

Family Housing Association

Carbon Footprint Report FY 2019/20

June 2021



Tai Teulu



Family Housing



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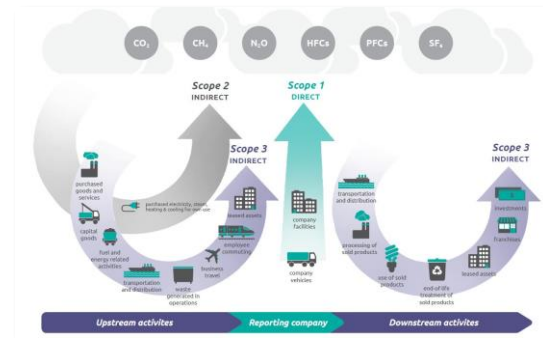
Executive Summary



Executive Summary

Scope of Assessment

- In March 2019, Family Housing's board finalised its 2019-2024 Business Plan. This included a Business Plan Priority to reduce Family Housing's carbon footprint and increase environmental sustainability. The action was to produce an Environmental Sustainability / Decarbonisation Strategy which included agreed targets and measures related to new offices, company-owned fleet and the energy performance of existing and new homes¹.
- Calculating a carbon footprint is a key step in developing a wider environmental strategy for the organisation. It is paramount to understanding the scale of the decarbonisation challenge and supports future decision-making to ensure Family Housing continues to build resilient communities in a changing climate and in line with national targets.
- The Carbon Trust was commissioned by Family Housing to calculate a carbon footprint of its activities. This included direct and indirect emissions sources from scopes 1 and 2 (incl. the housing stock). The carbon footprint was calculated using data from the 2019/20 financial year.
- To achieve their ambitions, Family Housing will need to build on this initial work and use it to inform the development of a formal environmental strategy. This would include identifying projects to reduce organisational emissions, modelling future emissions pathways to understand the level of action required to meet specified targets and ensuring there are clear monitoring and reporting protocols that ensure the carbon footprint is kept up to date and accurate.



Overview of the World Resource Institutes GHG Protocol accounting methodology

This carbon footprint has been calculated in line with the Greenhouse Gas (GHG) Protocol Guidelines which categorise emissions sources into 3 scopes. These are defined as follows:



Scope 1

- Direct emissions from combustion of gas and other fuels for building energy and transport

Scope 2

- Indirect emissions resulting from purchased energy that is generated outside the organisational boundary (e.g. Purchased grid electricity, district heating/cooling)

Scope 3

- Emissions produced by third parties in connection with operational activities (e.g. contract suppliers)

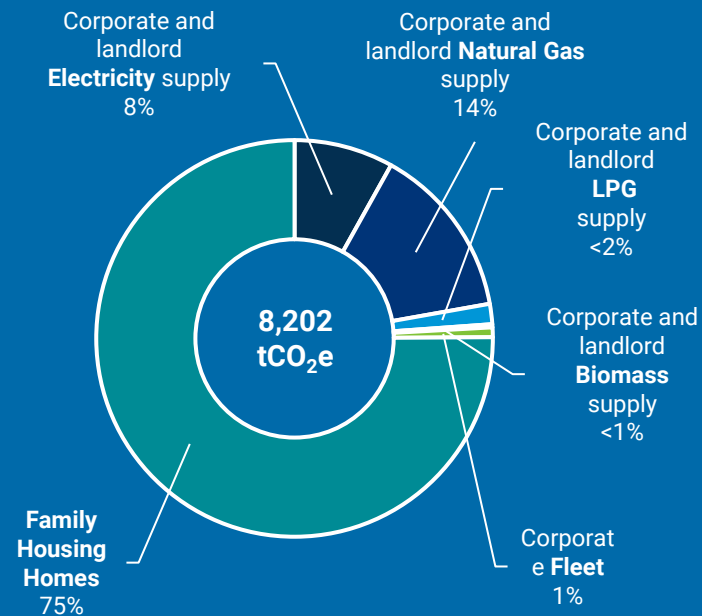
¹Development and Asset Management Committee meeting 21st October 2020, "Paving Report – Carbon Reduction, Decarbonisation and Way Forward"



Executive Summary

- The total measured **scope 1 and 2 carbon footprint**¹ for Family Housing for the financial year 2019/20 is **8,202 tCO₂e**.
- Of Family Housing's total emissions:**
 - 75% are from building energy consumption in its Homes** (energy sources used across Homes include natural gas, biomass, heating oil, LPG and electricity) where tenants procure energy themselves. Note that no primary energy consumption data was available. This aspect of the footprint was estimated based on typical industry performance metrics and asset information provided by Family Housing, where available (EPC rating, dwelling type, floor area). Homes provided with communal energy (such as extra care) are included in corporate consumption.
 - 8% are from electricity consumption** from landlord supplies², including the Swansea office.
 - 14% are from natural gas combustion** from landlord supplies², including the Swansea office.
 - <2% are from biomass used for communal heating** in certain housing schemes.
 - <1% are from LPG used for communal heating** in certain housing schemes.
 - 1% are from owned vans and leased pool cars.**

Total scope 1 & 2 carbon emissions¹ by source



¹ Scope 3 emissions for WTT and T&D associated with the extraction, refining, transportation and distribution of fuels used are not included (1,464 tCO₂e).

