered in scope and may do again. Also, the CO_2 to kWh conversion factors have changed year on year and so when we look at the final results and year on year comparison, we need to understand the nuances of the figures we are presented within that context.

As referenced in this plan, the quality of the collection of data can vary within our organisation. Similarly, this is true for other local authorities and so again any comparisons in performance should be done with caution.

Wider Community Activity

The whole world needs to move to net zero not only this Council and so we need to be cognisant that just moving emissions to the ownership of other parties is not the route to global net zero (although in many cases it will save the Council money; this should not be our only driver). We need to understand not only the direct impact of our actions to our organisation but also consider our actions in the context of our community leadership role and the wider Global implications of these actions.

Although not included in our measured carbon reduction activities to 2030, several teams across the Council are activity engaged with delivering a low carbon future and aiding the decarbonisation of our wider community activities towards net zero carbon emissions for 2050[10]. This activity is not captured in this corporate Carbon Management Plan, but should be noted as demonstrating innovation, successfully piloting and embedding new ways of working and providing lessons learnt for other areas of the council.

As set out in Appendix A, it is possible to see that some of our climate emergency activity reported through Project Zero has no/low impact on our annual corporate reporting of our carbon emission to the Welsh Government, whilst others have a greater impact. This is not to lessen the value of the no/low impact work, as that is essential to secure the wider societal decarbonisation targets for 2050.

Some examples of this wider societal decarbonisation activity being undertaken across the Council, but which isn't reflected in our corporate carbon footprint are:

Housing: The Council remains committed to a fabric first approach, utilising off site construction methods wherever practical and the development programme includes new homes designed and constructed that have panelised (2D), or modular (3D), or structural components, manufactured offsite, to improve thermal efficiency, air leakage and construction quality.

The Housing Development Team is also ensuring materials and especially the timber used in the structural frame, roofing structure and internally are sustainably sourced. We fit energy efficient electric heating and hot water systems, as gas fired heating systems will be phased out for new build homes from 2025. We also install solar photovoltaic panels (PV) and improved energy efficient windows and doors, as well as decentralised Mechanical Extract Ventilation (dMEV) to improve air quality and remove moisture from the home. To minimise the wastage of water, we are fitting low flow sanitary ware, a shallower bath, and

[9] Public sector net zero reporting guide | GOV.WALES
[10] Wales' commitment to tackling climate change: Transitioning to a net zero economy (gov.wales)

diffusers on tap fittings, as well as rainwater harvesting systems. We ensure that there is low air leakage from the fabric of the building.

The Council continually seeks to improve the energy performance of the new homes it builds and is already planning to improve on the current EPC A rating of its current Housing Development Programme and transition into the delivery of net zero carbon housing from 2025.

The Association for Environment Conscious Building (AECB) has led the way in environmentally responsible building for over 25 years, developing a set of standards backed up with specific building systems and methods. A huge pool of knowledge has been developed by members which is regularly disseminated on courses and conferences.

The AECB Carbon-lite Standard adheres to the key principles of Passivhaus design which are:

- Good levels of insulation with minimal thermal bridging
- Excellent levels of airtightness
- Good indoor air quality
- Passive heat gains through solar radiation and internal heat sources

The Council is therefore aiming to adopt AECB Carbon-lite Standards in all our new build properties.

Existing housing – The Energy Company Obligation (ECO4) scheme, administered by OFGEM and running from April 2022 – March 2026 focuses on supporting low income and vulnerable households. The Vale of Glamorgan Council is working in partnership with Cardiff Capital Region and E.ON to improve the least energy efficient homes[11] helping to meet the UK and Welsh Government's fuel poverty and net zero commitments.

Planning: The Preferred Strategy for the Replacement Local Development Plan (RLDP) 2021-2036 was published for consultation at the end of 2023. The RLDP will set the planning policy framework to support achieving net zero over the plan period. Mitigation and adapting to climate change is a key objective of the Preferred Strategy and the target of the Council becoming zero carbon is central to the Vision. The Preferred Strategy sets out a series of strategic policies aimed that will support the Vision and Objectives, including SP15 Climate Change Mitigation and Adaption which sets out a series of criteria that development proposals must respond to demonstrate how new development proposals mitigate and adapt to climate change by ensuring the design and construction of new buildings minimises carbon emissions, including through taking measures to reduce energy consumption; and ensuring buildings are resilient to projected changes to weather patterns, including more extreme weather events. This would include flood resilience and considering overheating.

The Council is currently undertaking feasibility work to consider the implications of requiring new buildings to be zero carbon in their construction and operation. Once this is complete, the Council will be able to fully consider the economic viability impacts of requiring new buildings to be zero carbon in their construction and operation. In accordance with Planning Policy Wales, this work would provide the Council with robust evidence allowing us to bring forward standards higher than the national standards set out in Building Regulations. If this intervention were considered feasible, Policy SP15 would be updated at Deposit stage to reflect zero carbon requirements, and prescriptive supporting policy would be produced.

[11] Home Energy Efficiency (valeofglamorgan.gov.uk)

Active travel: we continue to promote public transport, cycle and pedestrian routes across our communities to reduce private fossil fuel car use. The LAEP sets out how transport provision and behaviour change will secure carbon savings to 2030 and 2050.

Food and Farming: In Spring 2024 a new role Senior Food and Farming Officer joined the Regeneration team. The Vale consists of 24, 780 Ha (61,255 areas) of farmed agricultural land, supporting approximately 393 active farms. (Source: WG Agricultural Small areas Statics 2020). Agricultural activity includes, mixed livestock, dairy, arable and to a more limited extent horticulture. The Vale of Glamorgan is also home to a rich variety of primary and secondary food producers. In line with the Wellbeing of Future Generations Act, Council Corporate Plan and Project Zero, the council is committed to assisting food and farming business to increase the sustainable production of locally grown food within the area, generating positive economic, social and environmental impacts. The aspiration is also to increase engagement between local communities and the rural sector to build connectivity and understanding about sustainable food production through education.

Projects include (but are not limited to) the progression towards an Agri-Food Hub located within the Vale of Glamorgan. Projects will support-

- Reduced food miles linked to livestock marketing within the region and improved animal welfare in transit = transport savings & business efficiencies (£, $C0_2$, Time)
- Increased well-being within the rural community/sense of place
- Support the growth and development of SME food businesses and new start-ups within the region
- Growing more fresh produce within the region, supporting farm diversification
- Creating short sustainable supply chains within the food sector = transport savings & business efficiencies (£, $C0_2$, Time)
- Increasing and enhancing natural resources and natural capita within the Vale of Glamorgan

Project delivery will be in collaboration and partnership with other Vale of Glamorgan directorates, arm's length companies, CCR, other external stakeholders (i.e. Farming Unions) and will complement national initiatives such as Welsh Government Farming Connect and Cywain programmes.

Community collaborations: In recent years we have launched five community managed libraries to local communities, local sports clubs and community committees. In 2023/24 we secured £250,000 from Ystadau Cymru, Welsh Government to refurbish three community centres, providing each with LED lighting, PV solar panels and battery storage, amongst other energy efficiency measures. This activity and collaboration will continue and be key to our wider community decarbonisation work for 2050.

Funding decarbonisation

While we have calculated some of the costs of decarbonising our estate, a full cost analysis of reaching net zero has not been undertaken. The Council has several internal budgets and external grants and funding routes to support decarbonisation. In the draft budget presented to Cabinet in February 2024, it was recognised that investment in the decarbonisation of the Council's asset base and supply change was a key challenge. Some additional investment was included as part of the Council's 2024/25 Capital Strategy, but the budget recognised that further investment will be required to achieve this challenging target.

The budget recognised that over the next five years of the Capital Programme the Council will continue to improve the energy efficiency of its housing stock to meet the requirements of Welsh Government legislation in relation to decarbonisation and the Welsh Housing Quality Standard (WHQS). The Sustainable Communities for Learning (SCfL) programme is committed to contributing to the decarbonisation agenda, the Welsh Government announcing in November 2021 that all new school projects within the Sustainable Communities for Learning Programme would be required to meet net zero carbon (in operation) from January 2022 onwards, and budget was provided by the Welsh Government to start the programme. Ahead of the 24/25 budget, a variety of energy reduction measures and renewable energy installations were identified across several assets within the council's portfolio, and budget allocated accordingly. This included for the installation of LED lighting, PV panels and Air Source Heat Pumps. An allocation of funding has also been made available in each of the five years for tree planting and the cyclical maintenance of trees.

In addition to the Capital Programme, the Council has set aside Project Zero reserves which were launched in 2023. Applications which demonstrate innovation, pilot and test new ways of working or technologies can be made to PZ reserves quarterly, with smaller value applications (under £5k) open for submission at any time.

Since 2009 the council has used a recycling fund created through matched funding invested by the Council and Welsh Government with the process being facilitated by Salix Finance Ltd. The recycling has resulted, since the creation of the fund, in circa £1.8 million worth of investment in energy efficiency projects across our building estate. Salix also operate a 'Salix Energy Efficiency Loan' scheme where funds are made available annually through contributions from Welsh Government to allow interest free loans outside of the recycling fund previously mentioned. This source has also been used for separate investments. In 2023 the Council successfully bid for a Low Carbon Heating Grant, which will be used to replace fossil fuelled gas boilers with electrically powered air source heat pumps at a local primary school. In the past the Council has taken advantage of funding made available by utility companies (via ECO funding rounds, and initiatives such as health through warmth) to provide education and to insulate domestic properties (both our housing stock and owner occupied. In 2023, 36 EV charging points were installed (for fleet) within the Council estate via a grant provided via the WLGA. The Council still collects the feed in tariff for photovoltaic systems that were installed whilst that scheme was running. The Council will always aim to take advantage of incentivisation schemes that provide funds and assist in the route to net zero.

Looking beyond the costs of decarbonising the Council's activities, as a society we have not yet managed to assign the costs associated with climate change (e.g. the costs of excess flooding or heat waves/forest fires). Until we have managed to assign those impact costs to the products and services that we use then our primary economic drivers are not going to be fully effective at impacting on our emissions. The Council must therefore continue to assess the cost of a "do nothing" option as much as the "decarbonisation project costs". Whilst significant capital costs are required to support our decarbonisation, a proactive approach will be much more cost effective than a year-on-year increase in our emergency response budgets and reacting to future climate impacts. We must move beyond a focus on just a project lifetime payback.

Project lifetime: anticipated lifetime of an energy efficiency technology or low carbon behaviour, used to calculate lifetime savings.

Specific funding opportunities (which we can bid for) or the funding shortfall are set out within each of the later sections of this document which link directly to each area of activity.

The Challenges and opportunities

The challenges faced in securing steep and rapid decarbonisation are numerous, particularly in financially constrained periods. It will be necessary to ensure that capital investment continues to be reviewed with whole life and carbon cost in mind and that should be evidenced to demonstrate value for money.

Further challenges, experienced across the Council are set out below, with sector specific risks and barriers detailed within each chapter:

- Understanding the scale of the challenge across all Directorates and the variety of emission generating activities undertaken by all council staff
- Restricted resources: limited capital and revenue budgets for foreseeable future and remain insufficient to deliver significant decarbonisation across our corporate estate
- Restricted resources: staffing level and future loss of skills and knowledge due to retirement to deliver the volume of works at pace required.
- Identifying future funding opportunities
- Late in year grants that are required to be completed prior to the end of the financial year within the terms of the grant. Greater flexibility is required allowing grants to span across financial years.
- Climate change impact is not felt equally, investment is unlikely to be uniform across the authority.
- Retrofitting and refurbishing our buildings and retaining service delivery in the spaces whilst work is on-going may be cost and disruption prohibitive and so decant costs and programme/service impacts to be considered.
- Quick wins and easier energy efficiency works have already been completed, meaning the changes remaining are complex and challenging.
- Embedding new procurement processes, such as Ardal and other public sector frameworks will generate financial and carbon savings over time but require staff awareness and training to move to these new ways of working.
- Supply and cost of alternatively fuelled vehicles.
- Need to consider methods of work so that electric vehicles could be based at a central hub for overnight charging.

Whilst daunting, it is an exciting time for innovation and new ways of working to embed and secure carbon savings, financial efficiencies and mutual benefits across climate change resilience, wellbeing and the biodiversity emergencies. This will see the council working much more collaboratively across Directorates.

3. Our 2022/23 Net Zero Carbon report

Having set the context on datasets and measurement in Section 2, we now look more closely at our 2022/23 report. As a public body in Wales, we are committed to contributing to the decarbonisation of the public sector by 2030. We are mandated by Welsh Government to report on our activity and associated carbon emissions, using the methodology and template issued annually by Welsh Government[12]. The activity captured in this reporting is summarised below in Figure 3.

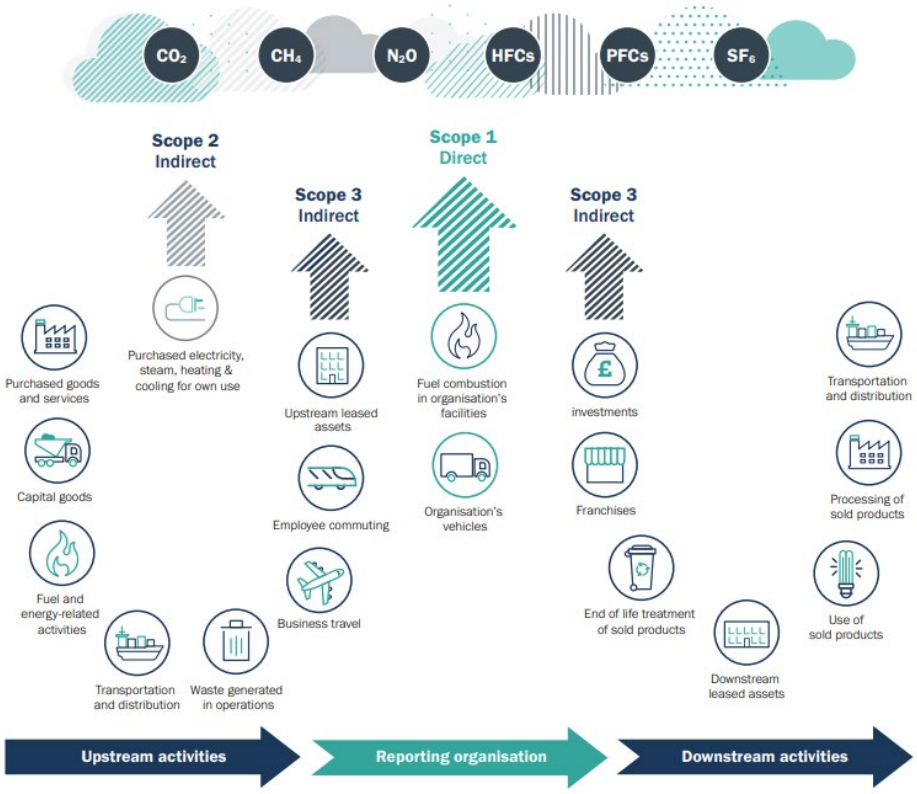

Figure 3 – Activity type and Scopes as categorised in Welsh Government "Public sector net zero reporting guide Version 3"

As shown above in Figure 3, the activities are grouped into Scope 1, Scope 2 and Scope 3 (upstream and downstream activities).

Scope: a way of categorising emission sources (activities) in relation to the reporting organisation, used as a way of providing transparency in emissions accounting, making it clear the type of emission source and the level of control of the reporting organisation over the source. Three scopes have been defined and are used on a global basis

[12] Public sector net zero reporting guide | GOV.WALES

Direct emissions (Scope 1): Emissions that are released directly by your estate or asset, for example burning fuel in a boiler or combustion of fuel in a vehicle owned by the reporting organisation.

Indirect emissions (Scope 2): Emissions attributable to the activity but not occurring directly on the estate of the reporting organisation e.g. generation of electricity causes emissions at power stations, but the electricity is consumed by the reporting organisation.

Indirect emissions (Scope 3): All indirect emissions (not included in scope 2) that occur in the value chain of the reporting organisations, including both upstream and downstream emissions" e.g. purchased goods and services.

Figure 4 below shows that a significant proportion, 88% of the Council's 2022/2023 carbon emissions are scope 3 and part of our upstream and downstream activity.

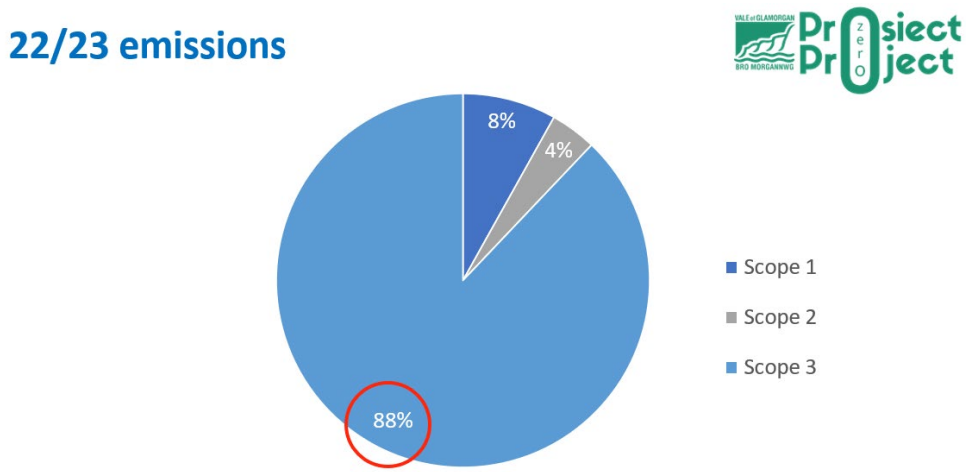

Figure 4 – Pie chart showing breakdown of carbon emissions for 2022/23 by scope

Scope 1 is the area where we have greatest control e.g. in our buildings, which account for 11% of our overall emissions (see table 4). In our section on Buildings and Street Lighting we used two methodologies to predict the cost of retrofitting our buildings to net zero which indicated similar investment requirements in excess of £40 million. This is an enormous challenge and whilst this report needs to highlight the investment requirements associated with this challenge, the funding for this estimated investment requirement funding has not yet been identified. The council will seek to take advantage (as it already does) of grants/interest free loans that become available in addition to other funding identified for these improvement works.

Alongside analysing our 2022/23 emissions by scope (see Figure 5) it is useful to review the total emissions by activity (see definition of 'activity' on page 13). The breakdown of our corporate carbon emissions for 2022/23 of 69,665 tonnes CO2e emissions is shown below in Table 3 with the full submission provided as Appendix B.

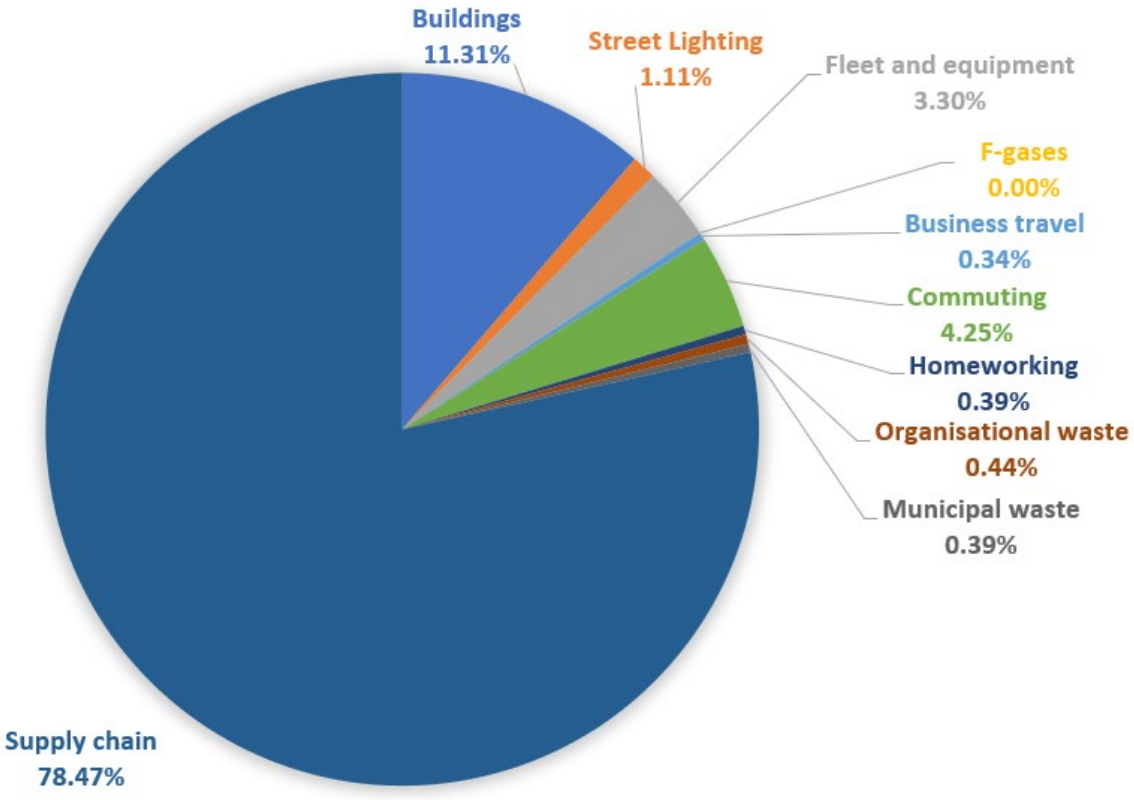

Figure 5 – Pie chart showing breakdown of corporate activity carbon emissions for 2022/23

The breakdown of our emissions across activities is set out below and will be explored in more detail in subsequent sections.