² This includes communal areas such as stairwells but also restaurants, hair salons, and communal living areas in larger schemes.

Executive Summary

Recommendations for future reporting

The measured carbon footprint has highlighted key areas that Family Housing can focus on to continually improve the accuracy of reporting, including:

1. Prioritise collecting actual activity data for key emissions sources.



- Using surveys to collect more accurate information around tenant behaviour (e.g. Energy consumption) and assets (e.g. Floor area, EPC ratings).
- Aiming for 100% EPC coverage for Family Housing Homes (currently ~94%).

2. Complete a Scope 3 screening exercise.



- Scope 3 emissions include all other indirect emissions that occur in Family Housing's value chain.
- Family Housing should complete a full scope 3 screening exercise to ensure the carbon footprint is comprehensive, and includes all emissions sources that are relevant, have the most significant emissions and offer the greatest emissions reduction opportunities. This could include emissions sources such as those from purchased goods and services, waste generated and business travel.

3. Engage key stakeholders.



- Engaging key stakeholders can be an impactful way to help reduce organisational emissions and identify priorities.
- For Family Housing, this could involve key stakeholders such as board and senior management members, tenants and employees, facilities and external stakeholders such as contractors for waste management services or other supplier. Engagement can be in the form of communications to raise awareness, encourage behaviour change or more collaborative with an aim to improve data quality and performance tracking.

4. Incorporate actual energy consumption for communal heating schemes across Homes



- Where actual consumption is available for communal heating schemes (because they are directly paid for by Family housing and recovered by a service charge), we recommend incorporating this into future emissions calculations. At the moment, 4,280 MWh of tenant consumption has been estimated for the 7 communal heating schemes at Windsor Road, Ty Eithin, Weig Fach Lane, Sir John Morris House, Robense House, Ty Derw and Swan Gardens.

Next Steps: Developing a decarbonisation strategy

The carbon footprint provides a starting point, from which Family Housing can begin to consider developing a strategy to manage climate-related risk and capitalise on the opportunities that it could bring. A strategy will ensure that Family Housing is prepared for the future in a changing climate. The key building blocks to consider are below, which form the strategic elements of the work proposed for Phase 2 of this work.

Engagement and Collaboration

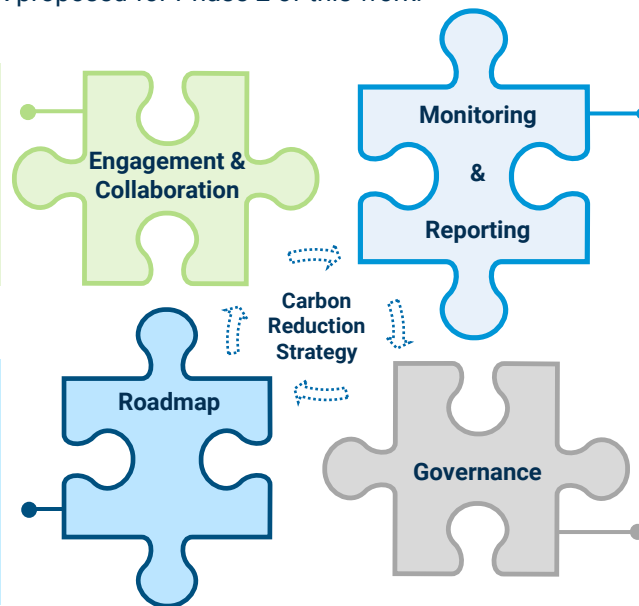
Engage key stakeholders from across Family Housing to drive action forwards and develop internal capability and knowledge around climate-related issues.

It can be in the form of communications to raise awareness and encourage behaviour change internally or collaboration with external suppliers to improve data quality and performance tracking.

Roadmap

A roadmap is an essential component of a strategy, and maps out how the target set will be reached through policies, projects and interventions.

Once an ambitious target has been set, a detailed strategy should be produced that demonstrates how to reach the target, including how to manage residual emissions that cannot be mitigated by considering offsetting mechanisms.



Setting targets

Setting ambitious emissions reduction targets drives momentum for change, can spark innovation and investment and ensures reductions meet national commitments.

We recommend setting science based targets that align to the latest climate science and national targets to meet Net Zero by 2030 and developing a complementary Roadmap for how to meet them.

Developing a monitoring and reporting framework

Implement an inventory management framework to facilitate future reporting which puts procedures in place for preparing emissions inventories and monitoring progress against defined KPIs. The framework should address key areas such as:

Methodology – Ensuring there is a clear methodology agreed for emissions calculation for each source, and that any estimation methods chosen accurately represent the characteristics of the source category.