Link to chapter	Activity	22/23 kgCO_2e	%
Procurement	Supply chain	54,667,719	78.47%
Buildings	Buildings	7,876,745	11.31%
Travel	Commuting	2,962,158	4.25%
Fleet	Fleet and equipment	2,298,526	3.30%
Street_Lighting	Street Lighting	772,872	1.11%
Organisational_Waste	Organisational waste	307,383	0.44%
Home_working	Homeworking	270,755	0.39%
Municipal_Waste	Municipal waste	268,422	0.39%
Business_Travel	Business travel	238,646	0.34%
F_Gases	F-gases	2,476	0.00%
	Total	**69,665,702**	**100%**

Table 3 – Breakdown of corporate activity carbon emissions for 2022/23

Decarbonisation across the Council

The following sections of the Carbon Management Plan look in more detail at the activities taking place across the council that contribute directly to our carbon emissions, as reported to the Welsh Government on an annual basis. Each section will set the context, share the emissions as reported in 2022/23, describe what steps we have taken already to decarbonise, and set decarbonisation goals and actions. These actions will be further fleshed out by a plan in Appendix C.

Each section will also lay out funding and resource needs, along with specific risks and barriers.

General carbon reporting activity for 2024/25

This Carbon Management Plan now sets out each of the reporting sections, namely:

- Buildings and Street Lighting (contribute to our scope 1 emissions)
- Fleet and other mobile equipment (contribute to our scope 1 emissions)
- Business travel, staff commute, working from home (contribute to scope 3 emissions)
- Waste (contribute to scope 3 emissions)
- Supply chain and procurement (contribute to scope 3 emissions)
- Renewables (will aid reduction of Scope 1 emissions)
- Land use (aids sequestration, any improvements here are deducted from our total carbon emissions)

A summary of all the decarbonisation recommendations is collated together in Appendix C. These recommendations have been linked to the existing Project Zero challenges and steps to enable progress to be reported annually. Our annual submission of carbon emissions to Welsh Government will align to their reporting cycles and will also be submitted to Project Zero Board and Cabinet.

4. Decarbonising our buildings

Context

Across the Vale of Glamorgan Council estate, we are responsible for reporting on 291 buildings, including 53 schools. These buildings are the workplaces for over 5000 staff, where we educate young people from across the Vale, the care homes for our most vulnerable residents, and include the buildings that we own and occupy, those that we lease in from other organisations, and those that we lease out to others. How we heat and light these buildings, the use of equipment within them and the water we use in our daily operations all contribute towards our carbon footprint.

Our carbon emissions

In 2022/23 the emissions linked to our buildings made up 11.31 % of our overall emissions and totalled 7,876.7 Tonnes CO_2. Using the methodology set by the Welsh Government, in 22/23 our buildings emissions were as below.

Buildings fuel / emission source	Carbon footprint 2022/23 % of building emissions		% of overall emissions	Data collection methodology
Grid electricity	2,961.2 Tonnes CO_2	37.6%	4.27%	Metered
Natural Gas	4,756.7 Tonnes CO_2	60.4%	6.87%	Metered
LPG (Liquefied Petroleum Gas)	86.3 Tonnes CO_2	1.1%	0.12%	Delivery data
Bioenergy (wood pellets)	7.9 Tonnes CO_2	0.1%	0.01%	Heat meter data
Water (mains supply & mains treatment)	64.7 Tonnes CO_2	0.8%	0.09%	Metered data
		TOTAL	**11.31%**	

Table 4 – 2022/23 data breakdown for buildings fuel

With the exception of F gases (see section below), we have a high degree of certainty about our buildings-related emission due to the comprehensive monitoring and metering systems that we have in place. Energy efficiency and decarbonisation initiatives have been successfully delivered across the estate for over 25 years.

Where we are now: energy

Over the last three decades we have been working to decarbonise our buildings. Historically health and safety, and essential maintenance have taken priority given the finite resources available. However, by demonstrating the advantages and savings associated with energy efficiency improvements within the last 15 years we have reduced our energy consumption by 39% and along with the emission factor changes our CO_2 emissions have reduced by 51%. These efforts included an insulation programme for our buildings during the period 2009 – 2012. Since 2012 we have installed solar PV arrays on 30 buildings with a total capacity of 950 kW with solar PV being included within the majority of 21st century schools (now referred to as Sustainable Communities for Learning programme). Southpoint Primary school was designed as the first net zero school within Wales. Fossil fuelled boilers were not included within the design of Southpoint, instead electrically powered air sourced heat pumps along with 66 kW peak PV in tandem with battery storage.

Decarbonisation goals and actions

Our aim and overarching actions in decarbonising our buildings are:

Aim: To reduce the carbon footprint of our buildings by 1,300 Tonnes per year until 2030.

Achieving this annual saving is dependent on significant investment. Whilst it is impossible to provide a precise figure it is estimated that **in excess of £40 million** will be required to improve our entire building stock to net zero. This figure could easily be higher given the uncertainty in relation to cost inflation, structural/ fabric improvement and initial feasibility work.

Overarching actions to 2030

- Target our efforts at the economically viable energy efficiency improvements across our estate
- Increase the use of roof mounted solar arrays (for electricity) across the estate (as detailed in Section 0)
- Electrify our estate wherever possible and eliminate the use of fossil fuels by the phase out gas & LPG boilers at end of life
- Ensure our new buildings are embedding low carbon solutions, and net zero in operation.
- Run behaviour change campaigns to promote lowering energy usage and ensure that automated systems assist in this area

The activities that we will undertake and the timeline to achieve the overarching actions are laid out in appendix C.

ACTIVITIES TO 2030: Energy			
No.	Timescale (e.g. by end 2024)	**Action**	**Team Responsible**
1.1	On-going through lifetime of programme	All new school developments will include the maximum PV panels for the roof design and layout, consideration to the building orientation is also included to ensure this is achievable. (Provision of battery storage will also be considered as part of the base build).	Sustainable Communities for Learning (SCfL)
1.2	On-going through lifetime of programme	Inclusion of alternative heat sources such as heat pumps within the new school developments to remove the requirement of fossil fuels for heating and domestic hot water.	SCfL
1.3	On-going through lifetime of programme	Include Green Roof systems to all new buildings, where possible. Inclusion is dependant of the array of PV panels and ongoing maintenance cost considerations	SCfL
1.4	On-going through lifetime of programme	All new school developments to comply with the carbon reduction targets set by the Welsh Government and Vale of Glamorgan Council, being met through considerate design and operational measures	SCfL with support from Decarbonisation & Energy

1.5	On-going through lifetime of programme	Ensure all new school developments provide end users with the understanding and knowledge of the building design and how the building is to be managed, to ensure Point 4 is not impeded through use.	SCfL
1.6	2024/2025	Develop policy to promote heat pump technologies and electric water heaters to replace end-of-life gas water heaters / gas fired boilers.	Property
1.7	2025/2026	Retrofit projects to develop consistent, robust approach, e.g. AECB CarbonLite[13], LETI[14].	Property

Where we are now: water

Reported alongside our building energy usage, we record our water consumption (and by association our wastewater to sewer). Whilst a small percentage of our scope 1 emissions, water efficiency can help us generate both financial and carbon savings and reduce the infrastructure carbon emissions generated by Welsh Water. In 22/23 we reported the estate consuming a mains water supply of 164,815m^3 and returning 147,542m^3 wastewater for mains treatment, generating 64,689kgCO_2e. Whilst this is just 1% of the carbon emissions associated with operating our buildings, water efficiency is a relatable and relatively easy behaviour change mechanism to engage with staff and building users on.

Introduction of water AMR (automatic meter reading) has allowed more accurate measurement of water consumption. The technology is being rolled out across most of the water supplies including schools, corporate buildings, depots and parks supplies, just over 200 supplies in total. Between the end of 2022 and March 2024, AMR has been installed on 164 meters across the whole estate. The remainder are dependent on Welsh Water changing the meters to those compatible with AMR. It has allowed identification of leaks and poor water use. Addressing these issues though is often not as swift as it could be. This can be due to genuine logistical challenges, but there are also times when much swifter action (which is hampered by our current Standard Operating Procedures) could have fixed issues much faster.

Efficient domestic hot water use within our buildings will also generate energy savings, and switching to electric water heaters, and heat pumps to generate hot water will assist. Anecdotally hot water generation may have been oversized, and with increased data monitoring we are able to replace plant to better match building use and ensure best efficiencies. Supporting water efficiency messaging should continue therefore to accompany all energy efficiency projects across the council.

At present irrigation of our parks, gardens and countryside parks are using potable water. Summer 2024 will be the last year of summer bedding and hanging baskets flowers and irrigation, in the future we will be moving to drought resistant planting, reducing the need for irrigation. The establishment of new tree saplings requires watering for their first three years, as is set out in the new Tree Strategy

[13] AECB CarbonLite Retrofit - AECB
[14] Home | LETI

Overarching actions to 2030

The activities that we will undertake and the timeline to achieve the overarching actions are laid out in Appendix C.

ACTIVITIES TO 2030: Water			
No.	**Timescale (e.g. by end 2024)**	**Action**	**Team Responsible**
1.8	2024/25	Continue to progress roll out of AMR water meters, monitoring out of hours usage and leak detection for resolution by asset holder.	Decarbonisation & Energy
1.9	On-going activity	Decarbonisation & Energy Team continue to undertake weekly checks on water consumption and report unusual consumption to designated building manager /site contact to perform initial checks.	Decarbonisation & Energy and all site managers
1.10	2024/25	Develop Standing Operational Procedures (SOPs) for identifying and fixing leaks.	Property/public buildings
1.11	2025/26	Develop policy to promote rainwater harvesting for landscaping / vehicle washing / WC flushing reducing portable water consumption.	Decarbonisation & Energy (with Neighbourhood Services)
1.12	2024/25	Develop process for void properties such that water is isolated and accounts paused to avoid incurring costs.	Housing (Emergency Housing)
1.13	2024/25 and on-going	Water butts installed at Porthkerry workshop and Cosmeston Medieval Village to harvest water for associated gardens. Look to develop other solutions to minimise water usage on all site	Place / Countryside
1.14	2024/25 and on-going	Consider opportunities to introduce rainwater harvesting when undertaking roof renewal works or replacement of rainwater goods.	Property Design & Maintenance
1.15	2024/25 and on-going	Implement specification changes, particularly in relation to sanitary fittings that introduce water saving devices into projects which reduce water usage	Property Design & Maintenance
1.16	2024/25 and on-going	Consider options for recycling water / greywater systems to provide alternative sources of water when undertaking refurbishment projects and as part of new build developments.	Property Design & Maintenance, SCfL.
1.17	2024/25 and on-going	Discuss with our supply chain options for reducing water usage during on site construction works. Introduce these requirements in to contract documentation.	Property Design & Maintenance
1.18	2024/25 and on-going	Utilise rainwater harvesting to water plants in our parks and public spaces, for vehicle washing, water bowser and other activities.	Visible Services / Countryside Services

Where we are now: Refrigerant F-gases

Further scope 1 emissions, reported alongside our buildings energy and water usage, are from refrigeration F-gases used in air conditioning systems. This was a new reporting line in the 2022/23 reporting methodology[15]. The Council does not currently have a central depositary of all air conditioning systems and so best efforts were carried out to compile a dataset for the corporate estate and an estimation for the f-gas dataset generated for our 22/23 return to Welsh Government. It is therefore not possible to confidently account for what percentage of our 22/23 carbon emissions can be attributed to air conditioning systems and the use of F-gases.

This dataset requires further work to improve records and establish a central depositary so that reporting can be carried out more effectively moving forward. It is anticipated that the teams to be involved with progressing this will be FM for the corporate estate, ICT (for server rooms), Learning & Skills (new schools), Decarbonisation & Energy and Compliance.

Emission source	Carbon footprint 2022/23 % of F gas emissions		% of overall emissions	Data collection methodology
R407C	0.89764 Tonnes CO_2	36.26%	0.00130%	Service records
R410A	1.52424 Tonnes CO_2	61.56%	0.00220%	Service records
HFC-32	0.054 Tonnes CO_2	2.18%	0.00008%	Service records
		TOTAL	0.0036%	

Table 5 – 2022/23 data breakdown for f-gas

Earlier in Chapter 2, the emission factors for grid electricity were explained. When discussing refrigerant gases, it is useful to also consider their emission factors and impact. Whist low volumes and a small percentage of our overall emissions, these gases are extremely harmful.

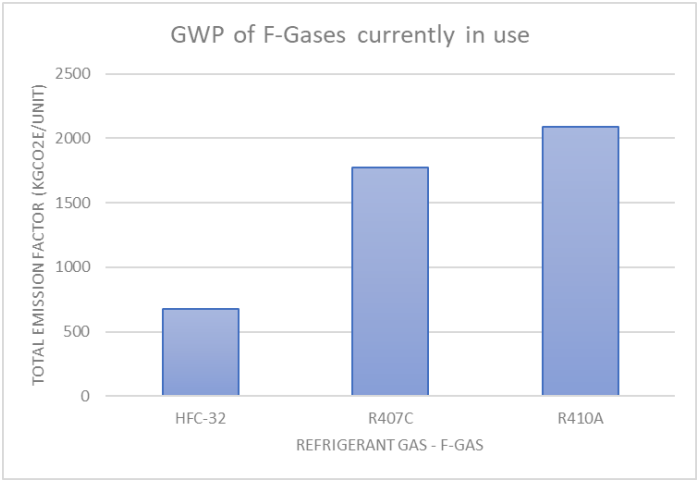

Figure 6 Graph showing the Global Warming Potential (GWP) of refrigerant gases currently used in VoGC estate

Monitoring refrigerant gases is therefore critical and a strategic replacement to lower GWP gases required.

[15] Welsh Public Sector Net Zero Carbon Reporting Guide (gov.wales)

Overarching actions to 2030

The activities that we will undertake and the timeline to achieve the overarching actions are laid out in appendix C.

ACTIVITIES TO 2030: F gases			
No.	**Timescale (e.g. by end 2024)**	**Action**	**Team Responsible**
1.19	2024/25 and on-going	Monitor existing air condition systems, rationalise air conditioning units where possible and investigate a replacement programme to swap to lower Global Warming Potential (GWP) refrigerant gases.	Compliance
1.20	2024/2025	Develop policy to promote passive cooling must be demonstrated first ahead of any air conditioning being installed. To include a sign-off process from Property Section and PZ Board and business case demonstrating need.	Decarbonisation & Energy
1.21	March 2026	Develop and implement infrastructure solutions for IT that reduce the on-site carbon consumption, i.e. existing Data Centre (and ensure robust carbon accounting for any outsourcing of this activity).	ICT
1.22	On-going through lifetime of programme	Plan server rooms in new school developments in a location to provide adequate passive cooling	SCfL

Resources, costs and funding

It has been estimated by pro rata means that decarbonisation of our building stock will cost a minimum of £40 million. Further details on the planned £1.3m (2024/25 to 28/9) investment in renewable energy is available later in Section 0. The Councils energy Team is currently made up of 4 members of staff (Decarbonisation & Energy Manager, Principal Decarb & Energy Officer, Senior Decarb & Energy officer and a Decarb & Energy Officer). Through the work of this small team, a total of over £2million has been invested in our building assets since 2010, via a mix of funding sources (Salix Funding, ECRF, Low Carbon Heat Grant, Ystadau Cymru ACPW3 Funding and Project Zero Funding). It is well documented that Local Government is facing severe and unprecedented budgetary pressures, with conflicting priorities calling on the limited capital funding available.

Energy Commission Reinvestment Fund (ECRF)

An additional charge was included in the unit rate for electricity and gas from the time that automatic meter reading (AMR) facilities were installed back in 2010. Those tariffs covered the cost of AMR with some to spare. After a number of years that surplus became enough to justify the setting up of the Energy Commission Re-Investment Fund (ECRF). The setting up of this fund was approved via a cabinet resolution on 26th January 2015.

As repayments are made into the fund new investments will be made predominantly into renewable technology and blended with the other funding mechanisms in order to maximise returns on schemes.

Risks and barriers

- Insufficient capital funding to allow full decarbonisation of the estate, including limited external funding resources
- Supply chain limitations to deliver work programme (particularly for works required to be completed during school holidays)
- Staff Resource to identify, procure and manage works at pace and scale required
- Loss of Salix funding stream if we are unable to recruit sufficient projects each year
- Existing building stock fabric unsuitable for improvement to net zero which would require additional investment in some cases to ensure suitability prior to any decarbonisation improvements
- Existing building stock not always suitable for emerging technologies which again would require additional investment in some cases.

5. Street Lighting

Context

Across the Vale of Glamorgan Council estate we are responsible for 16,180 adopted lighting columns on the system which we maintain providing lighting of streets and footpaths comprising the adopted highway throughout the Vale local highway network, of which 15,033 are currently LED (approx. 93%), The council also manages and maintains numerous traffic signals, along the 1,029.90 km length of local highway network comprising streets and footpaths. Whilst most of this asset group is held by Highways, some footpath lighting and other architectural lighting features are assets held by the housing, development and other service teams.

Our carbon emissions

Using the methodology set by the Welsh Government, in 22/23 our street lighting emissions were as below.

Street Lighting	Carbon footprint 2022/23	% of 22/23	Data collection methodology
Grid electricity	773 Tonnes CO_2	1.12%	Based on information from our meter administrator, the data collector, Unmetered supply operator and supplier invoicing.

Table 6 – 2022/23 data breakdown for streetlighting

Where we are now

As the highway authority, the Council has a statutory duty to maintain the highway under Section 41 of the Highways Act (1980). We will always ensure the appropriate lighting levels are captured, at the appropriate locations, for example, should roosting bats be of a concern, then the appropriate measures will be taken to mitigate risk. It is important to note that the Council do not have a legislative requirement to light the highway network, however once installed the Council will maintain.

The Council's approach is to standardise on 4000 Kelvin (neutral white) unless there are ecology issues whereby a lower correlated colour temperature (CCT).

Currently 93% of our streetlights have been converted to LED, with capital funds committed to convert the remaining 7% (1120) lighting and remaining road lighting to LED. Many of the remaining lights for conversion are heritage / bespoke style. We have a moderate confidence about our street lighting-related emissions due to the comprehensive monitoring systems that we have in place.

We currently have various methods of lighting control with the majority of main roads within the Vale of Glamorgan controlled by a central management system, with many dimming regimes set up and faults easily identified. A large proportion of residential lighting is dimmed between midnight and 6.00am by up to 50%. Finally, the last method of control is via dusk till dawn and can vary through the seasons of the year automatically.

Since 2008, we have been working to decarbonise our street lighting by:

- Improving metering and data collection
- Improving lighting control settings (e.g. regime hours for example dimming to lower light level, daylight linking time controls)
- Switching to LED lighting

To generate energy savings in recent years we had implemented a part night lighting scheme switching off the older style light sources (SON and SOX) between the hours of midnight till 6.00am. Leaving key strategic points not switched off (for example, roundabouts and zebra crossings). Whilst the part night lighting was deemed a success due to financial savings, the implementation of the LED installation initiative (SALIX) superseded this approach with much greater financial savings, as well as enhanced lighting levels on the highway network.

We have on occasion considered solar lighting, however this hasn't been proven to be successful to date for many contribution factors, such as increased maintenance and battery consumption, tree canopy cover and the assets are traditionally more expensive / per unit costs.

As set out in CMP 02 (2018-2022), a Salix loan of £1.4m was used to enable a switch off main road lighting over to LED so considerable savings have already been secured. Prior to this there was significant capital investment to convert many of the council's street lighting assets along residential streets to LED. There remains some areas for improvement as most street lighting is connected to unmeasured/metered supplies (UMS). Energy consumption is calculated knowing the wattage of the lamp (power using device – kW) and the time (hours) that it runs. A calculation of electricity consumption is then made for each unit each month. If lights are fed from a meter, then usually this will be supplying other things too. For example, the illumination kiosk on Barry Island is supplying various lights along the sea front, and several concession holders. We now have most of the concessions sub-metered so we can work out how much the lighting element uses. We have several lighting columns on separate Non-Half Hourly (NHH) certificates. Some of these are held by housing, some parks, and some by development servicing. It is hoped to get all the columns on to the main streetlighting meter point administration number (MPAN) but these lights need to be surveyed to establish the details are still correct and if they are fed from a meter or if they are UMS.

Decarbonisation goals and actions

Our aim and overarching actions in decarbonising our street lighting are:

Aim: To reduce the carbon footprint of our lighting by 2% per year until 2030 when compared with the previous year. To convert all street lighting across the estate to LED by 2030 providing sufficient budget allocation.

To reduce the carbon footprint of our illuminated road furniture by 9.7% per year until 2030 when compared with the previous year. To convert all illuminated road furniture across the estate to LED by 2030 providing sufficient budget allocation.

To reduce the carbon footprint of our traffic signals by 2030. To convert all traffic signal aspects across the estate to LED by 2030 providing sufficient budget allocation.

Overarching actions to 2030:

- Convert all remaining street lighting to LEDs
- Continue to provide efficient asset management.

The activities that we will undertake and the timeline to achieve the overarching actions are laid out in appendix C.

ACTIVITIES TO 2030: Street lighting			
No.	**Timescale (e.g. by end 2024)**	**Action**	**Team Responsible**
2.1	On-going activity	1.5% per annum to close off the outstanding 7% - 191 assets/units per year providing sufficient budget available.	Highway Maintenance Team
2.2	March 2026	Strategic review of lighting levels for new developments (S278/38) whether requirements can be flexible to reduce lighting levels, areas remaining unlit for example.	Highway Developments with Planning
2.3	On-going activity	Develop programme to transition the remaining assets onto CMS should budget be available.	Highway Maintenance Team

Resources, costs and funding

Street lighting team is very small and made up of two officers. Additional support would help deliver the aim.
Challenging budgets and significant cost savings impacting delivery of conversion to LED and other improvements to existing assets to deliver necessary carbon savings. There are no current sector specific funds or grants to support this activity.

Risks and barriers

Whilst the LED lanterns are operational, it is important to note that these assets have a shelf life (100,000 hours), they will at some point fail in mass. Funding will need to be identified to ensure best technology is available to replace before 2030.

Small team remains focused on reactive work and daily changes in workload demands with aging assets and insufficient time to programme and arrange works more strategic.

Ensuring lighting infrastructure is fit for purpose and long-life remains prior to installing LED fittings (avoids the risk of installing new LED fittings on end-of-life concrete columns).

6. Fleet and mobile equipment

Context

Across the Vale of Glamorgan Council estate, we are responsible for over 325 vehicles. Our "fleet" includes the following vehicles: all pool cars, maintenance vans, refuse collection vehicles, maintenance vehicles and gritters. In 2022/23 most of the fleet activity was undertaken in diesel vehicles and 9% of the Council's (centralised) fleet were electric vehicles.

Our carbon emissions

In 2022/23 the fleet accounted for 3.33% of our reported carbon emissions. No data was available for mobile equipment.

The council holds a well-established dataset for our main corporate fleet with data collected via:

- Telemetry data recording journeys made by the vast majority of our vehicles[16]
- Fuel purchase data
- EV charging data
- Fuel card purchasing petrol (by SRS team)

Using the methodology set by the Welsh Government, in 22/23 our fleet emissions were as below.

Emission source	Carbon footprint 2022/23 % of Fleet emissions		% of overall emissions	Data collection methodology
Fleet – equipment (Diesel)	61.4 Tonnes CO_2	2.67%	0.09%	Litres – tank data off car registration
Fleet – HGV (Diesel)	1,836.9 Tonnes CO_2	79.92%	2.65%	Litres – tank data off car registration
Fleet – pool car (Diesel)	82.2 Tonnes CO_2	3.58%	0.12%	Litres – tank data off car registration
Fleet – van (Diesel)	299.1 Tonnes CO_2	13.01%	0.43%	Litres – tank data off car registration
Fleet – pool car (Grid electricity)	1.6 Tonnes CO_2	0.07%	0.00%	EV portal recording kWh charge per vehicle registration
Fleet – pool car (Petrol)	17.3 Tonnes CO_2	0.75%	0.02%	Purchase card transactions (litres of receipt against car registration)
		TOTAL	3.32%	

Table 7 – 2022/23 data breakdown for fleet

[16] It is not possible to have telemetry tracking all fleet vehicles because of the sensitive nature of the work being undertaken (e.g. money laundering and SRS vehicles).

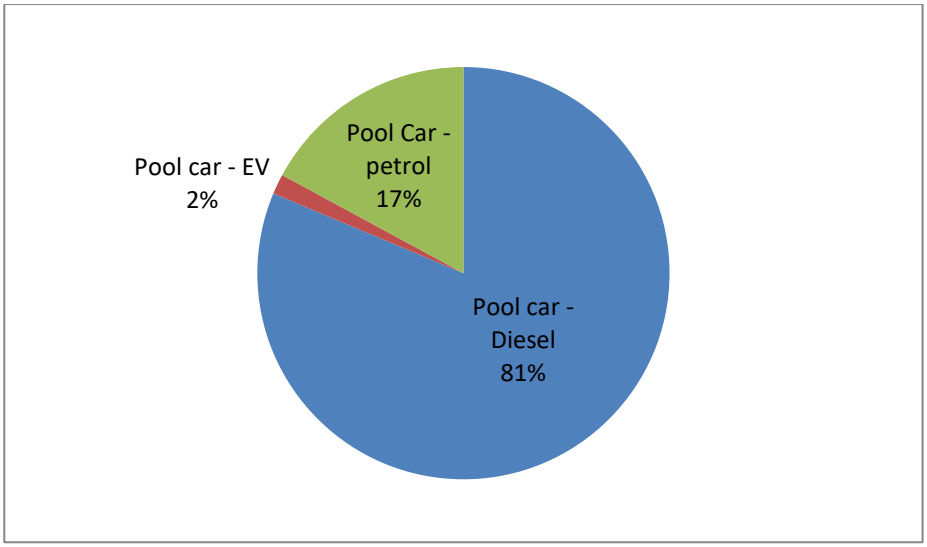

Figure 7 - Pie chart showing 2022/23 reporting of fleet pool cars by fuel type

No records were available on mobile equipment diesel or petrol use (e.g. handheld landscaping, grounds maintenance plant). Any equipment which is registered as fleet has been incorporated into the dataset table able, smaller mobile equipment is yet to be reported.

Where we are now

Following submission of the 22/23 activity to Welsh Government, other corporately owned vehicles managed outside of the Fleet team were identified. It is recommended that all fleet owned or leased by the council should be centralised in terms of oversight and management. With a more co-ordinated approach it may also be possible to identify fleet efficiencies / pooling / rationalisations as well.

At present, when a vehicle (of any fuel type) is purchased, it is recorded on the Tranman platform and an indicative service lifespan recorded (included as Appendix D). It should be noted that some vehicles have been extended beyond maximum lifespan due to budget constraints and the timescale of ordering replacement vehicles and receiving them. The lifespan is determined either by vehicle age, or a maximum mileage rate. Vehicles are then replaced at the expiration of this date. A similar process should be established for the replacement of the EV fleet in time, whether we are replacing battery or the entire vehicle and at what age / mileage.

Because this activity requires a change in staff behaviour, the Project Zero board and internal comms teams will need to support this activity to ensure that investments made in switching vehicles / equipment and infrastructure are realising significant carbon savings.

The Welsh Government Energy Services fleet review is reporting back May 2024 and will provide an independent review of current fleet management practices. They have completed similar reviews for others in the public sector in Wales. Their report will give the Council a timeline to replace each fleet vehicle with an alternatively fuelled model, and requirements to fuel/charge each.

Reporting on EV charging

In 2022/23 data was available from our EV charging platform to record the electricity used on our sites to charge the EV fleet. Through 22/23 the vehicles were not charged elsewhere. All EV fleet will remain charged via corporate charging points, there will not be a mechanism whereby EV fleet can be charged at third party charge points and expenses claimed.

Through spring 2024, a trial is in place in one corporate location for staff EV charging. If successful, we will roll out to offer on additional sites and be offered to the public to charge their own electric vehicles. At present, the Welsh Government reporting template indicates that electricity used for the charging of third-party vehicles is exempt from reporting[17].

Furthermore, through 2023/24 the Cardiff City Region have continued to install community EV charging points across the county[18]. The Council currently has no visibility of their usage or any cost, or carbon accountability for these installations.

Mobile Equipment

Data for our mobile equipment (sit on mowers, handheld maintenance equipment e.g. chainsaws, mowers, strimmer's, leave blowers) is not currently collated or monitored by service areas. It has been possible to retrospectively collect this data for mobile equipment operated by Countryside Services staff, but fuel for mobile equipment used in Parks and Playing Fields is not currently captured and reported.

The current replacement rates for lawnmowers and strimmer's are replaced every two years. The smaller equipment (blowers and hedge cutters) is replaced every three years, based on safe working practices (HAVS - Hand-arm vibration syndrome). At the point of replacement electric models are reviewed and purchased where viable. Any electrical equipment purchased is then charged from our sites and would form part of our scope 1 reporting for buildings grid electricity – it would not be possible to sub-meter this charging activity at present due to the dispersed nature of equipment and activity.

Two EV charging points have been installed at Romilly Park (Barry) and Alexandra Park (Penarth) and within our countryside parks for golf buggies and future mobile equipment (mowers).

Decarbonisation goals and actions

Our aim and overarching actions in decarbonising our fleet and mobile equipment are:

Aim: To reduce the carbon footprint of our fleet and mobile equipment by 4% per year until 2030 when compared with the previous year.

Overarching actions to 2030

- Promote use of fleet vehicles (particularly EV) over private vehicles
- Continue to manage fleet investing in EVs and review the market for other types of Ultra Low Emission vehicles
- Phase out petrol and diesel vehicles which are due for replacement.
- Ensure charging technology is fit for purpose and available where required.
- Transition mobile equipment away from fossil fuel power sources.
- Pilot the use of electric bikes with the wider workforce

[17] Refer to page 26/70, table 5: Organisation boundaries for Welsh public sector organisations (services /activities excluded) Public sector net zero reporting guide | GOV.WALES (accessed 19/12/23)
[18] Connected Kerb | Cardiff

The activities that we will undertake and the timeline to achieve the overarching actions are laid out in appendix C.

ACTIVITIES TO 2030: Fleet and mobile equipment			
No.	**Timescale (e.g. by end 2024)**	**Action**	**Team Responsible**
3.1	2024/2025	Centralise data collection of all datasets to a single team to enable analysis of fleet vehicle journey types and vehicle utilisation patterns, fuel split diesel, petrol and electric.	Fleet
3.2	March 2025	Develop fleet replacement strategy which incorporates whole life carbon approach to vehicle replacement, considers vehicle rotation amongst fleet user groups, and timeline to phase out fossil fuel fleet (using WGES April/May 2024 recommendations).	Fleet
3.3	March 2025	Develop new pool car recharging policy to use mileage (telemetry) or EV charging data to improve accuracy (current policy is time charge based only).	Finance
3.4	March 2028	EV fleet end of life policy developed confirming battery or vehicle replacement and age / mileage criteria.	Fleet & Finance
3.5	Twice yearly - ongoing	Promote efficient use of pool car hires and use of EV	Fleet & Comms
3.6	2024/25	Develop findings of trial and EV infrastructure working group for staff and visitor use of EV charge points.	Fleet & FM
3.7	2024/2025	Implementation of a staff and public EV charging capability trial and subsequent wider rollout.	EV Project Team
3.8	2024/25	Establish records of all mobile equipment held in Parks and Playing Fields and Countryside Services teams. Develop timeline for rationalisation / pooling and sharing of equipment.	Countryside Services and Neighbourhood Services (Fleet support)
3.9	2024/25	Building on March / April 2024 trials of battery generators – establish policy to hire / purchase in place of petrol and diesel generator.	Countryside Services and Neighbourhood Services
3.10	2024/25	Pilot the use of electric bikes with the wider workforce.	24/25 - Social Services 2025 onwards – Fleet (active travel lead on implementation to wider organisation)
3.11	2024/25	Annual records of fuel purchased for mobile equipment to be retained.	Countryside Services and Neighbourhood Services
3.12	Yearly	Departments utilising fleet vehicles to review mileage and work patterns, and rationalisation of fleet to be considered by	All fleet vehicle using departments

		the relevant departments; outcome of decision then supported by Fleet team.	

Resources, costs and funding

- Staffing
- Grants available for vehicles
- Support from the Cardiff Capital Region
- EV infrastructure grants available
- Vehicle replacement / auction income generated

Risks and barriers

- Grid capacity for EV charging – phasing and strategic approach across the estate
- No pool fleet car hubs in mid or west county.
- Cost and supply of alternatively fuelled vehicles.

7. Business travel, staff commute, working from home

Context

Our people strategy is strongly aligned to Project Zero and building a staff culture where our employees will be able to clearly articulate our vision for sustainable working practices. All our future people strategies, policies and processes will carefully consider the impact of our sustainability agenda, commitment to Project Zero and economic regeneration.

Underpinning the strategy is a drive to improve our digital capability and communications with staff across all our directorates on all people matters, engaging in ongoing and meaningful dialogue with our staff, trade unions and partner organisations on how we can work together to achieve the best outcomes for all.This includes our working environment and other key aspects such as how we reward our staff and engage in learning opportunities with a focus on the achievement of net zero.

In addition, how our staff work and where they are based also forms part of our corporate carbon footprint. There are a variety of working patterns across the council, with many staff travelling to work daily such as those working in schools, in social care settings and in other frontline services. Through our Hybrid Working Strategy, flexible working patterns are established in some areas, with systems in place to support hybrid working arrangements (where practicable), the principles of such arrangements are always focused on the needs of our citizens and those most vulnerable within our communities whilst allowing our staff opportunities to work from their closest Council offices, at home and within our communities. Our Hybrid Working Strategy outlines our guiding principles to staff strongly aligned to Project Zero objectives.

Through the utilisation of our existing and new technologies, we will aim to reduce un-necessary travel to offices to return paperwork/complete work. Remote meeting solutions are now in place for Council meetings that enable live streaming and remote presentation, reducing the need to travel to meetings and cutting travel related emissions.

As well as improving mobile device utilisation, we will reduce re-keying of data into other systems and paper utilisation through the implementation of applications that are designed for mobile devices. Where we can avoid behaviour change by developing solutions in the background, we will and where a change in working practice is required will work with the directorates to design the right solutions.
The Welsh Government's carbon reporting template has a set emission factor for home working, with business travel and commuting are recorded in a similar manner to our fleet (stating the transport mode, fuel type and distance travelled). The data for this return is held by a variety of teams – including finance and HR but ultimately relies on the behaviour of all staff to correctly record their travel accurately. Our policies ask our staff to consider the appropriateness of travel arrangements, whether a meeting can be conducted online and the most sustainable mode of travel.

Our carbon emissions

In our 2022/23 carbon emission reporting, business travel, our staff commute and staff working from home (in a hybrid way) is presented below in Table 8 .

Emission source	Carbon footprint 2022/23 % of travel emissions		% of overall emissions	Data collection methodology
Business travel	238.6 Tonnes CO_2	6.87%	0.34%	Finance system, expenses claimed for business travel (private car mileage, train, bus, cycle etc)
Commuting	2,962.2 Tonnes CO_2	85.33%	4.28%	Extrapolated from staff survey returns
Homeworking[19] (via a hybrid approach)	270.8 Tonnes CO_2	7.80%	0.39%	Extrapolated from staff survey returns
		TOTAL	5.01%	

Table 8 – 2022/23 data breakdown for business travel, commuting and homeworking

In 2022/23 business travel was only recorded for private car and motorbike. There were no datasets recording business miles travelled by: hire car, public transportation, flight or van. It is not clear whether this activity is undertaken, and this is to be determined Corporately with HR taking the lead from a project management perspective with input from key services.

Where we are now

Whilst recording our business travel activity is well established, data on staff commute and home working is relatively new with a change in ways of working post-pandemic. The data used so far has been based on staff survey returns of 982 participants (704 participants excluding school staff) and this being extrapolated up to be representative of the full staff population (a potential 2371 FTE who could work from home).

Decarbonisation goals and actions

Our aim and overarching actions in decarbonising our business travel, staff commute, working from home are:

Aim: To reduce the carbon footprint of our business travel, staff commute, working from home we will continue to review and enhance our policies and practices to encourage active travel, the use of public transport and low carbon means of travel. A quantified target for 2030 will be developed through 2025/26.

[19] Note: The carbon factor associated with home working is part of the Welsh Government's template and does not require any personalised data being collected on a staff members own utility use.

Overarching actions to 2030

- To lead on future engagement with our staff and the building of a staff culture which embraces sustainability and project zero principles in all that we do.
- To continue to develop a culture shift towards active travel and public transport use for the staff commute through work such as the reward strategy.
- To drive further reductions in carbon through more sustainable working practices, i.e. virtual meetings, e-mailing and reducing printing
- To support the development of our Volunteer Policy to engage in community projects that support our carbon reduction management plan

The activities that we will undertake and the timeline to achieve the overarching actions are laid out in appendix C.

ACTIVITIES TO 2030: Business travel, staff commute, working from home			
No.	**Timescale (e.g. by end 2024)**	**Action**	**Team Responsible**
4.1	March 2025	Develop travel policy refresh for communication to all staff. Include flight policy including no short haul, UK travel by plane etc (we have successful examples from our Public Services Board partners to use as a template	HR lead (Fleet input and with Finance, Comms support as required)
4.2	March 2025	Develop new policy for staff on claiming business travel to reflect new ways of working, post-pandemic	Corporate, including Finance and HR Lead
4.3	March 2025	Undertake a review of business travel to inform the travel policy refresh. Business travel appears very low and uncertainty remains on whether all business travel is being recorded	Corporate, including HR and Finance. HR lead.
4.4	March 2025	Ensure our policies reflect best practice for staff travel and hybrid working. That our staff embrace these new ways of working and take decisions which continue to support low carbon activity.	Corporate – including HR and Finance. HR lead.
4.5	March 2025	Develop fleet replacement strategy which incorporates whole life carbon approach to vehicle replacement, considers vehicle rotation amongst fleet user groups, and timeline to phase out fossil fuel fleet.	Fleet
4.6	2024-2030 (on-going work)	Continual improvement and participation in staff travel survey - Internal comms and Corporate Services team who complete staff survey to continue to refine survey, encourage higher participation return (aim for 30-40% minimum return) and feedback data to all staff.	Communications and Policy
4.7	Dec 2025	Data collection of hire car usage (for business mileage).	Fleet

4.8	Dec 2025	Implementation of a revised Print Strategy that reduces the utilisation of printing and where absolutely required, has the lowest carbon impact	Digital
4.9	March 2025	Pilot for e-bike use by social services staff through 2024/25 monitored and findings implemented 2025 onwards.	Social Services / HR / Finance

Resources, costs and funding

There are resource and cross departmental working required to deliver the changes to relevant policies and working practices. Staff resources to develop relevant policies and surveys.

Risks and barriers

- Change relies on staff engagement and behaviour change, may take time to get traction and see change in datasets
- Data relies on extrapolation of staff participation in staff survey until better methodology can be established.

8. Waste

Context

The Council is committed to working to a low carbon Wales and reducing our carbon footprint, to preventing waste and to continuing to increase our reuse and recycling rates. The Council's new Waste Strategy will make a significant contribution to how the Council responds to the climate emergency via the Carbon Management Plan and the Climate Change Challenge Plan which contains a specific challenge to "Reduce waste and put in place the necessary facilities, services and awareness raising for a more circular economy with a strong emphasis on reuse, repair and recycling".

We believe we are in a good position to respond to the above challenges and that by working together with our residents we can embed an efficient, smart and modern recycling and waste management service which will ensure we achieve our targets now and in the future. The Council's Recycling and Waste Strategy is an integrated Recycling and Waste Strategy which prioritises waste minimisation and promotes re-use, repair and recycling and to deliver new employment opportunities through the development of a more circular economy. Our Vision for recycling and waste management is to: 'Provide effective recycling and waste management services working with our communities to respect, enhance and enjoy our environment and ensure a bright future.'

The Council's Recycling and Waste Management Strategy also aligns with Welsh Governments "Towards Zero Waste" the National Waste Strategy. The Welsh Government has set ambitious targets for all Welsh Local Authorities to work towards. The National Strategy sets out the long-term framework for resource efficiency and waste management between now and 2050.

At present, the Council collects from approximately 63,000 properties using the Collections Blueprint model which follows Welsh Governments statutory guidance. This recommends a service profile for the collection of recycling from households via kerbside sort to ensure compliance to the revisions of the European Union Waste Framework Directive (WFD) and to ensure high rates of high-quality recycling, cost savings and improved sustainable development outcomes.

The Council also has statutory obligations to collect Commercial Waste when requested, and the new Workplace Recycling Regulations will provide an opportunity to increase our income, as well as recycling performance.

We generate waste at our places of work, reported as "organisational waste". In addition, we provide a waste collection service for our communities (including household and non-household waste), reported as "municipal waste". There is a further waste reporting section for "project waste" which is waste generated from a single one-off activity.

Our carbon emissions

In our carbon reporting to Welsh Government, we report three types of waste: organisational, municipal and project waste. In 2022/23 our waste carbon emissions accounted for 0.83% of our total carbon emissions. There is some uncertainty around this data due to the data reported for our organisational waste (as reported higher than our municipal waste totals). The breakdown submitted is:

Organisational Waste

Organisational waste - Emission source	Disposal method	Carbon footprint 2022/23	% of waste emissions	% of overall emissions	Data collection methodology
Commercial and industrial waste	Combustion	10.56 Tonnes CO_2	3.44%	0.0152%	Data provided by waste team and analysed by energy team
Mixed recycling	Recycling	21.72 Tonnes CO_2	7.07%	0.0314%	Data provided by waste team and analysed by energy team
Organic mixed	Anaerobic Digestion	0.14 Tonnes CO_2	0.05%	0.0002%	Data provided by waste team and analysed by energy team
Commercial and industrial waste	Combustion	127.66 Tonnes CO_2	41.53%	0.1843%	Data provided by waste team and analysed by energy team
Mixed recycling	Recycling	147.30 Tonnes CO_2	47.92%	0.2126%	Data provided by waste team and analysed by energy team
			TOTAL	0.44%	

Table 9 – Organisational Waste data submitted for 2022/23

Municipal Waste

Municipal waste - Emission source	Disposal method	Carbon footprint 2022/23	% of waste emissions	% of overall emissions	Data collection methodology
Household residual waste	Combustion	14.67 Tonnes CO_2	5.46%	0.0212%	Collected by Waste Team, but not a complete data set
Organic garden	Composting	34.83 Tonnes CO_2	12.97%	0.0503%	Collected by Waste Team, but not a complete data set
Organic food and drink	Anaerobic digestion	38.18 Tonnes CO_2	14.22%	0.0551%	Collected by Waste Team, but not a complete data set
Mixed recycling	Recycling	180.75 Tonnes CO_2	67.34%	0.2609%	Collected by Waste Team, but not a complete data set

Table 10 – Municipal Waste data submitted for 2022/23

Project waste

- Emission source	Disposal method	Carbon footprint 2022/23 % of waste emissions		% of overall emissions	Data collection methodology
N/A	N/A	0	0	0	No data available for 22/23 project activities.

Table 11 – Project Waste data submitted for 2022/23

Where we are now

Organisational Waste

Our organisational waste is generated in the workplaces across the council, including our corporate sites.

Organisational waste: waste generated in day-to-day operations.

The collection of this waste is currently contracted out to a commercial provider. Waste data for our organisational, corporate sites, was insufficient and incomplete at the time of the 2022/23 carbon reporting. There were other reporting lines within the Welsh Government template for which data was not available as detailed later in this section.

With new Workplace Recycling Regulations being implemented in April 2024 there will be communication to support behaviour change to ensure better waste segregation and data collection going forward.