Data – Identify data owners, and ensure that quality data is available for included emissions sources.

Processes – Identify a team responsible for the collection and review of data used for the inventory, integrating this into existing organisational processes.

Documentation – Develop a comprehensive blueprint for reporting the inventory each year aligned to best practises, which will ensure credibility and consistency in future reporting years.

Governance

Integrating climate-related issues into decision-making at board and management level is key to ensuring sufficient action is taken to reduce the risks of climate change. Governance mechanisms that increase accountability and transparency could be introduced, such as frequent board meetings or KPIs linked to remuneration.

Context, Background and Drivers

Context and Background to the report

Growing acknowledgement of the latest science and recommendations from the Climate Change Committee (CCC) has resulted in unprecedented recognition of the global climate emergency, and the need to act urgently to reduce carbon emissions and limit further global warming and associated environmental impacts.

Global initiatives are now focused on limiting warming to well below 2°C, aligning to the pledges outlined in the Paris Agreement. Despite this, warming continues, with the impacts being felt both nationally and internationally.

The Welsh Government declared a climate emergency in 2019 and accepted the recommendations from the CCC to target a 95% reduction in greenhouse gas emissions by 2050 relative to 1990. After the Welsh Government accepted the CCC's recommended target, it presented in parallel an ambitious plan to reach "net zero" by 2050, with a complementary target announced by the Partnership council that aims to achieve Net Zero in the public sector by 2030.

Family Housing acknowledge the need to take action on climate change and the role they can play in reducing emissions from the social housing sector. As a result, they have set out objectives in the current Business Plan to reduce their carbon footprint through a focus on retrofit in existing homes, internal training and development, and staff and stakeholder engagement.

They aim to use the outcomes of this carbon footprint report to inform and develop this plan designed to meet their statutory and Welsh national commitments.

Drivers for decarbonisation

Regulations

Building regulations contain requirements that relate to the conservation of both fuel and power. There are set minimum energy performance standards for new buildings and major refurbishments of existing buildings, and the Minimum Energy Efficiency Standard for privately rented homes (currently EPC Band E) is rising to Band C by 2030, which Family Housing subsequently has to meet. New homes will need to meet EPC A from April 2021.

Local drivers

The Welsh Government declared a climate emergency in 2019 and accepted the recommendations from the CCC to target a 95% reduction in greenhouse gas emissions by 2050 relative to 1990. The Welsh Government has also presented in parallel an ambitious plan to go further and reach "net zero" by 2050, with the Welsh public sector aiming to be carbon neutral by 2030. It was further stated that Registered Social Landlords and Housing Associations will be expected to decarbonise their Social rented homes.

Reputation

With stretching national and local targets, there is increasing pressure on all organisations to be seen as "doing their bit" and playing a role in climate change action. Failure to act could lead to reputational risks and adversely affect Family Housing's public image.

Legislation

Following recommendations from the Committee on Climate Change, in June 2019 the Climate Change Act was updated to legally commit the UK government to reducing emissions by at least 100% by 2050 (net zero) compared to 1990 levels.

Cost Savings

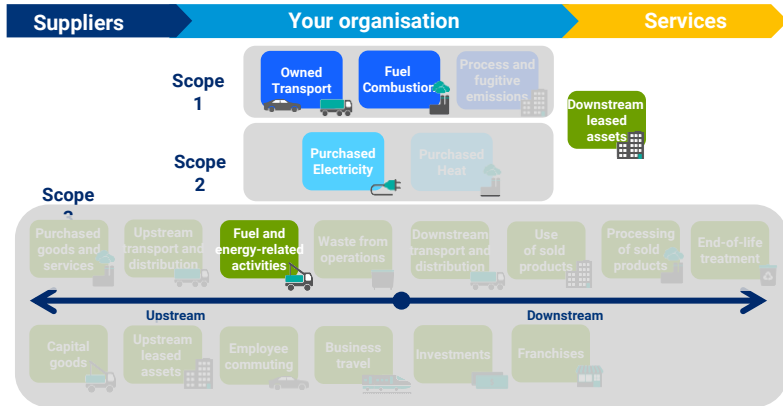
Lowering energy consumption to reduce carbon emissions also reduces the amount spent on energy bills. This is a key driver for both Family Housing and their tenants.