There are 19 organisational waste types, with various disposal routes within the reporting template. Those waste types that we reported in 2022/23 are as detailed above in Table 9. There are gaps for a number of waste streams which will need to be investigated for future reporting. These organisational waste streams are:

- Organic food and drink (separated food waste)
- Organic garden (separated garden waste)
- Mixed WEEE
- Mixed plastics (segregated plastic waste – all types of plastic)
- Mixed glass (segregated glass waste – all colours)
- Mixed paper (segregated paper and cardboard waste)
- Mixed metal cans (segregated metal cans – all types)
- Batteries (mixed batteries, excluding car batteries)
- Clothing (segregated textile and clothing)
- Average construction (general construction waste)
- Non-infectious offensive waste
- Infectious waste (Orange bag – infectious waste not fulfilling criteria of hazardous waste)
- Clinical waste (Yellow box – infectious waste contaminated with chemicals or pharmaceuticals)
- Medical contaminated sharps waste (Yellow box – sharp items contaminated with medications)

- Anatomical waste (red lidded, yellow box – body parts, including anatomical waste which is infectious or contaminated with chemicals)
- Medicinal waste (Blue lidded, yellow box – unused (or part used) medicines)

Municipal Waste

Municipal waste: In additional to waste produced by Local Authorities from their own operations, municipal (household and non-household) waste will also be collected. This waste should be included in the operational boundary as it is a service provided by the Local Authority.

The municipal waste types reported in 2022/23 are detailed above in Table 10.

Data for the waste streams reported on were split for the municipal waste (from communities) and from our school sites. The school sites data was extrapolated from a very small sample of data available up to represent waste generated by the full school population.

For municipal waste the following municipal waste streams can also be recorded and will need to be investigated for future reporting, as they are currently gaps in our records:

- Commercial and industrial waste
- Organic mixed (we have included for segregated organic waste)
- Mixed WEEE
- Mixed plastics
- Mixed glass
- Mixed paper
- Mixed metal cans
- Batteries
- Clothing
- Non-infectious offensive waste

Project Waste

No project waste was recorded for 2022/23 activity.

Project waste: If your organisation has undertaken a construction or retrofit project, or regularly collects information on construction waste for delivery of public services, this data can be entered in the Project waste table.

No data was recorded for project waste because the activity is procured by a wide range of teams and range of external contractors. It is recommended that a working group should be set up to establish the reporting methodology and timescales and a central data collection point. The following project waste streams (reported in tonnes / kg) can also be recorded and will need to be investigated for future reporting:

- Aggregates
- Average construction
- Asbestos
- Asphalt
- Bricks
- Concrete
- Insulation
- Metals
- Soils
- Mineral oil
- Plasterboard
- Tyres
- Wood
- Commercial and industrial waste
- [Plastics – not currently in WG template but will endeavour to collect data]

It may be that a methodology is piloted for key activities through 2024/25 for wider rollout in subsequent years. This is most likely data which is being recorded by Contractors and providers as part of their own ESG/CSR audit trail, but that we are not currently requiring to be evidenced to us.

As set out in Section 9, our procurement policies reflect the requirements of WPPN 06/21. As such, for tenders greater than £5m expenditure suppliers are required to have a carbon reduction plan and will also need to report on the waste streams and disposal as a result of the project works carried out.

Decarbonisation goals and actions

Our aim and overarching actions in decarbonising our waste are:

Aim: To reduce the carbon footprint of our waste by 5% per year until 2030 when compared with the previous year.

Overarching actions to 2030

- Drive the reduction of overall volumes of waste, lowering the proportion of general waste and increasing the proportion of recycling (municipal and organisational waste)
- Add an overarching action on commitment to Welsh / UK recycling
- Minimise the amount of building waste generated in our building, renovation and retrofitting programmes
- Work with colleagues across the estate to ensure waste generated by other activities is managed with a low carbon approach
- Promote and facilitate 'reuse' and 'repair' activities across the Vale

The activities that we will undertake and the timeline to achieve the overarching actions are laid out in appendix C.

ACTIVITIES TO 2030: Waste			
No.	**Timescale (e.g. by end 2024)**	**Action**	**Team Responsible**
5.1	March 2025	Analysis and alignment of waste stream data reported to WG waste submissions and for carbon emission reporting (for both organisational and municipal waste streams).	Waste
5.2	March 2025	Identify key projects for which waste data will be reported (e.g. set by volume of material or £ invested) and develop methodology to enable reporting in future years.	Waste
5.3	March 2025	Develop communication resources to support behaviour change for staff and visitors on new legislation leading to a reduction in waste volumes and improved segregation.	Waste/FM/Comms (waste lead)
5.4	March 2025	Support service sites, e.g. residential care, countryside parks and gardens, to improve waste segregation and compliance with new legislation.	Waste

5.5	Dec 2025	Develop methodology to record waste generated from projects and ensure relevant clauses are incorporated into all project contracts going forward.	Waste team to lead with all Council teams managing projects i.e. building services/public buildings, housing, compliance, property, Highways, PMU implementing methodology with their suppliers etc
5.6	Dec 2025	Develop a process re=utilising old materials i.e a building that is to be demolished, the existing foundations would be broken/crushed and transported to another site to use as blinding/hardcore, thus removing the need for the material to be taken to landfill. A review is currently underway on how achievable this is and the merits from the task within a SCfL project 2024/25.	SCfL

Resources, costs and funding

There will be resource and contractual implications that will need to be considered, associated with these targets and actions primarily relating to cross department working and those standalone arrangements that will need to be reviewed. There are limited resources to manage this within the waste department to coordinate and collate all the required information, as well as issues associated with waste types that are not always measured or separated. This will need to be challenged and existing resource aligned accordingly.

Generally, although significant cost pressures exist, the Recycling and Waste Management Strategy (2022-2032), is costed and the associated business plan in place to deliver services with expected legislative changes, up to 2032. It will be necessary to utilise existing resources and carefully manage legislative changes that will impact on our strategic direction and actions associated with this plan.

Risks and barriers

Our primary risk relates to the effectiveness of diversionary activities and initiatives in place to meet the requirements of the European Landfill Directive as well as the requirements of Welsh Government's 'Towards Zero Waste' the national waste strategy, the targets to achieve net zero by 2030 and zero waste by 2050. Aligned to this are national statutory landfill reduction/ diversionary targets. Failure to meet the national waste agenda, and meet its associated targets, increases the likelihood of incurring significant fines as well as having a detrimental impact on the Council's reputation and the environment.

The biggest shift change overall is in relation to reducing the volume of household residual waste and managing other waste effectively and recycling as sustainably as possible. In progressing our Waste Strategy, we continue to look at ways of further increasing our recycling rates across the Vale of Glamorgan.

Additionally, the inability to streamline and optimise productivity because of budgetary cuts and/or staff shortages will impact on our performance against waste reduction targets, and it will be necessary to manage external contract agreements to prevent poor contractual compliance and performance essential to our overall performance. New processes will be required, and identifying waste types across departments and managing that, accordingly, will be essential. The individual agreements and departments managing waste separately will be our greatest barrier.

UK and Welsh legislative changes will be implemented through the lifetime of this Carbon Management Plan. They will each affect future recycling rates, some of the risks and impacts these legislative changes will have to our waste services are detailed below:

- **Recycling at Work Regulations (Wales)**[20] This new Legislation (Workplace Recycling Regulations) was introduced 6th April 2024 and places a duty on premises/workplaces (non-domestic) to separate recycling prior to collection. The scheme compliments Welsh Government's domestic "Collections Blueprint" the Council recently introduced to all of its residents and the Regulations cover the collection and processing/treatment of paper and card, glass, metal (steel and aluminium), plastic, cartons and some packaging (these 3 can be mixed together), food, unsold small WEEE and unsold textiles. There is minimal risk to the Council, as the in-house service prioritises separated collections and it has the necessary infrastructure, to process material in readiness for resale and reuse. Therefore, the new Regulation provides new commercial opportunities to increase income and add recycling performance that can mitigate against challenging Statutory Recycling Targets (SRT's).

- **Extended Producer Responsibility for packaging scheme (EPR)**[21] The principle of the Extended Producer Responsibility for packing scheme (EPR), is that the 'polluter pays' and this will hopefully incentivise a reduction in packaging materials over time. Currently, changes to the Packaging Waste Regulations will require obligated businesses to pay 100% of the costs associated with waste management of items they place on the UK market, both collection and recycling of packaging waste. Effectively the Council will be able to claim back costs associated with packaging recycling. Although it is still not clear how this will yet work, the service area is working nationally with the Welsh Local Government Association (WLGA) and Welsh Government (WG). It is unlikely that this will have a negative impact on the service and risks will be minimal. The council will still be able to record the tonnages collected that contribute to SRT's, as well as recovering costs. The area of risk that will need to be managed in future, is SRT's especially if they continue to be tonnage based rather than carbon based. If they continue with tonnage, there will need to be dispensation for loss of material as a result of this new legislation.

- **Deposit return scheme**[22] The UK Government intends to introduce a Deposit Return Scheme (DRS) to improve the recycling of drink bottles and cans in Wales, England, and Ireland in 2025. The DRS aims to reduce the amount of drinks containers discarded by 85% within 3-years and the incentive to do this, is a cash return. This would be facilitated by reverse vending machines installed at designated sites such as retail premises. Every year UK consumers go through an estimated 14 billion plastic

[20] Workplace recycling | GOV.WALES
[21] Extended Producer Responsibility for Packaging: integrated impact assessment (gov.wales)
[22] New drinks container return scheme for 2025 will help Wales improve world-leading recycling rates | GOV.WALES

drinks bottles and nine billon drinks cans, many of which are littered or condemned to landfill or through energy from waste. There are associated risks with this new Legislation primarily with the potential loss of income from valuable recycling resources. Additionally, if Welsh Government continue to set further Statutory Recycling Targets (SRT's) with loss of material, it will potentially impact on our performance and ability to achieve future SRT's. Despite there being a potential to impact on our performance, there are also positives associated with a DRS. Many discarded bottles and cans end up as street litter and with its proposed introduction, there is an expectation nationally, that the scheme will improve local environmental quality and reduce cleansing disposal costs.

- **Environmental Protection (Single-use Plastics Products) (Wales) Act 2023**[23] - This Act makes it a criminal offence to supply or offer to supply (including for free) certain single-use plastic products to consumers in Wales unless an exemption applies. The Act will be introduced in 2-phases. Phase 1 - 30th October 2023, for most single use plates, cutlery, takeaway cartons etc. and phase 2 – anticipated Spring 2026, that will include carrier bags, polystyrene lids and oxo-degradable plastic products. Under the Act, WG also have powers to add or remove products from the list of banned single-use plastic products. WG will keep the list of banned products under review and may make changes if further action is needed to tackle plastic pollution. The Act provides an added benefit to the Council and there is little or no risk. Most of this material is not included within the current recycling stream but they are generally a burden in respect of street litter and ongoing collection (litter picking) and disposal costs.

- **UK Emissions Trading Scheme (UK- ETS)**[24] **-** The UK ETS is a cap-and-trade scheme for UK Carbon allowances that was introduced in January 2021. The cap is reduced in line with the UK's 2050 net zero commitment (noting Welsh Government's target of net zero by 2030). Currently Energy from Waste (EfW) is excluded from UK-ETS, however in June 2022, the UK Government consulted on its proposal to include EfW within the scheme. Inclusion of EfW within UK-ETS will mean that EfW plant operators, such as Viridor (who process all our black bag waste as part of the Prosiect Gwyrdd partnership), will have to pay a price for the emission of fossil derived CO2 from the combustion of waste. This is unlikely to be introduced before 2028 but this has potential to add significant costs to our EfW contract. Based on existing waste (in tonnes) this could potentially equate to an additional cost of approximately £500k per year based on current comparable data on cost per tonne. High recycling rates and removing plastics from the waste stream will lower the emission of fossil derived CO2 from the burning of the waste and thus potentially lower the additional cost per tonne. Additionally, any recycling initiative over future years will contribute as will, proposed legislative changes documented above.

[23] The Environmental Protection (Single-use Plastic Products) (Wales) Act 2023 | GOV.WALES
[24] The long-term pathway for the UK Emissions Trading Scheme - GOV.UK (www.gov.uk)

9. Supply chain - procurement

Context

Our supply chain procurement, activity carried out by all council staff contributes significantly to our carbon footprint.

Our carbon emissions

In 2022/23 the council's supply chain accounted for 78.47% of the total carbon emissions reported. This activity, purchasing services and goods upstream and the disposal downstream, forms 88% of our Scope 3 (indirect) footprint.

The methodology for reporting supply chain emissions is based on spend within separate supply chain and product categories (e.g. construction, manufactured goods, social care). The spend is multiplied by an 'emissions factor') supplied by Welsh Government to calculate the total kg CO_2. As illustrated in Table 12, buildings and construction works had the highest carbon footprint making up around 30% of our total emissions in 2022/23.

Supply chain group	Product category	Amount spent by product category (£)	Emission factor (kgCO_2e per £ spent)	Total kg CO_2e
CONSTRUCTION	Buildings and building construction works	£88,222,181	0.240	21,173,323
MANUFACTURING	Other manufactured goods	£13,273,116	0.725	9,623,009
HUMAN HEALTH AND SOCIAL WORK ACTIVITIES	Residential care services	£45,905,144	0.131	6,013,574
HUMAN HEALTH AND SOCIAL WORK ACTIVITIES	Social work services without accommodation	£53,140,579	0.108	5,739,183
ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES	Employment services	£18,252,458	0.133	2,427,577
PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES	Other professional, scientific and technical services	£14,329,251	0.149	2,135,058
MANUFACTURING	Motor vehicles, trailers and semi-trailers	£3,298,915	0.366	1,207,403
ACCOMMODATION AND FOOD SERVICE ACTIVITIES	Accommodation services	£3,856,381	0.247	952,526
WHOLESALE AND RETAIL TRADE; REPAIR OF MOTOR VEHICLES AND MOTORCYCLES	Wholesale trade services, except of motor vehicles and motorcycles	£2,022,401	0.377	762,445
PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES	Accounting, bookkeeping and auditing services; tax consulting services	£3,768,354	0.145	546,411

Table 12 - Highest ten supply chain contributors to our carbon footprint in 2022/2023

Where we are now

Carbon reduction is a key element of the Council's recently revised Procurement Policy & Strategy. Section 7 of the Strategy sets out the Council's expectation of contracts in respect of emissions, energy, travel, circular economy as well as biodiversity elements of purchased goods and water.

The Council has a collaborative procurement partnership, Ardal, that comprises of four local authorities, Cardiff, Monmouthshire, Torfaen, and the Vale of Glamorgan. The four authorities have a combined annual spend of over £1 billion, and the aim of the partnership is to deliver socially responsible procurement for all partners through shared resources, knowledge, and expertise. The partnership is managed by Cardiff Council and provides strategic advice and guidance, and expert support through category managers with the majority of day-to-day procurement activity devolved to service. Ardal also manages[25].

Ardal have issued a "Climate Change and Carbon Reduction procurement Guidance Note"[26] which sets out the sustainable procurement hierarchy guidance. The guidance includes requirements for specifications for the full range of services procured by the Authority and these must be embedded within contracts going forward.

Legislative and procedural changes in procurement will generate changes and increasingly see carbon reduction requirements featuring in specifications/tenders. Ardal will collaborate with councils across the region to maximise regional knowledge/expertise and look to develop a common approach so that the Vale and other councils across the region are not at a competitive disadvantage and lose market interest by having more onerous procurement targets than neighbouring authorities.

In January 2024 Ardal supported the development of a pilot project to trial a Carbon Calculator tool which suppliers complete to determine their organisational carbon footprint. By also confirming their annual turnover, this estimated organisational carbon footprint can be attributed by a percentage of total annual turnover to each purchasing local authority. A review of whether this supplier led approach is more accurate than the current proxy SIC allocations will also be carried out.

WPPN 06/21[27] adopts the UK Procurement Policy Note 06/21, providing further information specifically to Welsh public sector bodies to help them meet the 2030 target for a net zero public sector in Wales. For tenders greater than £5m expenditure suppliers are required to have a carbon reduction plan and this is also an explicit requirement in the Council's Procurement Policy & Strategy.

Ardal councils have been the catalyst for developing a consistent approach across the Cardiff Capital Region for requesting Carbon Reduction Plans from organisations tendering for contracts. This approached will be rolled out from the start of the financial year, starting with tenders above £5m but then rolled out to lower value tenders as the market develops.

[25] https://ardal-procurement.gov.wales/
[26] Ardal Carbon Reduction Procurement Guidance Note (valeofglamorgan.gov.uk)

[27] Welsh Procurement Policy Note WPPN 06/21: Decarbonisation through procurement - Taking account of Carbon Reduction Plans | GOV.WALES

In addition, Ardal are working with councils across the region, Welsh Government and other partners to establish and coordinate a market development programme for local SMEs, so they are prepared for carbon reduction being given a greater priority within tenders.

At the local level examples of internal upskilling and skill sharing are starting to appear within the Council. For example, a new school building will include green roofs and walls, our Parks specialists are receiving training on how to maintain these new features and will carry out the works in the future. This enables skills to be retained by the council and payment retained within the council rather than to external service providers.

The key focus therefore remains to ensure all staff are aware of and implement the Ardal Carbon Reduction Procurement Guidance Note as swiftly as possible and share best practice across directorates.

Decarbonisation goals and actions

Our aim and overarching actions in decarbonising our supply chain are:

Aim: The actions below will undoubtedly deliver a reduction in the Council's carbon footprint through reduction of carbon in our supply chain by 2030. However, the Tier 1 SIC codes are too crude to enable the reduction to be managed. Work is underway to have more sophisticated measurement through Tiers 2 and 3 SIC codes and when this work is in place a realistic target can be set.

Overarching actions to 2030

- **Further alignment on policy across the Ardal partnership to give a greater focus on** Carbon reduction – The Vale's Policy & Strategy will be revised in June/July 2024
- Ensure all relevant staff follow the current Carbon reduction guidance through awareness raising and training
  Ardal Carbon Reduction Procurement Guidance Note (valeofglamorgan.gov.uk)
- Provide greater focus on the need to recycle and reuse (collaboration with WrapCymru).
- Improve the quality of the SIC data.

The activities that we will be undertaken and the timeline to achieve the overarching actions are laid out in appendix C.

ACTIVITIES TO 2030: supply chain			
No.	**Timescale (e.g. by end 2024)**	**Action**	**Team Responsible**
6.1	Ongoing	Ardal and Senior management (Directors/Heads of Services/Operational Managers) to continue to raise the profile of new procurement practices to support and embed carbon reduction practices including "Carbon Reduction Procurement Guidance"	Ardal and PZ Board
6.2	Dec 24	Governance arrangements to put in place to ensure buying responsibly and carbon reduction guidance has been considered at pre-tender stage.	Ardal/Head of Finance
6.3	Ongoing	Awareness raising and behaviour change messaging to support this new guidance and deliver carbon savings and where possible economic savings too for the Council.	Ardal/Head of Finance
6.4	Ongoing	Create case studies of best practice examples for staff.	Ardal, Internal Comms, PZ Board, Head of Finance
6.5	Oct 24 /ongoing	Improve the accuracy of the Tier 1 (SIC) carbon footprint through the improved categorisation of spend data. Continual quarter by quarter improvement, initial action end of 2023/24.	Ardal/Procurement Team/Head of Finance
6.6	Oct 24	Review 2023/24 datasets, SIC (standard industrial classification) codes used and identify opportunities for decarbonisation	Ardal/Procurement Team/Head of Finance
6.7	Oct 24	Roll out the request for Carbon Reduction Plans from organisations tendering for contracts (Minimum Requirement in Procurement Policy & Strategy). Detailed wording will be set out rather than a simple pass/fail.	Ardal/Procurement Team/Head of Finance
6.8	Oct 24	Review Council Contract Terms and Conditions to ensure the appropriate data and commitments are fully reflected in both goods and services contracts. Partly dependent on timing of Welsh Government adopting PPN 01/24	Head of Finance/Legal
6.9	Oct 24	Revised Procurement Policy & Strategy to have a greater focus on deforestation in Purchased Goods section to ensure the purchase of products from unsustainable sources is reduced.	Head of Finance
6.10	June 25	Consider what categories of spend could have annual emission reduction targets set and report the outcome for the next annual update	Head of Finance

Resources, costs and funding

The Vale has strengthened its Procurement resource through joining the Ardal partnership but still has limited resources in this area. There is a budget of £189K covering strategic oversight and data analysis, senior category manager time and the equivalent of 2 x Procurement Officers. The Council lead is the Head of Finance who liaises regularly with the Head of Ardal Procurement and is also a

member of the Ardal Partnership Board which meets quarterly. The partnership is managed on the Vale's side by the Head of Finance.

Risks and barriers

- Staff response to new ways of working
- Potential additional cost of contracts containing reduced carbon.
- Capacity of the supply chain to react.

10. Renewable energy

Context

We continue to invest in renewable energy technologies, most commonly building mounted solar PV arrays to generate electricity. We currently have two biomass boilers in operation at a primary school site and our Docks Offices, Barry.

The Welsh Government wish to track the generation of renewable electricity and heat by public sector organisations each year as part of the net zero reporting template. In 2022/23 we reported:

Renewable Energy Type	Total kWh generated	kWh consumed on site	kWh exported
Solar PV	976,723	883,069	93,654
Bioenergy (wood pellets)	-	164,396	-

Figure 8 – 2022/23 data breakdown for renewable energy generation

The use of solar PV and biomass energy reduces our scope 1 emissions (grid electricity and mains gas) and is reflected in the data we report as part of our "buildings, fleet and other assets" section to Welsh Government.

Our carbon emissions

Our PV generation during 2022/23 provided 7.24% of the total of electricity consumed by the buildings we own and occupied during the same period.

Whilst our deployment of renewable technology will increase, as we continue to electrify heating (swapping from gas to heat pumps) the percentage contribution will change. Therefore, we will continue to report on the kWh of installed renewable energy annually and monitor the percentage contribution made (rather than reporting solely on percentage contribution).

Where we are now

The Local Area Energy Plan (LAEP) sets out 11 objectives for the future energy system and indicates that we will require a 14-fold increase on the amount of renewable energy installed (across the entire County, not just the Council's own estate) when comparing 2019 to anticipated energy demand in 2050. The Council therefore plays a critical role in maximising its investment in both building mounted and ground mounted renewable technologies to contribute towards the LAEP aspirations.

A decarbonisation programme has been established which will see further PV projects and conversion from gas boilers to air source heat pumps (ASHP) being installed. The anticipated capital investment, subject to site surveys, is:

Site (renewable technology)	Capital (£)	Allocated financial year(s)
Llangan Primary (PV)	35,000	2024/25
Cogan Primary (PV)	41,000	2024/25
Penarth Leisure Centre (PV)	80,000	2024/25
Barry Leisure (PV)	80,000	2024/25 & 25/26
Penarth Learning Community (PV)	158,000	2024/25
St Josephs Primary School (PV)	45,000	2024/25
Ty Dewi Sant (PV)	41,000	2024/25
Ysgol St Curig (PV)	14,000	2024/25
Oakfield Primary School (ASHP)	396,000	2025/26 & 26/27
Ysgol y Ddraig (ASHP)	396,000	2026/27, 26/28 & 28/29
Unallocated spend (TBC)	**145,000**	2028/29
TOTAL	**1,390,000**	-

Figure 9 – Decarbonisation programme as set March 2024

It should be noted that the allocated capital indicted in Figure 9, is indictive and subject to market testing at the time of works being designed and procured. Furthermore, where grants can be secured, or Salix (recycling loan) leveraged to reduce the capital investment this will be explored for each project. Where alternative funds are secured, the capital will remain within the decarbonisation fund and be reallocated to other renewable energy projects identified across the estate.

Decarbonisation goals and actions

Maximize the potential contribution renewable energy technologies can make to our estate.

- Ensure that re-roofing projects consider and incorporate renewable energy where orientation and construction type are cost effective/viable.
- Explore opportunities for ground mounted technologies on Council land, working with third parties to deliver where funding and project aspirations align.
- Continue to monitor existing battery installations to assess benefits (financial and carbon) with the view to using more batteries in appropriate settings in the future.

Overarching actions to 2030:

The activities that we will undertake and the timeline to achieve the overarching actions are laid out in appendix C.

ACTIVITIES TO 2030: renewable energy			
No.	**Timescale (e.g. by end 2024)**	**Action**	**Team Responsible**
7.1	March 2025	Develop policy to identify prioritisation of renewable energy deployment and funding streams to enable increased generation across buildings estate.	Decarbonisation & Energy
7.2	March 2025	Develop procedure to review renewable energy potential of land is determined prior to disposal or acquisition, wherever possible.	Property – Estates & Energy Team
7.3	On-going activity	Continue to apply for Low Carbon Heat Grant (WG) annually whilst available and to seek out other funding opportunities to support renewable energy schemes.	Decarbonisation & Energy
7.4	On-going activity	Identify possible land mounted renewable energy opportunities within the Land Use Planning process to support developers and third-party collaborations.	Regeneration and Planning.
7.5	On-going activity	Continue to collaborate with all parties in implementing the LAEP.	Regeneration and Planning – co-ordinate Council's behalf.

Resources, costs and funding

In the main, renewable energy projects are managed by the Property Section on behalf of all asset holders across the Council's estate. Staff within Regeneration and Planning will also participate with this work as part of the on-going LAEP activities.

Investment in renewable energy technologies has to date been via capital, Salix recycling loans, the Low Carbon Heat Grants (Welsh Government) and Ystadau Cymru ACPW3 grant. The Decarbonisation and Energy team will continue to seek additional grants to support this activity.

Risks and barriers

- Limited local supply chain for some technologies, or the on-going maintenance of renewable energy systems
- Retaining the Salix recycling loan fund, ensuring sufficient percentage is recycled each year within current staff resource and wider programme delivery.
- Continuation of supply of suitable grant funding

11. Land Use

Context

The Welsh Government net zero carbon template requires data on our land-based emissions and sequestration. It should be noted that this is for land in the Council's ownership, land we own but do not manage and land areas which we lease. It does not include privately owned land within the County.

Sequestration: WG define sequestration as: "a natural or artificial process by which carbon dioxide is removed from the atmosphere and held in solid or liquid form. The uptake of atmospheric carbon by plants and the growth of wood or increase of peat volume are examples of biological sequestration."

This area of work forms part of our biodiversity and resilience of ecosystems duties[28] and national targets to support meaningful delivery of the target to protect 30% of the land, freshwater and ocean in Wales by 2030[29].

In November 2023 the "Land use and carbon sequestration guidance and tool" was published by WLGA[30]. Through 2024/25 the Estates team in consultation with other keys teams such as legal and planning, will review this new methodology and the land parcels held by the Authority to determine what the maximum potential is for our land sequestration. At present we are unable to determine, what if any, further enhancements it may be possible to generate.

In addition, a Green Infrastructure Action Plan has been developed through 2023 as part of our RLDP work. This also provides a more strategic approach to our land management, sustainable management practices enhancing both the biodiversity and water retention characteristics of the land – to aid the three interlinked issues of: climate change, biodiversity crises and health inequalities.

The sustainable and considered management of our land, and practices to ensure biodiversity net gain will have some synergy with land classification and should bring mutual benefits, as well as improved wellbeing and air quality for our communities.

Our carbon emissions

In 2022/23 the emissions linked to our land, calculated by stating the acreage of each land "type" and a pre-set carbon factors are then applied to the dataset (where provided within WG reporting template). In 2022/23, our land use was negative, and provided 0.55% sequestration of our total carbon emissions.

[28] Biodiversity and resilience of ecosystems duty (section 6): guidance for public authorities | GOV.WALES
[29] Biodiversity Deep Dive (gov.wales)
[30] WLGA Land Use and Carbon Sequestration Guidance and Tool - WLGA

Emission source	Carbon footprint 2022/23 % of land emissions		% of overall emissions	Data collection methodology
Settlements	1,321.9 Tonnes CO_2	-347.35%	1.91%	
Wetlands	No Emission factor available			
Grassland	-943.7 Tonnes CO_2	247.96%	-1.36%	
Other land	No Emission factor available			
Forest land	-758.8 Tonnes CO_2	199.39%	-1.10%	
		TOTAL	-0.55%	

Where we are now

During April 2024, the VoGC Tree strategy underwent external consultation, once this phase is completed and any consultation points raised have been analysed with any relevant changes made the strategy will be adopted, anticipated later in 2024/25.

The Council have prepared a Green Infrastructure Strategy. The Strategy will set out the Council's priorities in relation to green infrastructure, and how it will respond to the Nature and Climate Emergencies in this regard, up to 2030. The Strategy will include an action plan that will set out how its objectives will be achieved. It also includes an Assessment, which audits all the green infrastructure within the Vale and maps it by typology. The document has been consulted on internally and NRW, during Q1 2024/25, are reviewing the Green Infrastructure Assessment.

Welsh Government are currently consulting on Environmental Principles, Governance and Biodiversity targets for a Greener Wales A new Environmental Governance Body at Welsh Government level is being proposed which would have a role overseeing and reporting and possibly prosecuting. This means that the governance body may exercise its functions in relation to the environmental principles and this would include monitoring the application of, and compliance with, those environmental principles where there is a duty on the Welsh Ministers and any Welsh public authorities.

Decarbonisation goals and actions

Our aim and overarching actions in increasing the capacity of our land to sequester carbon are:

Aim: To consider opportunities for increasing the carbon sequestration capacity of our land where appropriate.

Overarching actions to 2030

- Seek to protect and where possible enhance our existing forest and grass land while having regard to service delivery.
- Consider land sequestration value as part of the disposal approval process at in order that decisions consider the carbon implications prior to disposal.

- Once the tree strategy is adopted the increased tree canopy percentage will be confirmed / numbers of trees planted per year will be confirmed, these increases will be in line with the Strategy timeframe of 2024 – 2038.
- Support the Vale Nature Recovery Action Plan especially in increasing species rich grasslands, local provenance trees and shrubs, improving the management of wildlife networks and making the missing connections in those networks.
- Adopt the Green Infrastructure Strategy, complete an action plan to implement its objectives, and progress work toward achieving these actions.

The activities that we will undertake and the timeline to achieve the overarching actions are laid out in appendix C.

ACTIVITIES TO 2030: land use			
No.	**Timescale (e.g. by end 2024)**	**Action**	**Team Responsible**
8.1	2024/25	Following WLGA training, investigate potential for land sequestration across estate portfolio.	Property – Estates
8.2	2024/25	Ensure that land sequestration value is considered when reporting surplus land opportunities to the Strategic Insight Board prior to disposal of land.	Property – Estates
8.3	2024/25	Adopt the Green Infrastructure Strategy, complete an action plan to implement its objectives, and progress work toward achieving these actions.	Place / Neighbourhood Services
8.4	2024/25	Adopt the Tree Strategy, complete an action plan to implement its objectives, and progress work toward achieving these actions.	Place / Neighbourhood Services
8.5	2024/25	Feasibility and Business Plan for a local provenance tree and shrub nursery as a social enterprise	Countryside Services

Resources, costs and funding

At present land management, the biodiversity crisis and sustainable land management practice is devolved to service areas and across two directorates, Place and Neighbourhood Services but there is no single officer role working on this agenda. Work areas may therefore be duplicating efforts or missing areas of innovation and skill sharing.

Budget cuts in 2024/25 saw the Council withdraw from the Green Flag initiative. We will continue to operate our sites aligning to the initiative's standards but will not complete formal assessments and be able to fly the flags at our sites.

Officers continue to apply for grant applications to support our work in these areas, our main grant sources are from Natural Resources Wales and Welsh Government.

Risks and barriers

- Activity remains disjointed and isolated within teams.
- Loss of existing established tree canopy due to ash dieback disease.
- Competing demands for new development sites, particularly in the east of the county.
- Competing demands for resources across the Council's portfolio which may impact on land use options and management models.

12. Offsetting

Context

In their "Net Zero Strategic Plan"[31] Welsh Government acknowledges…

> ***"For any organisation, it is very difficult to entirely remove all emissions. We recognise that some residual emissions will remain part of our footprint in 2030, even after all the initiatives have been implemented. These emissions will be unavoidable and will need to be offset. Carbon offsetting is a broad term that refers to activities that reduce or avoid carbon emissions or increase carbon storage to compensate for emissions that occur elsewhere. We recognise that absolute zero emissions by 2030 is not realistic and a level of neutralising through GHG removal offsets will be required to reach our net zero ambition.***
>
> ***The offsetting market and investment guidance is likely to change between now and 2030 as technology, policy and markets evolve, so we will start by developing a robust and credible approach for use that is aligned with our organisational objectives..."***

To get to net zero, we either reduce our activities or ensure that the emissions associated with our activities are zero or we use methods to extract the emissions produced during our activities (offsetting). Using renewable energy to fuel our efficient services is one way to achieve this but it is very unlikely that as a local authority we will manage to operate with zero emissions. In theory offsetting can account for those emissions that we can't avoid.

Ideally:

Emissions associated with our activities + offsetting of emissions equals zero. However, verification of the effect of offsetting can be problematic and controversial at this point in time. **It is therefore proposed that investment continues to focus on the reduction of our scope 1 activity, investing in energy efficiency, deploying renewable energy projects and fleet management.**

[31] Welsh Government's Net Zero Strategic Plan

13. Conclusion

In producing the 2024-2030 Carbon Management Plan several issues have been highlighted. The Welsh Government reporting template has broadened the scope of this carbon management plan compared with previous plans. Whilst street lighting, buildings and fleet would have been the core of declared emissions within previous plans they now represent just under 16% of the total declared emissions. The majority of our emissions are indirect emissions associated with our procurement at just over 78%. It is a huge step forward to include emissions that had previously not been considered. The inclusion of emissions in other areas of our activity has meant that this carbon management plan reflects the shared responsibility of the Council across all of its directorates. It makes gathering data more challenging but at the same time the inclusivity will ultimately help with council engagement and organisational effort.

The aim of getting to net zero by 2030 is a significant challenge. Reporting on procurement emissions is still in comparative infancy, whilst effecting the reductions necessary within the procurement area is also at an early stage of development. In the areas that we have much more experience (e.g. buildings and street lighting) we are better able to estimate the costs of achieving net zero (despite the likelihood of these estimates being much lower than the final possible outturn costs), and there remains the challenge of identifying the expected investment costs which are significantly greater than the current identified budgets.

Whilst this carbon management plan has highlighted significant challenges it is imperative that we do everything we can now to try and meet them as far as possible.

We have experts across the council with knowledge and experience within their own service disciplines, that have been called upon to inform this plan. The plan represents their input and commentary and going forward, those same experts will have key roles in leading on emission reduction targets set against their service areas.

Appendices

Appendix A

Appendix B

Appendix C

Appendix D

APPENDIX A - PROJECT ZERO CHALLENGES AND 2024 CARBON MANAGEMENT PLAN

		Challenge	Quantifiable impact on Corporate NZC journey and reporting to WG No/low impact Greater impact	Refer to this section of the CMP…
LEADERSHIP	1	Engage with the community and listen to their priorities for tackling climate change and protecting our resources, supporting them to make a difference and to shape our collective ambitions		
	2	Raise awareness and understanding by promoting consistent and clear messages to our staff, our communities and partners about the difference we can make and are making by changing our behaviour and transforming our services		
	3	Develop our evidence base and insight to understand more fully the potential impact and 'costs' of activities		
	4	Embrace our role as community leaders to work with and influence and enable others to bring about the changes necessary to tackle climate change.		
RESPONSIBILITIES TO CURRENT & FUTURE GENERATIONS	5	Protect and enhance green and blue space, biodiversity and ecosystem resilience and improve understanding of the importance of our natural environment.		Section 11 - Land use
	6	Ensure planning policies and regeneration activities support work to adapt to and mitigate the effects of climate change and reduce negative impact on the environment.		
	7	Achieve a modal shift away from cars to more sustainable forms of transport with an increase in walking, cycling and the use of less polluting transport.		Section 6 - Fleet and mobile equipment Section 7 - Business travel, staff commute, working from home
	8	Work with partners and business to develop and implement an Economic Growth Strategy that supports local business and meets the challenge of climate change and our ambition for a green recovery from the Coronavirus pandemic.		
	9	Support and advocate for more sustainable local food systems leading to fewer food miles, less waste and greater awareness about the impact of our food choices on the environment.		
	10	Reduce waste and put in place the necessary facilities, services and awareness raising for a more circular economy with a strong emphasis on reuse, repair and recycling.		Section 8 - Waste
	11	Work with partners to reduce the risk of flooding, manage our coastline and encourage everyone to take a more responsible approach to water use.		
	12	Reduce the amount of energy we all use and lead by example sourcing our energy from clean and renewable sources and working across all sectors to bring new technology, innovation and investment to the Vale.		Section 4 - Decarbonising our buildings Section 10 - Renewable energy
MAKE A DIFFERNCE NOW	13	Revise our Contract Management and Procurement policies and practices to ensure they support our ambition to reduce waste and carbon emissions.		Section 5 - Waste Section 9 - Supply Chain
	14	Invest in our housing stock to make it more energy efficient and deliver near zero carbon, or at minimum A rated new Council homes.		
	15	Build new zero carbon schools and improve our existing school buildings to ensure they are energy efficient and create learning environments fit for the future.		Section 4 - Decarbonising our buildings
	16	Manage and use our land, building and other assets to tackle climate change, rationalising what we need and improving sustainability and energy efficiency.		Section 4 - Decarbonising our buildings Section 10 - Renewable energy Section 11 - Land use
	17	Reduce the number of car journeys staff make and increase the number of electric, low carbon vehicles across the Council's fleet of vehicles.		Section 6 - Fleet and mobile equipment Section 7 - Business travel, staff commute, working from home
	18	Invest in technologies to support homeworking and online services reducing the need for travel and office space.		Section 7 - Business travel, staff commute, working from home

27-Apr-23

Introduction and Organisation Data

This spreadsheet is the required format for Welsh public sector organisations reporting their carbon emissions for the **2022 - 2023 reporting period**.
It is based on the Welsh Public Sector Net Zero Carbon Reporting Guide.

The following updates have been applied to this version of the template:
- Emission factors have been updated where appropriate
- Various bug fixes
- Data providers are asked to provide the floor area of their buildings
- The summary sheet has been updated to be more comprehensive
- Organisations are now asked to report use of anaesthetic gases and f-gases in the buildings tab
- The supply chain SIC code carbon factors have been updated

Please send the completed form to publicsectordecarbonisation@gov.wales by **4th September 2023**

Organisational information

Organisational information	Organisation type	Local Authority
Organisational information	Organisation name	Vale of Glamorgan Council
Organisational information	Financial year period for reporting	Financial year 2022/23
Organisational information	Date of report submission	01/09/2023
Organisational information	Person responsible for this report	Decarbonisation and Energy manager
Organisational information	Email address of person responsible for this report	dpowell@valeofglamorgan.gov.uk
Organisational information	Total financial budget /spend/ turnover £	£ 467,876,000
Organisational information	Number of Full Time Equivalent employees	3,840
Organisational information	Building internal floor area equivalent to the energy data reported (sq m)	353,383
Organisational information	Region of Wales	South East Wales

Cell colour codes

- **Information cell or question**
- **Information entry. Some cells have drop down lists**
- **Activity data. Numeric data entry**
- **Calculated data**
- **Summary data**
- **Not used**

Boundary information

Buildings in scope	Do you own buildings that you occupy?	Y	Please complete the 'Buildings' table in Buildings, fleet & other assets sheet. See section 7.2 of the guidance for further information.
Buildings in scope	Do you lease buildings that you occupy?	Y	Please complete the 'Buildings' table in Buildings, fleet & other assets sheet. See section 7.2 of the guidance for further information.
Buildings in scope	Do you lease out buildings that you own to organisations to deliver public services on your behalf?	Y	Please complete the 'Buildings' table in Buildings, fleet & other assets sheet. See section 7.2 of the guidance for further information.
Buildings in scope	Do you lease out buildings that you own to other public bodies?	N	
Buildings in scope	Do you lease out buildings that you own to private organisations for their own purposes?	Y	The majority of these emissions are out of scope. See section 7.2 of the guidance.
Streetlighting in scope	Do you own and operate streetlighting or signage	Y	Please complete the 'Streetlighting' table in Buildings, fleet & other assets tab. See section 7.3 of the guidance for further help.
Fleet and equipment in scope	Do you own or lease fleet and equipment?	Y	Please complete the 'Fleet' table in Buidlings, fleet & other assets. See section 7.4 of the guidance for further help
Agriculture in scope	Do you have farms with livestock (not leased out)?	N	
F-gases in scope	Do you have air conditioning or refrigeration systems that require refrigerant gas top-ups, or do you use anaesthetic gases?	Y	Please complete the 'Other gases' table in Buidlings, fleet & other assets. See section 7.5 of the guidance for further help
Business travel in scope	Do staff travel for work using their own cars or other transport modes (not fleet vehicles)	Y	Please complete the 'Business travel' table in Business travel, commute, home tab. See section 8.2 of the guidance for further help
Commuting in scope	Do staff commute to offices or other sites?	Y	Please complete the 'Commuting' table in Buidlings, fleet & other assets. See section 8.3 of the guidance for further help.
Homeworking in scope	Do any staff work from home?	Y	Please complete the 'Homeworking' table in Buidlings, fleet & other assets. See section 8.4 of the guidance for further help
Supply chain in scope	Do you purchase goods and services?	Y	Please complete the 'Supply chain emissions tab'. See section 10 of the guidance for further help
Land use in scope	Do you own and manage land for providing public services, with a total of more than 10 hectares?	Y	Please complete the 'Land Use emissions' sheet. See section 12 of the guidance for further information.
Waste in scope	Does your organisation produce waste from operations that is collected from your premises by a third party organisation?	Y	Please complete the 'Operational Waste' table in the Waste sheet. See section 9.2 of the guidance for further information.
Waste in scope	Does your organisation produce waste from operations and also operate the collection service of this waste?	Y	Please complete the 'Operational Waste' table in the Waste sheet. See section 9.2 of the guidance for further information.
Waste in scope	Do you run waste collection services that collect and dispose of municipal waste?	Y	Please complete the 'Municipal waste' table in the Waste sheet. See section 9.3 of the guidance for further information.
Waste in scope	Do you contract out a waste collection service that collect and dispose of municipal waste?	Y	Please either complete the 'Municipal waste' table in the Waste sheet OR record your annual spend for this servce in the supply chain sheet. See section 9.3 of the guidance for further information.

Reporting comments

Reporting comments	Please provide comments on scope and completeness of your report and any significant changes in methods compared to last year. This comment will be included in your individual organisation report output once data have been reviewed and compared across all organisations. If you wish for some of the comment to be excluded from that report please make that clear.	Our reporting on F Gases is going to develop in future years as we put in more procedures to ensure we capture all of the data. Export of rewable energy has been metered in only a few instances and for the majority of cases estimates of exports have been made according to the number of periods that there is zero import from the grid during. The total floor area for our buildings has been taken from our Energy Database and will likely be an under estimate. A carbon management action plan is currently being finalised as part of our Project Zero initiative and will become operational Q3/Q4 of 2023/24. We continue to switch to EV as we replace older fleet vehicles. For our light vehicles – cars & vans the percentage of EV is approximately 9% of our total pool car and van fleet. We have 2 EV Romaquip refuse orders on order.

Peer review (optional)

Peer review	Peer organisation that has reviewed the data and calculations	
Peer review	Date of last review	
Peer review	Name of reviewer	
Peer review	Brief comments of the review outcomes	

Summary of results

This section provides a summary of the reported emissions for Vale of Glamorgan Council for Financial year 2022/23
You do not need to input any information into this sheet.
Please note, 'Outside of scopes' emissions are not included in 'Total' emissions or 'High' and 'Low' estimates.