Carbon Footprint Boundary

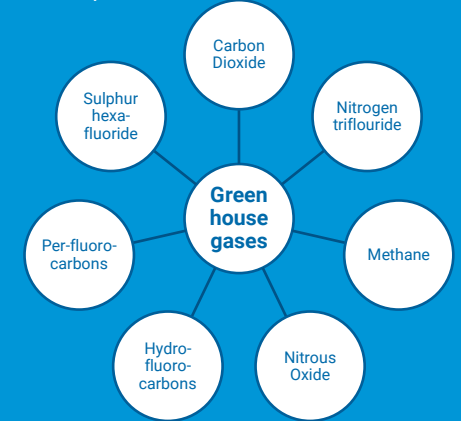
Carbon footprint boundary – scope

Family Housing’s carbon footprint has been calculated according to the World Resources Institute (WRI) **Greenhouse Gas (GHG) Protocol**, which categorises emissions sources into scopes¹:

- **Scope 1:** Direct GHG emissions from the combustion of fuel within the organisational boundary (e.g. building energy and transport).
- **Scope 2:** Indirect GHG emissions from the consumption of purchased electricity, heat or steam.
- **Scope 3²:** Other indirect emissions, not covered in Scope 2, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the organisation, electricity-related activities (e.g. transmission and distribution (T&D) losses), outsourced activities and waste disposal.



- Carbon dioxide is not the only greenhouse gas. There are 6 other greenhouse gases that contribute to global warming and are covered by the Kyoto Protocol³.
- Each gas has a global warming potential (GWP). By comparing each gas’s GWP to that of carbon dioxide (CO₂) we are able to derive a carbon dioxide equivalent value (CO₂e) which is the commonly used unit to report GHG emissions.



- Although CO₂ has the lowest GWP, it is also by far the most abundant GHG emission. Hence the focus on CO₂ when discussing emissions reduction and climate change.

¹Note that tenanted properties have been included in Scope 1 & 2 even though they are classified as “downstream leased assets”. Rationale for this decision is explained on slide 14.
²Only emissions from upstream fuel and energy-related activities have been included as part of scope 3 reporting. This refers to emissions associated with the extraction, refining, transport and distribution of fuels and other energy sources e.g. electricity, natural gas, petrol. Other scope 3 emissions have not been considered in this iteration of the carbon footprint, but may be considered in future reporting.
³ The Kyoto Protocol operationalises the United Nations Framework Convention on Climate Change by committing industrialised countries and economies in transition to limit and reduce greenhouse gases (GHG) emissions in accordance with agreed individual targets.

Carbon footprint boundary – included emissions sources

Family Housing have chosen to include the following emissions sources in their carbon footprint.

	Element	Data
Scope 1	Corporate and landlord supply heating fuels consumption	Annual heating fuel consumption (kWh), fuel type and spend for the Family Housing office and landlord supplies ¹ .
	Fleet vehicles mileage	Annual fleet vehicle mileage, vehicle details and fuel type for Family Housing’s owned fleet.
	Family Housing Homes <u>estimated</u> heating fuel consumption	Annual heating fuel use (kWh) for 2,828 ¹ (as of 31 st March 2020) tenanted properties (estimated based on benchmarks and asset data).
Scope 2	Corporate and landlord supply electricity consumption	Annual electricity use (kWh) and spend for the Family Housing office and landlord supplies ¹ .
	Family Housing Homes <u>estimated</u> electricity consumption	Annual electricity use (kWh) and spend for 2,828 ¹ (as of 31 st March 2020) tenanted properties (estimated based on benchmarks and asset data).
Scope 3	Other energy and fuel-related activities ²	Calculated using data received for Scope 1 and 2

The Homes are assets wholly owned or leased by Family Housing that are rented to tenants who directly pay the energy bills or provided with communal energy. The Homes are included on Family Housing’s balance sheet.

Following guidance set out in the GHG Protocol, it was concluded that the Homes falls within the organisational boundary and was included within Family Housing’s Scope 1 and 2 emissions for the following reasons:

Size

Family Housing’s Homes contribute significantly to the organisation’s total anticipated emissions.

Influence

Family Housing have control and influence over the built assets, including building fabric, lighting, energy sources, maintenance and upkeep. Therefore, emission reduction measures beyond user behaviour can be undertaken or influenced by the organisation.

Spending & Revenue Analysis

Family Housing’s Homes are a primary area of the organisation that requires a high level of spending and generates a high level of revenue.

¹Based on unique site codes. Note, 461 dwellings are supplied with heat and electricity, 117 with heat. These are not estimated in the overall footprint.

²Upstream emissions associated with the extraction, refining, transport and distribution of fuels and other energy sources e.g. electricity, natural gas, petrol. .

Carbon footprint boundary – excluded emissions sources

The GHG Protocol recognises that there are several reasons why an organisation may exclude sources of emissions from an emissions inventory, either due to a lack of relevance or due challenges in collating reliable data. For this footprint it was agreed that the following emissions sources would not be included but that each would be kept under review for inclusion in future iterations.