Total emissions

	Units of $kgCO_2e$						
	Direct	Indirect	Indirect	Total	Estimated range	Estimated range	Outside of scopes
	Scope 1	Scope 2	Scope 3		High	Low	
Vale of Glamorgan Council Financial year 2022/23	5,619,245	2,762,026	60,903,856	69,285,128	83,557,669	55,012,586	1,785,779

Buildings, fleet & other assets

	Units of $kgCO_2e$						
Categories	Direct	Indirect	Indirect	Total	Estimated range	Estimated range	Outside of scopes
	Scope 1	Scope 2	Scope 3		High	Low	
Buildings	4,143,126	2,189,418	1,544,200	**7,876,745**	*8,077,635*	*7,675,855*	1,360,238
Streetlighting	-	571,432	201,440	**772,872**	*792,193*	*753,550*	340,026
Fleet and equipment	1,854,216	1,177	443,133	**2,298,526**	*2,413,412*	*2,183,639*	85,516
F-gases and anaesthetic gases	2,476	-	-	**2,476**	2,723	2,228	-
Agriculture	-	-	-	-	-	-	-
Buildings, fleet & other assets	***5,999,818***	***2,762,026***	***2,188,774***	***10,950,618***	***11,285,964***	***10,615,272***	***1,785,779***

Business travel, commuting & homeworking

	Units of $kgCO_2e$						
Categories	Direct	Indirect	Indirect	Total	Estimated range	Estimated range	Outside of scopes
	Scope 1	Scope 2	Scope 3		High	Low	
Business travel	-	-	238,646	**238,646**	*268,476*	*208,815*	-
Commuting	-	-	2,962,158	**2,962,158**	*3,185,678*	*2,738,638*	-
Homeworking	-	-	270,755	**270,755**	*324,906*	*216,604*	-
Business travel, commuting & homeworking	**-**	**-**	**3,471,559**	**3,471,559**	***3,779,060***	***3,164,057***	**-**

Waste

	Units of $kgCO_2e$						
Categories	Direct	Indirect	Indirect	Total	Estimated range	Estimated range	Outside of scopes
	Scope 1	Scope 2	Scope 3		High	Low	
Organisational waste	-	-	307,383	**307,383**	*351,869*	*262,896*	-
Municipal waste	-	-	268,422	**268,422**	*281,843*	*255,001*	-
Project waste	-	-	-	-	-	-	-
Waste	**-**	**-**	**575,805**	**575,805**	***633,712***	***517,897***	**-**

Supply chain - Tier 1 and Tier 2 combined

	Units of $kgCO_2e$						
Categories	Direct	Indirect	Indirect	Total	Estimated range	Estimated range	Outside of scopes
	Scope 1	Scope 2	Scope 3		High	Low	
Agriculture, forestry and fishing			53,370.01	53,370.01	66,712.51	40,027.51	
Mining and quarrying			-	-	-	-	
Manufacturing			12,832,477.87	12,832,477.87	16,040,597.34	9,624,358.40	
Electricity, gas, steam and air conditioning supply			-	-	-	-	
Water supply; sewerage, waste management and remediation activities			-	-	-	-	
Construction			21,173,323.45	21,173,323.45	26,466,654.32	15,879,992.59	
Wholesale and retail trade; repair of motor vehicles and motorcycles			844,738.21	844,738.21	1,055,922.77	633,553.66	
Transportation and storage			66,542.12	66,542.12	83,177.64	49,906.59	
Accommodation and food service activities			966,961.74	966,961.74	1,208,702.17	725,221.30	
Information and communication			634,806.96	634,806.96	793,508.71	476,105.22	
Financial and insurance activities			137,655.04	137,655.04	172,068.80	103,241.28	
Real estate activities			-	-	-	-	
Professional, scientific and technical activities			3,089,939.36	3,089,939.36	3,862,424.20	2,317,454.52	
Administrative and support service activities			2,555,153.28	2,555,153.28	3,193,941.60	1,916,364.96	
Public administration and defence; compulsory social security			20,356.44	20,356.44	25,445.54	15,267.33	
Education			48,095.90	48,095.90	60,119.88	36,071.93	
Human health and social work activities			11,828,006.84	11,828,006.84	14,785,008.55	8,871,005.13	
Arts, entertainment and recreation			318,310.34	318,310.34	397,887.93	238,732.76	
Other service activities			97,981.44	97,981.44	122,476.79	73,486.08	
Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use			-	-	-	-	
Supply chain - Tier 1 and Tier 2 combined			**54,667,719**	**54,667,719**	**68,334,649**	**41,000,789**	

Land based emissions

	Units of $kgCO_2e$			Total	Estimated range	Estimated range
Categories	Emissions	Removals	Indirect		High	Low
Total land based emissions	1,321,908	-1,702,481		-**380,573**	-*475,716*	-*285,430*

Renewables

	Units of kWh	
Categories	Total generated	Total exported
	Scope 1	Scope 2
Onsite renewables - heat	-	-
Onsite renewables - electricity	976,723	93,654
Onsite renewables - CHP	-	-
Purchased renewables - heat	-	
Purchased renewables - electricity	10,156,163	
Renewables	**11,132,886**	**93,654**

Cell colour codes: Information cell or question | Activity data. Numeric data ent
Information entry. Some cells hav | Calculated data

Building, fleet and other assets

Guidance for users

This sheet contains five tables - buildings, streetlighting, fleet and equipment (fuel), fleet (distance), other gases and agriculture.

Please see Section 7 of the Welsh Net Zero Public Sector Reporting Guide for further guidance.

Instructions for users

- Input information into the orange and blue cells. Grey cells should not be edited.
- Activity data entered in the 'data' column should only be in units specified in the 'units' column drop down list. If your data is in units that are not included in this drop down list, you will need to convert it before entering it into this sheet (see conversion sheet)
- When completing a row, fill in the columns from left to right. The drop down lists in later columns will change to provide valid combinations based on your previous selections.
- You can copy and paste between rows but please avoid copying data from one column to another, as this is likely to break the drop down lists.
- Fill in the notes column with a description of the method and data source used for each row
- Please note that the 'Outside of scopes' emissions are not included in the 'Total emissions'

Buildings

No errors in this table

Emission data breakdown (kg CO_2e)

Ownership structure	Fuel/emission source	Category 1	Methodology	RSD	Data	Units	Converted data	Standard units	Total EF (kgCO_2e/unit)	Total emissions (kgCO_2e)	Notes	Ease of collection	Direct	Indirect generation	Indirect service	Indirect T&D	Indirect WTT	High	Low	Outside of scopes
Buildings we own and occupy	Grid electricity	Consumption based	Tier 3	2.5%	9,292,750	kWh	9,292,750	kWh	0.3766	2,430,518.76	Data held by Energy team	Data complete and easy to collect and process	-	1,797,032.00	-	164,388.75	469,098.02	*2,491,281.73*	*2,368,755.79*	1,069,309.69
Buildings we lease in from other organisations	Grid electricity	Consumption based	Tier 3	2.5%	863,413	kWh	863,413	kWh	0.3766	225,825.67	Data held by Energy team	Data complete and easy to collect and process	-	166,966.81	-	15,273.78	43,585.09	*231,471.31*	*220,180.03*	99,352.28
Buildings we lease out to deliver services	Grid electricity	Consumption based	Tier 3	2.5%	1,165,681	kWh	1,165,681	kWh	0.3766	304,883.87	Data provided by external organisation	Data complete but requires effort to collect and process	-	225,419.39	-	20,620.90	58,843.58	*312,505.96*	*297,261.77*	134,134.03
Buildings we own and occupy	Natural gas	All natural gas	Tier 3	2.5%	16,096,380	kWh	16,096,380	kWh	0.2136	3,438,830.62	Data held by Energy team	Data complete and easy to collect and process	2,938,233.21	-	-	-	500,597.42	*3,524,801.39*	*3,352,859.86*	-
Buildings we lease in from other organisations	Natural gas	All natural gas	Tier 3	2.5%	1,459,550	kWh	1,459,550	kWh	0.2136	311,818.26	Data held by Energy team	Data complete and easy to collect and process	266,426.26	-	-	-	45,392.01	*319,613.72*	*304,022.81*	-
Buildings we lease out to deliver services	Natural gas	All natural gas	Tier 3	2.5%	4,708,921	kWh	4,708,921	kWh	0.2136	1,006,013.88	Data provided by external organisation	Data complete but requires effort to collect and process	859,566.44	-	-	-	146,447.44	*1,031,164.23*	*980,863.54*	-
Buildings we own and occupy	LPG	All LPG	Tier 3	5.0%	179,073	kWh	179,073	kWh	0.2398	42,943.50	Data held by Energy team	Data complete and easy to collect and process	38,409.37	-	-	-	4,534.13	*45,090.67*	*40,796.32*	-
Buildings we lease in from other organisations	LPG	All LPG	Tier 3	5.0%	180,707	kWh	180,707	kWh	0.2398	43,335.35	Data held by Energy team	Data complete but requires effort to collect and process	38,759.84	-	-	-	4,575.50	*45,502.11*	*41,168.58*	-
Buildings we own and occupy	Bioenergy	Wood pellets	Tier 3	5.0%	164,396	kWh	164,396	kWh	0.3974	7,886.08	Data held by Energy team	Data complete and easy to collect and process	1,731.09	-	-	-	6,154.99	*8,280.38*	*7,491.77*	57,441.61
Buildings we own and occupy	Water	Mains supply	Tier 3	5.0%	131,440	m3	131,440	m3	0.1490	19,584.56	Data held by Energy team	Data complete and easy to collect and process	-	-	19,584.56	-	-	*20,563.79*	*18,605.33*	-
Buildings we lease in from other organisations	Water	Mains supply	Tier 3	5.0%	16,099	m3	16,099	m3	0.1490	2,398.75	Data held by Energy team	Data complete and easy to collect and process	-	-	2,398.75	-	-	*2,518.69*	*2,278.81*	-
Buildings we lease out to deliver services	Water	Mains supply	Tier 3	5.0%	17,276	m3	17,276	m3	0.1490	2,574.12	Data provided by external organisation	Data complete but requires effort to collect and process	-	-	2,574.12	-	-	*2,702.83*	*2,445.42*	-
Buildings we lease out to deliver services	Water	Mains treatment	Tier 3	5.0%	16,413	m3	16,413	m3	0.2720	4,464.34	Data provided by external organisation	Data complete but requires effort to collect and process	-	-	4,464.34	-	-	*4,687.55*	*4,241.12*	-
Buildings we own and occupy	Water	Mains treatment	Tier 3	5.0%	115,944	m3	115,944	m3	0.2720	31,536.77	Data held by Energy team	Data complete and easy to collect and process	-	-	31,536.77	-	-	*33,113.61*	*29,959.93*	-
Buildings we lease in from other organisations	Water	Mains treatment	Tier 3	5.0%	15,185	m3	15,185	m3	0.2720	4,130.32	Data held by Energy team	Data complete and easy to collect and process	-	-	4,130.32	-	-	*4,336.84*	*3,923.80*	-

Streetlighting

No errors in this table

Emission data breakdown (kg CO_2e)

Type of lighting	Fuel/emission source	Category 1	Methodology	RSD	Data	Units	Converted data	Standard units	Total EF (kgCO_2e/unit)	Total emissions (kgCO_2e)	Notes	Ease of collection	Direct	Indirect generation	Indirect service	Indirect T&D	Indirect WTT	High	Low	Outside of scopes
Streetlights	Grid electricity	Consumption based	Tier 3	3%	2,954,967	kWh	2,954,967	kWh	0.3766	772,871.62	Data held by Energy team	Data complete and easy to collect and process	-	571,431.52	-	52,273.37	149,166.73	*792,193.41*	*753,549.83*	340,025.81

Fleet and equipment - fuel

No errors in this table

Emission data breakdown (kg CO_2e)

Type	Fuel	Category 1	Methodology	RSD	Data	Units	Converted data	Standard units	Total EF (kgCO_2e/unit)	Total emissions (kgCO_2e)	Notes	Ease of collection	Direct	Indirect generation	Indirect service	Indirect T&D	Indirect WTT	High	Low	Outside of scopes
Equipment	Diesel	Average biofuel blend	Tier 3	5%	19,395	litres	205,723	kWh	0.3097	61,439.10	Data held by Fleet team	Data complete but requires effort to collect and process	49,610.04	-	-	-	11,829.06	*64,511.06*	*58,367.15*	2,271.18
HGV	Diesel	Average biofuel blend	Tier 3	5%	579,869	litres	6,150,670	kWh	0.3097	1,836,897.74	Data held by Fleet team	Data complete but requires effort to collect and process	1,483,234.19	-	-	-	353,663.55	*1,928,742.63*	*1,745,052.85*	67,903.40
Pool car	Diesel	Average biofuel blend	Tier 3	5%	25,947	litres	275,220	kWh	0.3097	82,194.40	Data held by Fleet team	Data complete but requires effort to collect and process	66,369.26	-	-	-	15,825.14	*86,304.12*	*78,084.68*	3,038.43
Van	Diesel	Average biofuel blend	Tier 3	5%	94,424	litres	1,001,555	kWh	0.3097	299,114.51	Data held by Fleet team	Data complete but requires effort to collect and process	241,525.08	-	-	-	57,589.43	*314,070.24*	*284,158.79*	11,057.17
Pool car	Grid electricity	Consumption based	Tier 3	3%	6,085	kWh	6,085	kWh	0.3768	1,591.53	Data held by Fleet team	Data complete but requires effort to collect and process	-	1,176.72	-	107.64	307.17	*1,631.32*	*1,551.74*	700.20
Pool car	Petrol	Average biofuel blend	Tier 3	5%	6,215	litres	59,321	kWh	0.3006	17,288.55	SRS petrol fuel cards for SRS fleet.	Data complete and easy to collect and process	13,477.17	-	-	-	3,811.38	*18,152.98*	*16,424.12*	545.16

Fleet - distance

No data entered

Emission data breakdown (kg CO_2e)

Type	Fuel	Size	Methodology	RSD	Data	Units	Converted data	Standard units	Total EF (kgCO_2e/unit)	Total emissions (kgCO_2e)	Notes	Ease of collection	Direct	Indirect generation	Indirect service	Indirect T&D	Indirect WTT	High	Low	Outside of scopes

Other gases

No errors in this table

Emission data breakdown (kg CO_2e)

Type	Gas	Not used	Methodology	RSD	Data	Units	Converted data	Standard units	Total EF (kgCO_2e/unit)	Total emissions (kgCO_2e)	Notes	Ease of collection	Direct	Indirect generation	Indirect service	Indirect T&D	Indirect WTT	High	Low	Outside of scopes
F gas	R407C		Tier 3	10%	0.51	kg	1	kg	1,774	897.64			897.64	-	-	-	-	*987.41*	*807.88*	-
F gas	R410A		Tier 3	10%	0.73	kg	1	kg	2,088	1,524.24			1,524.24	-	-	-	-	*1,676.66*	*1,371.82*	-
F gas	HFC-32		Tier 3	10%	0.08	kg	0	kg	675	54.00			54.00	-	-	-	-	*59.40*	*48.60*	-

Agriculture

No data entered

Emission data breakdown (kg CO_2e)

Agriculture emission source	Category 1	Not used	Methodology	RSD	Data	Units	Converted data	Standard units	Total EF (kgCO_2e/unit)	Total emissions (kgCO_2e)	Notes	Ease of collection	Direct	Indirect generation	Indirect service	Indirect T&D	Indirect WTT	High	Low	Outside of scopes

Cell colour codes: Information cell or question | Activity data. Numeric data entry | Information entry. Some cells have drop down lists | Calculated data

Business travel, commuting and homeworking

Guidance for users

This sheet contains three tables - business travel, commuting and homeworking.

Please see Section 8 of the Welsh Net Zero Public Sector Reporting Guide for further guidance.

Instructions for users

- Input information into the orange and blue cells. Grey cells should not be edited.
- Activity data entered in the 'data' column should only be in units specified in the 'units' column drop down list. If your data is in units that are not included in this drop down list, you will need to convert it before entering it into this sheet (see conversion sheet)
- When completing a row, fill in the columns from left to right. The drop down lists in later columns will change to provide valid combinations based on your previous selections.
- You can copy and paste between rows but please avoid copying data from one column to another, as this is likely to break the drop down lists.
- Fill in the notes column with a description of the method and data source used for each row
- Please note that the 'Outside of scopes' emissions are not included in the 'Total emissions'

Business travel

No errors in this table

Emission source	Category 1	Category 2	Methodology used	RSD	Data	Units	Converted data	Standard units	Total EF (kgCO2e/unit)	Total emissions	Notes	Ease of collection	Emission data breakdown (kg CO2e) Direct	Indirect generation	Indirect service	Indirect T&D	Indirect WTT	High	Low	Outside of scopes
Private car	Average	Unknown fuel	Tier 2	13%	1,105,924	Vehicle km	1,105,924	Vehicle km	0.21575	238,603.20	Data provided by finance team (via expenses platform)	Data incomplete but easy to	-	-	188,748.13	-	49,855.07	*268,428.60*	*208,777.80*	-
Motorbike	Average	Petrol	Tier 2	13%	293	Vehicle km	293	Vehicle km	0.14489	42.44	Data provided by finance team (via expenses platform)	Data incomplete but easy to	-	-	33.26	-	9.18	*47.74*	*37.13*	-

Commuting

No errors in this table

Emission source	Category 1	Category 2	Methodology used	RSD	Data	Units	Converted data	Standard units	Total EF (kgCO2e/unit)	Total emissions	Notes	Ease of collection	Emission data breakdown (kg CO2e) Direct	Indirect generation	Indirect service	Indirect T&D	Indirect WTT	High	Low	Outside of scopes
Private car	Small	Unknown fuel	Tier 3	8%	3,286,224	Vehicle miles	5,287,534	Vehicle km	0.18344	969,945.31			-	-	763,519.97	-	206,425.34	*1,042,691.21*	*897,199.41*	-
Private car	Medium	Unknown fuel	Tier 3	8%	2,993,220	Vehicle miles	4,816,091	Vehicle km	0.22187	1,068,546.11			-	-	847,054.08	-	221,492.02	*1,148,687.06*	*988,405.15*	-
Private car	Large	Unknown fuel	Tier 3	8%	1,718,892	Vehicle miles	2,765,697	Vehicle km	0.28516	788,666.22			-	-	628,725.95	-	159,940.27	*847,816.19*	*729,516.25*	-
Motorbike	Average	Petrol	Tier 3	8%	45,600	Vehicle miles	73,370	Vehicle km	0.14489	10,630.64			-	-	8,331.21	-	2,299.43	*11,427.94*	*9,833.34*	-
Private car	Average	Unknown fuel	Tier 3	8%	201,780	Vehicle miles	324,664	Vehicle km	0.21575	70,046.26	Private Car Passengers		-	-	55,410.41	-	14,635.85	*75,299.73*	*64,792.79*	-
Public Transport	Taxi	Taxi - Regular	Tier 3	10%	9,360	Passenger miles	15,060	Passenger km	0.18508	2,787.35			-	-	2,240.36	-	546.99	*3,066.08*	*2,508.61*	-
Public Transport	Bus	Average local bus	Tier 3	10%	216,972	Passenger miles	349,108	Passenger km	0.12144	42,395.67			-	-	33,688.92	-	8,706.75	*46,635.24*	*38,156.10*	-
Public Transport	Rail	National rail	Tier 3	10%	127,920	Passenger miles	205,823	Passenger km	0.04441	9,140.61			-	-	7,304.67	-	1,835.94	*10,054.67*	*8,226.55*	-

Homeworking

No errors in this table

Emission source	Number of FTE	% working hours at home	Methodology used	RSD	Data	Units	Converted data	Standard units	Total EF (kgCO2e/unit)	Total emissions	Notes	Ease of collection	Emission data breakdown (kg CO2e) Direct	Indirect generation	Indirect service	Indirect T&D	Indirect WTT	High	Low	Outside of scopes
Homeworking	90	100%	Tier 2	20%	90.0	FTE years	90.0	FTE years	668.9	60,197.48	Data is a mix of Staff Travel Survey - for proportion of days spent at home and FTE data on staff able to work from home	Data incomplete but easy to	-	-	60,197.48	-	-	*72,236.97*	*48,157.98*	-
Homeworking	53	80%	Tier 2	20%	42.4	FTE years	42.4	FTE years	668.9	28,359.70	Data is a mix of Staff Travel Survey - for proportion of days spent at home and FTE data on staff able to work from home	Data incomplete but easy to	-	-	28,359.70	-	-	*34,031.64*	*22,687.76*	-
Homeworking	95	60%	Tier 2	20%	57.0	FTE years	57	FTE years	668.9	38,125.07	Data is a mix of Staff Travel Survey - for proportion of days spent at home and FTE data on staff able to work from home	Data incomplete but easy to	-	-	38,125.07	-	-	*45,750.08*	*30,500.06*	-
Homeworking	66	40%	Tier 2	20%	26.4	FTE years	26	FTE years	668.9	17,657.93	Data is a mix of Staff Travel Survey - for proportion of days spent at home and FTE data on staff able to work from home	Data incomplete but easy to	-	-	17,657.93	-	-	*21,189.51*	*14,126.34*	-
Homeworking	111	20%	Tier 2	20%	22.2	FTE years	22	FTE years	668.9	14,848.71	Data is a mix of Staff Travel Survey - for proportion of days spent at home and FTE data on staff able to work from home	Data incomplete but easy to	-	-	14,848.71	-	-	*17,818.45*	*11,878.97*	-
Homeworking	278	60%	Tier 2	20%	166.8	FTE years	167	FTE years	668.9	111,565.99	Data is a mix of Staff Travel Survey - for proportion of days spent at home and FTE data on staff able to work from home	Data incomplete but easy to	-	-	111,565.99	-	-	*133,879.19*	*89,252.79*	-

Cell colour codes: Information cell or question | Activity data. Numeric data entry
Information entry. Some cells have drop dow | Calculated data

Land-based emissions and sequestration

Guidance for users

The organisational boundary should be defined as assets and operations under your organisation's operational control. This equates to emissions and sequestration in the vegetation and soils of land managed by your organisation for the delivery of public services, whether owned or leased.

Please see Section 10 of the Welsh Net Zero Public Sector Reporting Guide for further guidance.