	Category	Category Description	Notes
Scope 1	Process and fugitive emissions	Emissions directly released in to atmosphere from process operations.	Not relevant.
Scope 2	District heating and cooling	Emissions released from heating and cooling from district sources.	Not relevant: Family Housing do not use district heating or cooling in any operated buildings or tenanted stock. Communal heating schemes where energy sources are “on-site” are considered in Scope 1 and Scope 2 – electricity consumption.
Scope 3 (Upstream)	Purchased goods and services	Upstream (i.e., cradle-to-gate) emissions from the production of products and services purchased or acquired by the reporting company in the reporting year.	Relevant, not included but may be considered in the near future.
	Capital goods	Emissions from the extraction, production and transportation of capital goods purchased or acquired.	Not currently considered, relevance will be assessed in due course.
	Upstream transportation and distribution	Emissions from the transportation and distribution of purchased products and services between the supplier and Family Housing.	Relevant, not included but may be considered in the near future.
	Waste generated in operations	Emissions from third-party disposal and treatment of waste generated in the reporting company’s owned or controlled operations in the reporting year. Includes wastewater.	Relevant, not included but may be considered in the near future.
	Business travel	Emissions from the transportation of employees for business-related activities in vehicles owned or operated by third parties (e.g. aircraft, trains etc.).	Relevant, not included but may be considered in the near future.
	Employee Commuting	Emissions from the transportation of employees between their homes and their worksites.	Relevant, not included but may be considered in the near future.
	Upstream leased assets	Emissions from the operation of assets leased to Family Housing by a third-party.	Not relevant: Family Housing don’t lease any assets from third parties.

Carbon footprint boundary – excluded emissions sources continued

	Category	Category Description	Notes
Scope 3 (Downstream)	Downstream transportation and distribution	Emissions from the transportation and distribution of sold products.	Not relevant: Family Housing don't transport or distribute sold products.
	Processing of sold products	Emissions from the processing of intermediate products sold by downstream companies.	Not relevant: Family Housing don't have sold products.
	Use of sold products	Emissions from the use of sold goods and services sold to consumers.	Not relevant: Family Housing don't sell products to third parties.
	End-of-life treatment of sold products	Emissions from the waste disposal and treatment of sold products.	Not relevant: Family Housing don't have sold products.
	Franchises	Emissions from the operation of franchises in the reporting year.	Not relevant: Family Housing don't have any franchises.
	Investments	Emissions from the operation of investments in the reporting year.	Not currently considered. Relevance will be assessed in due course.

Data Collection and Assumptions



Data collection and assumptions

Consumption data for Family Housing operated assets, fleet and tenanted stock has been sourced by Family Housing, and has been reviewed by Carbon Trust.

The table below summarises the sources of the data provided by Family Housing for the footprint calculations.

Raw data	Evidence provided
Vehicle fleet mileage	Annual mileage, vehicle type and fuel type.
Operated sites heating fuel consumption	Gas annual report 2019/20. Invoices for the purchase of LPG 2019/20 Total mass and costs of biomass (pellets) purchased in 2019/20 Communal / Tenant service charge ratio
Operated sites electricity consumption	Electricity annual report 2019/20.
Family Housing Homes asset details	Family Housing asset register.

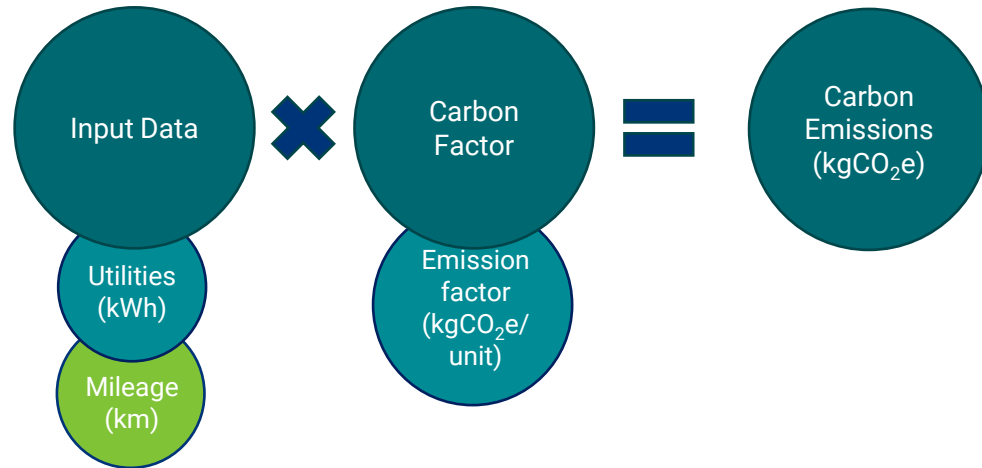
Carbon Footprint Methodology



Carbon footprint methodology

A carbon footprint is calculated by multiplying activity data (e.g. litres of vehicle fuel, kWh of electricity/gas) collected over the reporting period by an associated emissions factor.

Emission factors are updated annually and published by the UK Government's Department for Business, Energy and Industrial Strategy (BEIS).

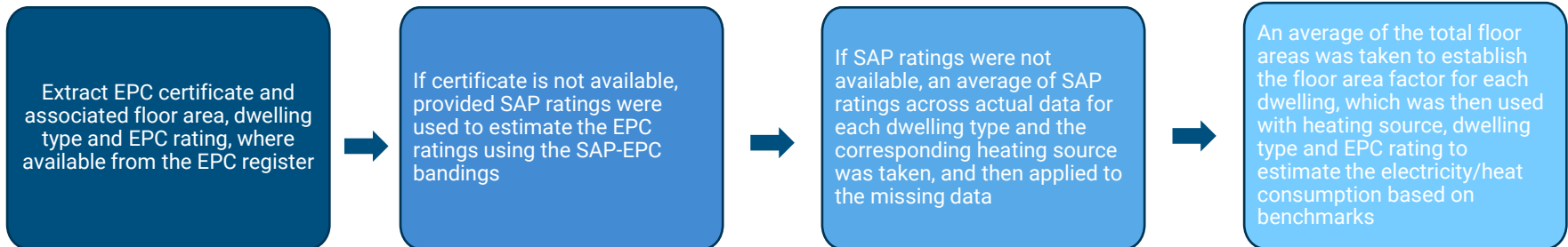


In the following sections, emissions are discussed using a breakdown by emissions source, as well as using the GHG Protocol's scope definitions:

- Vehicle fleet
- Family Housing operated properties (buildings or areas of buildings for which Family Housing pay energy bills)
- Family Housing Homes (tenanted dwellings)

Family Housing homes – estimation approach

- Family Housing currently leases **2,856 homes** (2,828 in the reporting period 2019/20). Except communal schemes, tenants procure energy by their chosen energy supplier (i.e. Family Housing does not know how much energy tenanted homes consume).
- Due to the complexity of accessing this billing data, electricity and gas consumption, energy consumption was estimated based on published benchmarks for UK social housing per unit floor area, by Energy Performance Certificate (EPC) rating and dwelling type¹.
- Family Housing provided the relevant asset data, including EPC rating, dwelling type, heating source and floor area. Where this information was available, the benchmarks were applied to estimate energy consumption for dwellings.
- Properties were divided into 5 categories including: Flat, Detached, Semi-detached, Terrace and Bungalows. Any properties that were listed as Room, Bedsit or Maisonette in the data collection sheet were estimated based on the benchmark available for flats. All types of semi-detached or detached properties were categorized as semi-detached or detached. Terraced Houses and Bungalows were categorized as terrace and bungalow respectively. Of note:
- **181** properties out of **2,828** had no EPC/SAP data which is approximately **6.4%** of the total properties.
- **28** properties were built after the reporting period and are excluded from reporting. These properties consumed **306,005 kWh** of total energy consumption, equivalent to **32.5 tCO₂e** (Scope 1+2 only).
- For dwellings where data was unavailable, the following estimation approach was applied:

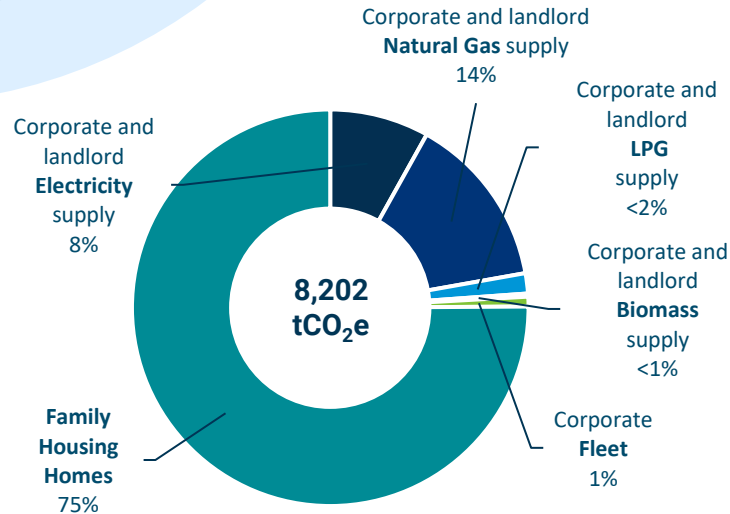


¹ BEIS, Domestic energy consumption by energy efficiency and environmental impact, 2015

Carbon Footprint Breakdown

Family housing carbon footprint FY 19/20

Total scope 1 & 2 carbon emissions¹ by source



Carbon Footprint Overview

- The total measured scope 1 and 2 carbon footprint¹ for Family Housing for the financial year 2019/20 is **8,202 tCO₂e**.
- Of Family Housing's total emissions:
 - 75% are from building energy consumption in its Homes (energy sources used across Homes include natural gas, biomass³, heating oil, LPG and electricity) where tenants procure energy themselves. Note that no primary energy consumption data was available. This aspect of the footprint was estimated based on typical industry performance metrics and asset information provided by Family Housing, where available (EPC rating, dwelling type, floor area). Homes provided with communal energy (such as extra care) are included in corporate consumption.
 - 8% are from electricity consumption from landlord supplies², including the Swansea office.
 - 14% are from natural gas combustion from landlord supplies², including the Swansea office.
 - <2% are from biomass³ used for communal heating in certain housing schemes.
 - <1% are from LPG used for communal heating in certain housing schemes.
 - 1% are from owned vans and leased pool cars.