Instructions for users:

- Input information into the orange and blue cells. Grey cells should not be edited. Please fill in the notes column with a description of the method and data source used.
- Find out the extent of land holdings that are under the operational control of your organisation
- Complete the scoping table below to determine whether Tier 1 methodology is required

If so,

- Complete the Tier 1 table below with available information and notes about sources of data

OR

If you want to use a Tier 2 method to report your emissions, complete the Tier 2 table below, providing notes about data sources and methods used

Land-based scoping questions

Land area	Land area in hectares (ha)
Land owned and managed by your organisation	1428.00
Land owned by your organisation and leased to a private organisation or individual but still used for delivering public services	106.00
Land owned by your organisation and leased to another public sector body, where your organisation is responsible for management of the asset	0.00
Land leased by your organisation from a private organisation or individual and used for delivering public services,	0.16
Land leased from another public sector body, where your organisation is responsible for management of the asset	0.00
Total	**1534.16**

Scoping result
Complete table below

Tier 1 methodology for land-based emissions

No data entered

Current land use type	Soil type	Previous land use type (select the same type as current if >20 years under same use)	Land area in hectares (ha)	Emission factor (tCO_2/ha/year)	Total kg CO_2e	RSD estimate (+/-%)	Source of data (e.g. estates team digital maps or estimates)	High	Low
Settlements	Mineral	Settlements	628	*2.10*	1,321,908	25%	Data held by Property team	1,652,385	991,431
Wetlands	Mineral	Wetlands	9	*No emission factor available*			Data held by Property team		
Grassland	Mineral	Grassland	655	*-1.44*	- 943,653	25%	Data held by Property team	- 1,179,567	- 707,740
Other land	Mineral	Other land	102	*No emission factor available*			Data held by Property team		
Forest land	Mineral	Forest land	140	*-5.42*	- 758,827	25%	Data held by Property team	- 948,534	- 569,120

If you wish to use a higher tier method to report your land use emissions, record these in the table below.

Tier 2 methodology for land-based emissions

No data entered

Land use type	Soil type	Not used	Land area in hectares (ha)	Not used 2	Emission kg CO_2e	Methodology used (IPCC equivalent Tier)	Notes on data sources

Cell colour codes: Information cell or question | Activity data. Numeric data entry
Information entry. Some cells have drop down lists | Calculated data

Organisational, municipal and project waste

Guidance for users

This tab has three tables for entering waste data - every effort has been made to include relevant waste types. If the waste type is not available, choose the closest match and write in the notes what waste type it is.
The first table is for organisational waste - this is waste produced by your organisation in day to day operations. You can choose from a range of waste types and disposal routes (some disposal routes are not applicable for certain waste types and therefore these option combinations are not available in the drop down lists).
The second table is for municipal waste collections and is only relevant to Local Authorities who provide this service. There is a question at the start of this table about operation of waste vehicles and recording of fuel used. This question has to be answered. Your answer will determine whether the emission factors applied in this table include the waste transport emissions (they may be already included elsewhere).
The third table is for construction project waste, where this is collected separately. You do not need to complete this table if it is not relevant to your organisation.
Please note: if your organisation has reported organisational waste based on tonnage, you should remove expenditure on waste collection services in your supply chain data to avoid double-counting.
Please see Section 9 of the Welsh Net Zero Public Sector Reporting Guide for further guidance.

Instructions for users

- Input information into the orange and blue cells. Grey cells should not be edited.
- Activity data entered in the 'data' column should only be in units specified in the 'units' column drop down list. If your data is in units that are not included in this drop down list, you will need to convert it before entering it into this sheet (see conversion sheet)
- When completing a row, fill in the columns from left to right. The drop down lists in later columns will change to provide valid combinations based on your previous selections.
- You can copy and paste between rows but please avoid copying data from one column to another, as this is likely to break the drop down lists.
- Fill in the notes column with a description of the method and data source used
- Please note that 'Outside of scopes' emissions are not included in the 'Total emissions'

Organisational waste

No errors in this table

Emission data breakdown (kg CO2e)

Waste type	Disposal	Methodology used	RSD	Data	Units	Converted data	Standard units	Total EF (kgCO2e/unit)	Total emissions	Notes	Ease of collection	Direct	Indirect generation	Indirect service	Indirect T&D	Indirect WTT	High	Low	Outside of scopes
Commercial and industrial waste	Combustion	Tier 2	10%	496,170	kg	496.17	tonnes	21.28	10,558.59	Data provided by waste team and analysed by energy team - corporate commercial collections excluding schools	Data incomplete and	-	-	10,558.59	-	-	11,614.45	9,502.73	-
Mixed recycling	Recycling	Tier 2	10%	1,020,760	kg	1,020.76	tonnes	21.28	21,721.97	Data provided by waste team and analysed by energy team - corporate commercial collections excluding schools	Data incomplete and	-	-	21,721.97	-	-	23,894.17	19,549.77	-
Organic mixed	Anaerobic digestion	Tier 2	10%	15,621	kg	15.62	tonnes	8.91	139.19	Data provided by waste team and analysed by energy team - corporate commercial collections excluding schools	Data incomplete and	-	-	139.19	-	-	153.11	125.27	-
Commercial and industrial waste	Combustion	Tier 1	15%	5,999,067	kg	5,999.07	tonnes	21.28	127,661.31	Data provided by waste team and analysed by energy team - schools only	Data incomplete and	-	-	127,661.31	-	-	146,810.50	108,512.11	-
Mixed recycling	Recycling	Tier 1	15%	6,922,001	kg	6,922.00	tonnes	21.28	147,301.52	Data provided by waste team and analysed by energy team - schools only	Data incomplete and	-	-	147,301.52	-	-	169,396.75	125,206.29	-

Municipal waste

Does your organisation collect this waste and include the vehicle fuel in the fleet section? Y

No errors in this table

Waste EF not including transport

Emission data breakdown (kg CO2e)

Waste type	Disposal	Methodology used	RSD	Data	Units	Converted data	Standard units	Total EF (kgCO2e/unit)	Total emissions	Notes	Ease of collection	Direct	Indirect generation	Indirect service	Indirect T&D	Indirect WTT	High	Low	Outside of scopes
Household residual waste	Combustion	Tier 3	5%	16,550	tonnes	16,550.31	tonnes	0.886	14,666.78	Not easy for waste team to collect but supplied to energy team complete	Data complete but re	-	-	14,666.78	-	-	15,400.12	*13,933.44*	-
Organic garden	Composting	Tier 3	5%	7,208	tonnes	7,208.00	tonnes	4.832	34,827.48	Not easy for	Data complete but re	-	-	34,827.48	-	-	36,568.85	*33,086.11*	-
Organic food and drink	Anaerobic digestion	Tier 3	5%	7,902	tonnes	7,902.00	tonnes	4.832	38,180.74	Not easy for	Data complete but re	-	-	38,180.74	-	-	*40,089.77*	*36,271.70*	-
Mixed recycling	Recycling	Tier 3	5%	19,814	tonnes	19,814.00	tonnes	9.122	180,747.15	Further	Data complete but re	-	-	180,747.15	-	-	*189,784.51*	*171,709.79*	-

Project waste

No data entered

Emission data breakdown (kg CO2e)

Waste type	Disposal	Methodology used	RSD	Data	Units	Converted data	Standard units	Total EF (kgCO2e/unit)	Total emissions	Notes	Ease of collection	Direct	Indirect generation	Indirect service	Indirect T&D	Indirect WTT	High	Low	Outside of scopes

Cell colour codes: Information cell or | Activity data. Numeric data entry
Information entry. | Calculated data

Indirect emissions from the supply chain

Guidance for users

This sheet contains two tables: Tier 1 supply chain spend based estimates and Tier 2 supply chain more accurate estimates **based on reported carbon.**
Please see Section 11 of the Welsh Net Zero Public Sector Reporting Guide for further guidance.

The Tier 1 table is based on the Defra source 'Conversion factors by SIC code 2019, updating Table 13', rounded to 3 d.p.
www.gov.uk/government/statistics/uks-carbon-footprint

This table only covers indirect emissions from the supply chain and is an estimate of the indirect GHG emissions resulting from expenditure on procuring goods and services. The emission factors were calculated by the University of Leeds as an update to the dataset used previously which were factors for 2011.
This table also includes a number of activities that are likely to be covered in your operational emissions, such as fuel use and transmission and distribution, travel and water. If you have captured that activity in the Operational emissions tab, you should remove the related expenditure from this table as otherwise you will be double counting your emissions. However, the information in this table may still be useful for a rough initial calculation of the relative importance of these activities in the first instance.

Instructions for users:

• Input information into the orange and blue cells. Grey cells should not be edited. Fill in the notes column describing the data source used and any data exclusions.
• Identify the amount spent on different product and service groups (in actual prices in £s, including VAT).
• In Tier 1, the amount of spend is automatically multiplied by the conversion factor to get total emissions in kilograms of carbon dioxide equivalent (kg CO_2e).
• If you wish to use a higher tier (Tier 2) method for part of your supply chain emissions, you can record these in the second table below. Please include notes about your method and the amount of spend that these emissions account for. Please **DO NOT** subtract this spend from the data reported in the Tier 1 table (i.e any emissions reported in the Tier 2 table should also be included in the total spend for that category in the Tier 1 table). Any emissions calculated by Tier 2 methods are included in column J of the Tier 1 table to provide an overall total without double counting.

Supply chain - tier 1 methodology

Supply chain group	SIC code (SIC 2007)	Product category	Amount spent by product category (£)	Emission factor ($kgCO_2e$ per £ spent)	Total kg CO_2e	RSD	Notes on data source and exclusions	Tier 1 & 2 combined emission	High	Low
AGRICULTURE, FORESTRY AND FISHING	01	*Products of agriculture, hunting and related services*	£24,381.00	*2.189*	53,370.0	25%		53370.0	66712.5	40027.5
AGRICULTURE, FORESTRY AND FISHING	02	*Products of forestry, logging and related services*		*0.282*		25%		0.0	0.0	0.0
AGRICULTURE, FORESTRY AND FISHING	03	*Fish and other fishing products; aquaculture products; support services to fishing*		*0.659*		25%		0.0	0.0	0.0
MINING AND QUARRYING	05	*Coal and lignite*		*1.883*		25%		0.0	0.0	0.0
MINING AND QUARRYING	06	*Crude petroleum and natural gas*		*0.868*		25%		0.0	0.0	0.0
MINING AND QUARRYING	08	*Other mining and quarrying products*		*0.692*		25%		0.0	0.0	0.0
MINING AND QUARRYING	09	*Mining support services*		*0.409*		25%		0.0	0.0	0.0
MANUFACTURING	10.1	*Preserved meat and meat products*		*0.766*		25%		0.0	0.0	0.0
MANUFACTURING	10.2 -3	*Processed and preserved fish, crustaceans, molluscs, fruit and vegetables*		*0.680*		25%		0.0	0.0	0.0
MANUFACTURING	10.4	*Vegetable and animal oils and fats*		*0.983*		25%		0.0	0.0	0.0
MANUFACTURING	10.5	*Dairy products*	£226,158.93	*0.874*	197,662.9	25%		197662.9	247078.6	148247.2
MANUFACTURING	10.6	*Grain mill products, starches and starch products*		*0.824*		25%		0.0	0.0	0.0
MANUFACTURING	10.7	*Bakery and farinaceous products*		*0.582*		25%		0.0	0.0	0.0
MANUFACTURING	10.8	*Other food products*	£444,971.20	*0.696*	309,700.0	25%		309700.0	387124.9	232275.0
MANUFACTURING	10.9	*Prepared animal feeds*		*0.747*		25%		0.0	0.0	0.0
MANUFACTURING	11.01-6	*Alcoholic beverages*		*0.745*		25%		0.0	0.0	0.0
MANUFACTURING	11.07	*Soft drinks*		*0.495*		25%		0.0	0.0	0.0
MANUFACTURING	12	*Tobacco products*		*0.705*		25%		0.0	0.0	0.0
MANUFACTURING	13	*Textiles*	£3,854.90	*0.869*	3,349.9	25%		3349.9	4187.4	2512.4
MANUFACTURING	14	*Wearing apparel*	£24,699.56	*0.782*	19,315.1	25%		19315.1	24143.8	14486.3
MANUFACTURING	15	*Leather and related products*		*0.739*		25%		0.0	0.0	0.0
MANUFACTURING	16	*Wood and of products of wood and cork, except furniture; articles of straw and plaiting materials*	£82,056.95	*0.553*	45,377.5	25%		45377.5	56721.9	34033.1
MANUFACTURING	17	*Paper and paper products*	£268,014.18	*0.698*	187,073.9	25%		187073.9	233842.4	140305.4
MANUFACTURING	18	*Printing and recording services*	£130,616.19	*0.418*	54,597.6	25%		54597.6	68247.0	40948.2
MANUFACTURING	19	*Coke and refined petroleum products*		*1.908*		25%		0.0	0.0	0.0
MANUFACTURING	20.3	*Paints, varnishes and similar coatings, printing ink and mastics*	£1,212.25	*1.151*	1,395.3	25%		1395.3	1744.1	1046.5
MANUFACTURING	20.4	*Soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations*	£418,730.88	*0.568*	237,839.1	25%		237839.1	297298.9	178379.4
MANUFACTURING	20.5	*Other chemical products*		*0.818*		25%		0.0	0.0	0.0
MANUFACTURING	20A	*Industrial gases, inorganics and fertilisers (all inorganic chemicals) - 20.11/13/15*		*1.307*		25%		0.0	0.0	0.0
MANUFACTURING	20B	*Petrochemicals - 20.14/16/17/60*		*1.134*		25%		0.0	0.0	0.0
MANUFACTURING	20C	*Dyestuffs, agro-chemicals - 20.12/20*		*1.005*		25%		0.0	0.0	0.0
MANUFACTURING	21	*Basic pharmaceutical products and pharmaceutical preparations*		*0.514*		25%		0.0	0.0	0.0
MANUFACTURING	22	*Rubber and plastic products*		*0.589*		25%		0.0	0.0	0.0
MANUFACTURING	23.5-6	*Cement, lime, plaster and articles of concrete, cement and plaster*		*1.465*		25%		0.0	0.0	0.0
MANUFACTURING	23OTHER	*Glass, refractory, clay, other porcelain and ceramic, stone and abrasive products - 23.1-4/7-9*		*1.395*		25%		0.0	0.0	0.0
MANUFACTURING	24.1-3	*Basic iron and steel*		*1.659*		25%		0.0	0.0	0.0
MANUFACTURING	24.4-5	*Other basic metals and casting*		*1.155*		25%		0.0	0.0	0.0
MANUFACTURING	25.4	*Weapons and ammunition*		*0.544*		25%		0.0	0.0	0.0
MANUFACTURING	25OTHER	*Fabricated metal products, excl. machinery and equipment and weapons & ammunition - 25.1-3/25.5-9*	£12,068.84	*0.515*	6,215.5	25%		6215.5	7769.3	4661.6
MANUFACTURING	26	*Computer, electronic and optical products*	£734,504.40	*0.468*	343,748.1	25%		343748.1	429685.1	257811.0
MANUFACTURING	27	*Electrical equipment*	£26,811.73	*0.534*	14,317.5	25%		14317.5	17896.8	10738.1
MANUFACTURING	28	*Machinery and equipment n.e.c.*	£1,094,773.66	*0.448*	490,458.6	25%		490458.6	613073.2	367843.9
MANUFACTURING	29	*Motor vehicles, trailers and semi-trailers*	£3,298,914.71	*0.366*	1,207,402.8	25%		1207402.8	1509253.5	905552.1
MANUFACTURING	30.1	*Ships and boats*		*0.292*		25%		0.0	0.0	0.0
MANUFACTURING	30.3	*Air and spacecraft and related machinery*		*0.414*		25%		0.0	0.0	0.0
MANUFACTURING	30OTHER	*Other transport equipment - 30.2/4/9*		*0.303*		25%		0.0	0.0	0.0
MANUFACTURING	31	*Furniture*	£153,462.77	*0.563*	86,399.5	25%		86399.5	107999.4	64799.7
MANUFACTURING	32	*Other manufactured goods*	£13,273,115.71	*0.725*	9,623,008.9	25%		9623008.9	12028761.1	7217256.7
MANUFACTURING	33.15	*Repair and maintenance of ships and boats*		*0.359*		25%		0.0	0.0	0.0
MANUFACTURING	33.16	*Repair and maintenance of aircraft and spacecraft*		*0.432*		25%		0.0	0.0	0.0
MANUFACTURING	33OTHER	*Rest of repair; Installation - 33.11-14/17/19/20*	£24,294.00	*0.190*	4,615.9	25%		4615.9	5769.8	3461.9
ELECTRICITY, GAS, STEAM AND AIR CONDITIONING SUPPLY	35.1	*Electricity, transmission and distribution*		*1.774*		25%		0.0	0.0	0.0
ELECTRICITY, GAS, STEAM AND AIR CONDITIONING SUPPLY	35.2-3	*Gas; distribution of gaseous fuels through mains; steam and air conditioning supply*		*1.403*		25%		0.0	0.0	0.0
WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES	36	*Natural water; water treatment and supply services*		*0.215*		25%		0.0	0.0	0.0
WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES	37	*Sewerage services; sewage sludge*		*0.388*		25%		0.0	0.0	0.0
WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES	38	*Waste collection, treatment and disposal services; materials recovery services*		*1.427*		25%		0.0	0.0	0.0
WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES	39	*Remediation services and other waste management services*		*3.425*		25%		0.0	0.0	0.0
CONSTRUCTION	41.2	*Buildings and building construction works*	£88,222,181.06	*0.240*	21,173,323.5	25%		21173323.5	26466654.3	15879992.6
CONSTRUCTION	42.1-2	*Constructions and construction works for civil engineering*		*0.306*		25%		0.0	0.0	0.0
CONSTRUCTION	42.99	*Specialised construction works*		*0.238*		25%		0.0	0.0	0.0
WHOLESALE AND RETAIL TRADE; REPAIR OF MOTOR VEHICLES AND MOTORCYCLES	45	*Wholesale and retail trade and repair services of motor vehicles and motorcycles*	£530,923.83	*0.155*	82,293.2	25%		82293.2	102866.5	61719.9
WHOLESALE AND RETAIL TRADE; REPAIR OF MOTOR VEHICLES AND MOTORCYCLES	46	*Wholesale trade services, except of motor vehicles and motorcycles*	£2,022,400.58	*0.377*	762,445.0	25%		762445.0	953056.3	571833.8
WHOLESALE AND RETAIL TRADE; REPAIR OF MOTOR VEHICLES AND MOTORCYCLES	47	*Retail trade services, except of motor vehicles and motorcycles*		*0.197*		25%		0.0	0.0	0.0
TRANSPORTATION AND STORAGE	49.1-2	*Rail transport services*		*0.325*		25%		0.0	0.0	0.0
TRANSPORTATION AND STORAGE	49.3-5	*Land transport services and transport services via pipelines, excluding rail transport*		*0.518*		25%		0.0	0.0	0.0
TRANSPORTATION AND STORAGE	50	*Water transport services*		*1.672*		25%		0.0	0.0	0.0
TRANSPORTATION AND STORAGE	51	*Air transport services*		*1.669*		25%		0.0	0.0	0.0
TRANSPORTATION AND STORAGE	52	*Warehousing and support services for transportation*		*0.181*		25%		0.0	0.0	0.0
TRANSPORTATION AND STORAGE	53	*Postal and courier services*	£373,832.11	*0.178*	66,542.1	25%		66542.1	83177.6	49906.6
ACCOMMODATION AND FOOD SERVICE ACTIVITIES	55	*Accommodation services*	£3,856,381.41	*0.247*	952,526.2	25%		952526.2	1190657.8	714394.7
ACCOMMODATION AND FOOD SERVICE ACTIVITIES	56	*Food and beverage serving services*	£59,898.46	*0.241*	14,435.5	25%		14435.5	18044.4	10826.6
INFORMATION AND COMMUNICATION	58	*Publishing services*	£70,338.46	*0.091*	6,400.8	25%		6400.8	8001.0	4800.6
INFORMATION AND COMMUNICATION	59	*Motion picture, video and TV programme production services, sound recording & music publishing*	£9,803.04	*0.095*	931.3	25%		931.3	1164.1	698.5
INFORMATION AND COMMUNICATION	60	*Programming and broadcasting services*		*0.083*		25%		0.0	0.0	0.0
INFORMATION AND COMMUNICATION	61	*Telecommunications services*	£1,671,286.47	*0.110*	183,841.5	25%		183841.5	229801.9	137881.1
INFORMATION AND COMMUNICATION	62	*Computer programming, consultancy and related services*	£4,436,333.64	*0.100*	443,633.4	25%		443633.4	554541.7	332725.0
INFORMATION AND COMMUNICATION	63	*Information services*		*0.164*		25%		0.0	0.0	0.0
FINANCIAL AND INSURANCE ACTIVITIES	64	*Financial services, except insurance and pension funding*	£1,358,913.52	*0.070*	95,123.9	25%		95123.9	118904.9	71343.0
FINANCIAL AND INSURANCE ACTIVITIES	65.1-2	*Insurance and reinsurance services, except compulsory social security*	£625,457.30	*0.068*	42,531.1	25%		42531.1	53163.9	31898.3
FINANCIAL AND INSURANCE ACTIVITIES	66	*Services auxiliary to financial services and insurance services*		*0.059*		25%		0.0	0.0	0.0
REAL ESTATE ACTIVITIES	68.12	*Real estate services, excluding on a fee or contract basis and imputed rent*		*0.087*		25%		0.0	0.0	0.0
REAL ESTATE ACTIVITIES	68.2IMP	*Owner-Occupiers' Housing Services*		*0.027*		25%		0.0	0.0	0.0
REAL ESTATE ACTIVITIES	68.3	*Real estate services on a fee or contract basis*		*0.077*		25%		0.0	0.0	0.0
PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES	69.1	*Legal services*	£1,514,243.07	*0.043*	65,112.5	25%		65112.5	81390.6	48834.3
PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES	69.2	*Accounting, bookkeeping and auditing services; tax consulting services*	£3,768,353.63	*0.145*	546,411.3	25%		546411.3	683014.1	409808.5
PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES	70	*Services of head offices; management consulting services*	£1,646,996.50	*0.104*	171,287.6	25%		171287.6	214109.5	128465.7
PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES	71	*Architectural and engineering services; technical testing and analysis services*	£769,877.26	*0.157*	120,870.7	25%		120870.7	151088.4	90653.0
PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES	72	*Scientific research and development services*		*0.157*		25%		0.0	0.0	0.0
PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES	73	*Advertising and market research services*	£410,368.75	*0.104*	42,678.4	25%		42678.4	53347.9	32008.8
PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES	74	*Other professional, scientific and technical services*	£14,329,250.95	*0.149*	2,135,058.4	25%		2135058.4	2668823.0	1601293.8
PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES	75	*Veterinary services*	£129,098.90	*0.066*	8,520.5	25%		8520.5	10650.7	6390.4
ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES	77	*Rental and leasing services*	£690,073.63	*0.115*	79,358.5	25%		79358.5	99198.1	59518.9
ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES	78	*Employment services*	£18,252,458.40	*0.133*	2,427,577.0	25%		2427577.0	3034471.2	1820682.7

ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES	79	*Travel agency, tour operator and other reservation services and related services*		*0.117*		25%		0.0	0.0	0.0
ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES	80	*Security and investigation services*	£16,968.44	*0.103*	1,747.7	25%		1747.7	2184.7	1310.8
ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES	81	*Services to buildings and landscape*	£304,567.65	*0.142*	43,248.6	25%		43248.6	54060.8	32436.5
ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES	82	*Office administrative, office support and other business support services*	£24,972.81	*0.129*	3,221.5	25%		3221.5	4026.9	2416.1
PUBLIC ADMINISTRATION AND DEFENCE; COMPULSORY SOCIAL SECURITY	84	*Public administration and defence services; compulsory social security services*	£169,636.96	*0.120*	20,356.4	25%		20356.4	25445.5	15267.3
EDUCATION	85	*Education services*	£717,849.32	*0.067*	48,095.9	25%		48095.9	60119.9	36071.9
HUMAN HEALTH AND SOCIAL WORK ACTIVITIES	86	*Human health services*	£498,347.17	*0.151*	75,250.4	25%		75250.4	94063.0	56437.8
HUMAN HEALTH AND SOCIAL WORK ACTIVITIES	87	*Residential care services*	£45,905,144.05	*0.131*	6,013,573.9	25%		6013573.9	7516967.3	4510180.4
HUMAN HEALTH AND SOCIAL WORK ACTIVITIES	88	*Social work services without accommodation*	£53,140,579.13	*0.108*	5,739,182.5	25%		5739182.5	7173978.2	4304386.9
ARTS, ENTERTAINMENT AND RECREATION	90	*Creative, arts and entertainment services*	£176,877.53	*0.094*	16,626.5	25%		16626.5	20783.1	12469.9
ARTS, ENTERTAINMENT AND RECREATION	91	*Libraries, archives, museums and other cultural services*	£3,007.71	*0.123*	369.9	25%		369.9	462.4	277.5
ARTS, ENTERTAINMENT AND RECREATION	92	*Gambling and betting services*		*0.099*		25%		0.0	0.0	0.0
ARTS, ENTERTAINMENT AND RECREATION	93	*Sports services and amusement and recreation services*	£1,943,960.70	*0.155*	301,313.9	25%		301313.9	376642.4	225985.4
OTHER SERVICE ACTIVITIES	94	*Services furnished by membership organisations*		*0.096*		25%		0.0	0.0	0.0
OTHER SERVICE ACTIVITIES	95	*Repair services of computers and personal and household goods*	£1,031,383.53	*0.095*	97,981.4	25%		97981.4	122476.8	73486.1
OTHER SERVICE ACTIVITIES	96	*Other personal services*		*0.070*		25%		0.0	0.0	0.0
ACTIVITIES OF HOUSEHOLDS AS EMPLOYERS; UNDIFFERENTIATED GOODS- AND SERVICES-PRODUCING ACTIVITIES OF HOUSEHOLDS FOR OWN USE	97	*Services of households as employers of domestic personnel*		*0.054*		25%		0.0	0.0	0.0

If you wish to use a higher tier method for part of your supply chain emissions, you can record the emissions in the table below together with the equivalent spend associated with those emissions. Include brief notes about your method for calculating the emissions, or a reference to further information.

DO NOT subtract this spend from the data reported in the Tier 1 table (i.e any emissions reported in the table **below** should also be included in the total spend for that category in the table **above**. Duplicated emissions will be reconciled when compiling the data. The 'Supply chain group' and 'SIC code' columns will automatically fill once a category has been selected in the 'Product category' column.

Supply chain - tier 2 methodology

Supply chain group	SIC code (SIC 2007)	Product category	Spend for which Tier 2 method accounts	Not used	Calculated emissions (kgCO2e) for this spend	RSD	Notes on data source and methods	High	Low

Cell colour codes: Information cell or question | Activity data. Numeric data entry
Information entry. Some cells have drop down lists | Calculated data

Renewables

Guidance for users

This sheet allows users to provide information about any renewable energy that an organisation generates or purchases. It has two tables, one for renewables generated onsite by your organisation, and one for any renewable electricity or heat that your organisation purchases.
If your organisation purchases renewable electricity (e.g. through a green tariff) which is reported in this sheet, the activity data should also be included in the 'Buildings' table in the 'Buildings, fleet &other assets' sheet. This is because the Welsh Public Sector has agreed to use a locational based approach to accounting; all the renewable electricity in the grid is already accounted for in the average grid factor. If individual organisations account for this green electricity as zero carbon and the grid average also includes it as a zero carbon component, the benefit is being double counted.
Please see Section 12 of the Welsh Net Zero Public Sector Reporting Guide for further guidance.

Instructions for users

- Input information into the orange and blue cells. Grey cells should not be edited.
- Activity data should only be in kWh unit. If your data is in other units, you will need to convert it before entering it into this sheet (see conversion sheet)
- When completing a row, fill in the columns from left to right. The drop down lists in later columns will change to provide valid combinations based on your previous selections.
- You can copy and paste between rows but please avoid copying data from one column to another, as this is likely to break the drop down lists.
- Fill in the notes column with a description of the method and data source used

Onsite renewables

Renewable Type	Technology	Methodology used	RSD	Total kWh generated	kWh consumed onsite	kWh exported	Notes	Ease of collection
Renewable electricity	Solar PV	Tier 3	3%	806,929	713,275	93,654		
Renewable electricity	Solar PV	Tier 2	5%	66,794	66,794			
Renewable electricity	Solar PV	Tier 1	10%	103,000	103,000			

Purchased renewables

If you purchase renewable electricity that is supplied through the UK grid, you must also include this electricity in the buildings table.

Renewable Type	Agreement	Methodology used	RSD	Total kWh purchased	Not used	Not used2	Notes	Ease of collection
Purchased renewable electrici	REGO tariff	Tier 3	3%	10,156,163			99% factor applied to our purchased energy to ac	Data complete and easy to collect and process

APPENDIX C - CMP ACTIVITIES

PZ challenge (Step)	CMP 2024	Activities	Team Responsible
Buildings & Street Lighting			
PZC15.1	1.1	All new school developments will include the maximum PV panels for the roof design and layout, consideration to the building orientation is also included to ensure this is achievable. (Provision of battery storage will also be considered as part of the base build).	Sustainable Communities for Learning (SCfL)
PZC15.1	1.2	Inclusion of alternative heat sources such as heat pumps within the new school developments to remove the requirement of fossil fuels for heating and domestic hot water.	SCfL
PZC15.5	1.3	Include Green Roof systems to all new buildings, where possible. Inclusion is dependant of the array of PV panels and ongoing maintenance cost considerations	SCfL
PZC15.1	1.4	All new school developments to comply with the carbon reduction targets set by the Welsh Government and Vale of Glamorgan Council, being met through considerate design and operational measures	SCfL
PZC15.6	1.5	Ensure all new school developments provide end users with the understanding and knowledge of the building design and how the building is to be managed, to ensure Point 4 is not impeded through use.	SCfL
PZC16.3	1.6	Develop policy to promote heat pump technologies and electric water heaters to replace end-of-life gas water heaters / gas fired boilers.	Property
PZC16.3	1.7	Retrofit projects to develop consistent, robust approach, e.g. AECB CarbonLite, LETI.	Property
PZC11.3	1.8	Continue to progress roll out of AMR water meters, monitoring out of hours usage and leak detection for resolution by asset holder.	Decarbonisation & Energy
PZC11.3	1.9	Decarbonisation & Energy Team continue to undertake weekly checks on water consumption and report unusual consumption to designated building manager /site contact to perform initial checks.	Decarbonisation & Energy and all site managers
PZC11.3	1.10	Develop Standing Operational Procedures (SOPs) for identifying and fixing leaks.	Property/public buildings
PZC11.4	1.11	Develop policy to promote rainwater harvesting for landscaping / vehicle washing / WC flushing reducing portable water consumption.	Decarbonisation & Energy (with Neighbourhood Services)
PZC11.3	1.12	Develop process for void properties such that water is isolated and accounts paused to avoid incurring costs.	Housing (Emergency Housing)
PZC11.4	1.13	Water butts installed at Porthkerry workshop and Cosmeston Medieval Village to harvest water for associated gardens. Look to develop other solutions to minimise water usage on all site	Place / Countryside
PZC11.4	1.14	Consider opportunities to introduce rainwater harvesting when undertaking roof renewal works or replacement of rainwater goods.	Property Design & Maintenance
PZC11.3	1.15	Implement specification changes, particularly in relation to sanitary fittings that introduce water saving devices into projects which reduce water usage	Property Design & Maintenance
PZC11.4	1.16	Consider options for recycling water / greywater systems to provide alternative sources of water when undertaking refurbishment projects and as part of new build developments.	Property Design & Maintenance, SCfL.
PZC1.2	1.17	Discuss with our supply chain options for reducing water usage during on site construction works. Introduce these requirements in to contract documentation.	Property Design & Maintenance
PZC11.3	1.18	Utilise rainwater harvesting to water plants in our parks and public spaces, for vehicle washing, water bowser and other activities.	Visible Services / Countryside Services
PZC16.3	1.19	Monitor existing air condition systems, rationalise air conditioning units were possible and investigate a replacement programme to swap to lower Global Warming Potential (GWP) refrigerant gases.	Compliance
PZC16.3	1.20	Develop policy to promote passive cooling must be demonstrated first ahead of any air conditioning being installed. To include a sign-off process from Property Section and PZ Board and business case demonstrating need.	Decarbonisation & Energy
PZC16.1	1.21	Develop and implement infrastructure solutions for IT that reduce the on-site carbon consumption, i.e. existing Data Centre (and ensure robust carbon accounting for outsourcing this activity).	ICT
PZC15.1	1.22	Plan server rooms in new school developments in a location to provide adequate passive cooling	SCfL
Street Lighting			
PZC17.1	2.1	1.5% per annum to close off the outstanding 7% - 191 assets/units per year providing sufficent budget available.	Highway Maintenance Team
	2.2	Strategic review of lighting levels for new developments (S278/38) whether requirements can be flexible to reduce lighting levels, areas remaining unlit for example.	Highway Developments with Planning
PZC17.1	2.3	Develop programme to transition the remaining assets onto CMS should budget be available.	Highway Maintenance Team
Fleet and Mobile Equipment			
PZC17.1	3.1	Centralise data collection of all datasets to a single team to enable analysis of fleet vehicle journey types and vehicle utilisation patterns, fuel split diesel, petrol and electric.	Fleet
PZC17.1	3.2	Develop fleet replacement strategy which incorporates whole life carbon approach to vehicle replacement, considers vehicle rotation amongst fleet user groups, and timeline to phase out fossil fuel fleet (using WGES April/May 2024 recommendations).	Fleet
PZC17.1	3.3	Develop new pool car recharging policy to use mileage (telemetry) or EV charging data to improve accuracy	Finance
PZC17.1	3.4	EV fleet end of life policy developed confirming battery or vehicle replacement and age / mileage criteria.	Fleet & Finance
PZC17.1	3.5	Promote efficient use of pool car hires and use of EV	Fleet & Comms
PZC17.1	3.6	Develop findings of trial and EV infrastructure working group for staff and visitor use of EV charge points.	Fleet & FM
PZC17.1	3.7	Implementation of a staff and public EV charging capability trial and subsequent wider rollout.	Countryside Services and Neighbourhood Services (Fleet support)
PZC17.1	3.8	Establish records of all mobile equipment held in Parks and Playing Fields and Countryside Services teams. Develop timeline for rationalisation / pooling and sharing of equipment.	Countryside Services and Neighbourhood Services
PZC17.1	3.9	Building on March / April 2024 trials of battery generators – establish policy to hire / purchase in place of petrol and diesel generator.	2025 onwards – Fleet (active travel lead on implementation to wider organisation)
PZC17.1	3.10	Annual records of fuel purchased for mobile equipment to be retained.	Countryside Services and Neighbourhood Services
PZC17.1	3.11	`	24/25 - Social Services 2025 onwards – Fleet (active travel lead on implementation to wider organisation)
PZC17.1	3.12	Departments utilising fleet vehicles to review mileage and work patterns, and rationalisation of fleet to be considered by the relevant departments; outcome of decision then supported by Fleet team.	All fleet vehicle using departments
Business travel, staff commute, working from home			
PZC17.1	4.1	Develop travel policy refresh for communication to all staff. Include flight policy including no short haul, UK travel by plane etc (we have successful examples from our Public Services Board partners to use as a template	HR lead (Fleet input and with Finance, Comms support as required)

PZC17.1	4.2	Develop new policy for staff on claiming business travel to reflect new ways of working, post-pandemic	Corporate, including Finance and HR
PZC17.1	4.3	Undertake a review of business travel to inform the travel policy refresh. Business travel appears very low and uncertainty remains on whether all business travel is being recorded	Corporate, including HR and Finance
PZC17.2	4.4	Ensure our policies reflect best practice for staff travel and hybrid working. That our staff embrace these new ways of working and take decisions which continue to support low carbon activity.	Corporate – including HR and Finance
PZC17.1	4.5	Develop fleet replacement strategy which incorporates whole life carbon approach to vehicle replacement, considers vehicle rotation amongst fleet user groups, and timeline to phase out fossil fuel fleet.	Fleet
PZC17.2	4.6	Continual improvement and participation in staff travel survey - Internal comms and Corporate Services team who complete staff survey to continue to refine survey, encourage higher participation return (aim for 30-40% minimum return) and feedback data to all staff.	Communications and Policy
PZC17.2	4.7	Data collection of hire car usage (for business mileage).	Fleet
PZC17.2	4.8	Implementation of a revised Print Strategy that reduces the utilisation of printing and where absolutely required, has the lowest carbon impactImplementation of a revised Print Strategy that reduces the utilisation of printing and where absolutely required, has the lowest carbon impact	Digital
PZC17.2	4.9	Pilot for e-bike use by social services staff through 2024/25 monitored and findings implemented 2025 onwards.	Social Services / HR / Finance
Waste			
PZC10.1	5.1	Analysis and alignment of waste stream data reported to WG waste submissions and for carbon emission reporting (for both organisational and municipal waste streams).	Waste
PZC10.1	5.2	Identify key projects for which waste data will be reported (e.g. set by volume of material or £ invested) and develop methodology to enable reporting in future years.	Waste
PZC10.2	5.3	Develop communication resources to support behaviour change for staff and visitors on new legislation leading to a reduction in waste volumes and improved segregation.	Waste/FM/Comms
PZC10.5	5.4	Support service sites, e.g. residential care, countryside parks and gardens, to improve waste segregation and compliance with new legislation.	Waste
PZC13.1	5.5	Develop methodology to record waste generated from projects and ensure relevant clauses are incorporated into all project contracts going forward.	Waste team to lead with all Council teams managing projects i.e. building services/public buildings, housing, compliance, property, Highways, PMU implementing methodology with their suppliers etc
PZC15.3	5.6	Develop a process re=utilising old materials i.e a building that is to be demolished, the existing foundations would be broken/crushed and transported to another site to use as blinding/hardcore, thus removing the need for the material to be taken to landfill. A review is currently underway on how achievable this is and the merits from the task within a SCfL project 2024/25.	SCfL
Procurement			
PZC13.2	6.1	Ardal and Senior management (Directors/Heads of Services/Operational Managers) to continue to raise the profile of new procurement practices to support and embed carbon reduction practices including "Carbon Reduction Procurement Guidance"	Ardal and PZ Board
PZC13.2	6.2	Governance arrangements to put in place to ensure buying responsibly and carbon reduction guidance has been considered at pre-tender stage.	Ardal/Head of Finance
PZC13.1	6.3	Awareness raising and behaviour change messaging to support this new guidance and deliver ~~economic and~~ carbon savings and where possible economic savings too for the Council.	Ardal/Head of Finance
PZC13.1	6.4	Create case studies of best practice examples for staff.	Ardal, Internal Comms, PZ Board.
PZC13.2	6.5	Improve the accuracy of the Tier 1 (SIC) carbon footprint through the improved categorisation of spend data. Continual quarter by quarter improvement, initial action end of 2023/24.	Ardal/Procurement Team/Head of Finance
PZC13.2	6.6	Review 2023/24 datasets, SIC (standard industrial classification) codes used and identify opportunities for decarbonisation	Ardal/Procurement Team/Head of Finance
PZC13.1	6.7	Roll out the request for Carbon Reduction Plans from organisations tendering for contracts (Minimum Requirement in Procurement Policy & Strategy). Detailed wording will be set out rather than a simple pass/fail.	Ardal/Procurement Team/Head of Finance
PZC13.2	6.8	Review Council Contract Terms and Conditions to ensure the appropriate data and commitments are fully reflected in both goods and services contracts. Partly dependent on timing of Welsh Government adopting PPN 01/24	Head of Finance/Legal
PZC13.2	6.9	Revised Procurement Policy & Strategy to have a greater focus on deforestation in Purchased Goods section to ensure the purchase of products from unsustainable sources is reduced.	Head of Finance
PZC13.2	6.10	Consider what categories of spend could have annual emission reduction targets set and report the outcome for the next annual update	Head of Finance
Renewable Energy			
PZC16.4	7.1	Develop policy to identify prioritisation of renewable energy deployment and funding streams to enable increased generation across buildings estate.	Decarbonisation & Energy
PZC16.4	7.2	Develop procedure to review renewable energy potential of land is determined prior to disposal or acquisition, wherever possible.	Property – Estates & Energy Team
PZC16.4	7.3	Continue to apply for Low Carbon Heat Grant (WG) annually whilst available and to seek out other funding opportunities to support renewable energy schemes.	Decarbonisation & Energy
PZC16.4	7.4		
PZC12.1	7.5	Identify possible land mounted renewable energy opportunities within the Land Use Planning process to support developers and third-party collaborations.	Regeneration and Planning.
Land Use			
PZC16.1	8.1	Following WLGA training, investigate potential for land sequestration across estate portfolio.	Property – Estates
PZC16.1	8.2	Ensure that land sequestration value is considered when reporting surplus land opportunities to the Strategic Insight Board prior to disposal of land.	Property – Estates
PZC5.1	8.3	Adopt the Green Infrastructure Strategy, complete an action plan to implement its objectives, and progress work toward achieving these actions.	Place / Neighbourhood Services
PZC5.3	8.4	Adopt the Tree Strategy, complete an action plan to implement its objectives, and progress work toward achieving these actions.	Place / Neighbourhood Services
PZC5.3	8.5	Feasibility and Business Plan for a local provenance tree and shrub nursery as a social enterprise	Countryside Services

CATEGORY	CLASS	Replacement Criteria	Standard Age Profile	Maximum Age profile	Maximum mileage	Finance option	Colour scheme	Racks	Air Con	Safety Lights	Audio warnings	lifting equipment	cleaning facilities				
G01	CAR/DERIVED VAN	age	4	7	75000	all	white	opt	man	opt	no	no	no				
	SMALL PANELL VAN	age	4	7	75000	all	white	opt	man	opt	no	no	no				
G02	PANELVAN UP TO 3500KG	age	5	7	80000	all	white	opt	opt	opt	no	no	opt				
G03	TRUCK TIPPER	age	6	8	100000	all	white	n/a	man	std	no	opt	no				
	4X4 OR FLAT BED PICK UP	age	6	8	100000	all	white	n/a	man	std	no	opt	opt				
G04	VAN /TRUCK/TIPPER 3.5 TO 7.5	age	6	8	100000	all	white	opt	man	std	no	opt	opt				
G05	VAN/TRUCK/TIPPER 7.5-18T	age	7	9	100000	all	white	opt	man	std	std	opt	opt				
G06	VAN/TRUCK/TIPPER 18T+	age	6	8	100000	all	white	opt	man	std	std	opt	opt				
G07	MINI BUS UP TO 17 SEAT	age	6	8	100000	all	White/opt	opt	man	std	std	opt	no				
G08	BUS 3.5-6T INC WELFARE	mileage	7	9	100000	all	White/opt	opt	man	std	std	opt	no				
G10+11 +19	2 OR 3 AXLE REFUSE VEHICLE	age	6	8	110000	purchase	white	n/a	std	std	std	no	std				
GI2+ 13	GRITTERS	mileage	10	12	100000	purchase	yellow	n/a	man	std	std	no	opt				
G15	PRECINCT SWEEPER	age	5	7	70000	all	white	n/a	std	std	std	no	opt				
G16+ 17	LARGER SWEEPER	age	6	8	70000	all	white	n/a	opt	std	std	no	opt				
G18	JETTERS& CESSPOOL	age	7	9	70000	all	white	n/a	opt	std	std	no	std				
G20	LIBRARY& COMM	mileage	10	12	100000	purchase	opt	n/a	std	std	std	opt	std				
G21	TRACTORS &LIGHT LOADERS	mileage	6	8	50000	all	man	n/a	opt	std	no	opt	n/a				
G22+23	GROUND EQUIP	age	5	7	n/a	all	man	n/a	man	std	no	no	n/a				
G25	SMALL TRACTOR	age	5	7	n/a	purchase	man	n/a	man	std	no	opt	n/a				
G26	MISC QUADS ETC	age	5	7	n/a	purchase	man	n/a	man	std	no	no	n/a				

Key

std	Standard requirement
opt	Choice / Optional fit if specified by customer
man	manufacturer standard product taken
n/a	not applicable to vehicle category
no	not required by VoG

THE VALE OF GLAMORGAN COUNCIL

OUR CARBON MANAGEMENT PLAN

2024 – 2030