¹ Scope 3 emissions for WTT and T&D associated with the extraction, refining, transportation and distribution of fuels used are not included (1,464 tCO₂e).

² This includes communal areas such as stairwells but also restaurants, hair salons, and communal living areas in larger schemes.

³ CO₂ emissions associated with burning biofuels are considered net 0, because the same amount of CO₂ released is absorbed during material growth. CO₂ emissions arising from corporate and landlord biomass combustion are 21 tCO₂. CO₂ emissions from tenant biomass combustion are 4 tCO₂. These emissions are excluded from final reporting but included for transparency as per the GHG Protocol.

Family housing carbon footprint FY 19/20

A further breakdown by emissions source of Family Housing's Scope 1+2 emissions is provided below.

Total scope 1 & 2 carbon emissions¹ by source

Responsibility	Emissions Source	Total Scope 1+2 emissions (tCO ₂ e)	% of total emissions
Corporate and landlord supply	Natural gas	1,157	14.1%
	Electricity	664	8.1%
	LPG	135	1.6%
	Biomass	21	0.3%
Family Housing Homes (tenant supply)	Natural gas	5,494	67.0%
	Electricity	543	6.6%
	Biomass	44	0.5%
	Other fuels (LPG, heating oil)	77	0.9%
Corporate	Fleet	65	0.8%
	Grand total	8,202	

¹ Scope 3 emissions for WTT and T&D associated with the extraction, refining, transportation and distribution of fuels used are not included (1,464 tCO₂e).

²This includes communal areas such as stairwells but also restaurants, hair salons, and communal living areas in larger schemes.

³CO₂ emissions associated with burning biofuels are considered net 0, because the same amount of CO₂ released is absorbed during material growth. CO₂ emissions arising from corporate and landlord biomass combustion are 21 tCO₂. CO₂ emissions from tenant biomass combustion are 4 tCO₂. These emissions are excluded from final reporting but included for transparency as per the GHG Protocol.

Emissions Breakdown – Source

Fuels used for building energy in the Family Housing office and communal areas in Homes

- Gas and other fuels consumption and cost data was consolidated from supplier invoices.
- These emissions are from the Family Housing office and communal areas where it directly pays the utility bills.
- In 2019/20, **6,295 MWh** of natural gas, **13 MWh** of LPG and **57 MWh** of biomass across the office and communal areas across homes.
- This is equivalent to **1,314 tCO₂e³**, **16%** of the total carbon footprint.
- The 10 Family Housing sites** with the highest emissions from other fuels used for building energy are shown in the table on the right.

The most effective methods for reducing natural gas consumption and associated emissions in buildings are to upgrade building fabric; service or replace aging boilers; electrification of heat (heat pumps); and adjust and monitor heating controls and temperature set points.

Family Housing office, communal areas ¹	Scope 1 Emissions (tCO ₂ e)	Cost to Family Housing	% of total natural gas costs
Hazel Court ² , Sketty SA2 8HJ	356	£42,031	26%
Flat 23 Princess of Wales Court, Mansel Road, Bonymaen, Swansea SA1 7ES	198	£26,593	16%
Cartref Cynnes, Argel Extra Care Facility, Llansteffan Road, Johnstone SA31 3NQ	158	£21,947	14%
Bro Preseli Extra Care Home, Heol Parc Y Ffair, Crymych SA41 3QE	135	£33,526	n/a (LPG)
Gwynfryn Extra Care Facility, Rhodfa Frank, Ammanford Dyfed SA18 2LP	111	£14,596	9%
Maes Mwldan, Bath House Road, Cardigan SA43 1JY	105	£14,330	9%
Swan Gardens, Swansea SA1 4DQ	49	£7,563	5%
St Nicholas Square, Maritime Quarter, Swansea SA1 1UG	33	£5,579	3%
Drovers Court, Gowerton, Swansea SA4 3JA	31	£5,312	3%
6-7 Slate Street, Swansea SA6 8AY	21	£3,341	2%
Total	1,197	£174,818	87%

¹Which includes communal supply. Note, Bro Preseli LPG gas consumption data from 20/21 was used

²Cost does not include biomass, GHG emissions contribution of biomass is 21 tCO₂e which is included in the overall 356 tCO₂e from Hazel Court.

³Scope 3 emissions for WTT and T&D associated with the extraction, refining, transportation and distribution of fuels used are not included (218 tCO₂e).

Emissions Breakdown – Source

Electricity consumption in the Family Housing office and communal areas in Homes

- Electricity consumption and cost data was consolidated from supplier invoices.
- These emissions are from the Family Housing office and communal areas where it directly pays the utility bills.
- In 2019/20, **2,596 MWh** of electricity was consumed across the office and communal areas in Homes.
- This is equivalent to **664 tCO₂e¹**, **8%** of the total carbon footprint.
- The 10 Family Housing sites** with the highest emissions electricity are shown in the table on the right.

The most effective methods for reducing electricity consumption and associated emissions are to switch to LED lighting, upgrade appliances to energy efficient types and encourage behavioural change. Family Housing should also consider installing renewable energy generation to provide zero carbon electricity. Building mounted solar PV systems can be relatively cost-effective decarbonisation options (e.g. ~10 years simple payback).

Family Housing office, communal areas ¹	Scope 2 Emissions (tCO ₂ e)	Cost to Family Housing	% of total electricity costs
Hazel Court, Sketty SA2 8HJ	189	£104,741	27%
Cartref Cynnes, Argel Extra care Facility, Llansteffan Road, Johnstone SA31 3NQ	82	£45,688	12%
Gwynfryn Extra Care Facility, Rhodfa Frank, Ammanford Dyfed SA18 2LP	72	£38,642	10%
Maes Mwldan, Bath House Road, Cardigan SA43 1JY	72	£38,124	10%
Bro Preseli Extra Care Home, Heol Parc Y Ffair, Crymych SA41 3QE	58	£33,220	8%
Llys Ael Y Bryn, Swansea SA4 9AA	13	£6,931	2%
42 Walter Road, Swansea SA1 5PN	13	£8,073	2%
Flat 23, Princess of Wales Court, Mansel Road, Bonynmaen, Swansea SA1 7ES	9	£5,468	1%
Drovers Court, Gowerton, Swansea SA4 3JA	9	£5,378	1%
Traherne Court, Stratton Way, Neath SA10 7EE	8	£4,802	1%
Total	525	£291,067	74%

¹Scope 3 emissions for WTT and T&D associated with the extraction, refining, transportation and distribution of fuels used are not included (157 tCO₂e).

Emissions breakdown – emissions from head Office¹

Emissions from Head Office at 42 Walter Road, Swansea

- Scope 1 & 2 emissions from Walter Road accounted for **28 tCO₂e** in FY 2019/20, which is less than **1%** of Family Housings overall emissions.

 **78,724 kWh of gas**

 **51,849 kWh electricity**

- Even though consumption is relatively small, Family Housing may have more influence over changes that could be made to reduce the environmental impacts associated with the office. Some of the ways this could be achieved are through the following suggested measures:
 - Applying temperature and time controls to heating system
 - Consider alternative, low-carbon heating technologies such as heat pumps, that offer greater efficiencies as well as significant emissions savings
 - Consider renewable energy generation such as roof mounted solar PV

The industry-recognised CIBSE benchmarks for typical and best practice energy consumption in buildings can be used to assess building performance of 42 Walter Road. The head office currently performs worse than the benchmark.
 If the office were to perform at the best practice benchmark, Family Housing could save approximately 80 kWh of energy annually, which approximately saves 14 kgCO₂e/yr.

Site	EPC	kWh/m ²	kgCO ₂ /m ²	CIBSE Office Benchmark (good-typical practice) kWh/m ²
42 Walter Road	D ²	487	92	225-404

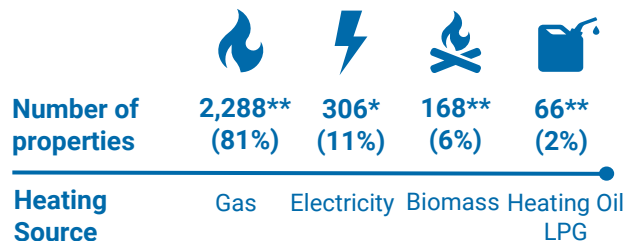
¹Scope 3 emissions for WTT and T&D associated with the extraction, refining, transportation and distribution of fuels used are not included (5 tCO₂e).
²An EPC certificate for 42 Walter Road was not found so the certificate for 40 Walter Road was used as a proxy, assuming the properties on this road are of similar archetypes.

Emissions Breakdown – Emissions¹ from Family Housing homes by source (FY19/20)

Fuel used for building energy & electricity consumption

- Emissions were estimated for **2,828 properties** in Family Housing’s Homes. This accounted for all Homes operational within the reporting period.
- 82% (2,328 properties)** of properties use natural gas for heating.
- The consumption of fuels (natural gas, heating oil, LPG and biomass) in these properties equates to an estimated annual cost to tenants of approximately **£680,000¹**, while electricity consumption (including electric heat) equates to an estimated annual cost to tenants of approximately **£1.7M¹**.

Number of properties by heating type



*four of which are air source heat pumps

**includes tenanted properties provided with heat from a central plant

Total energy consumption and associated emissions by scope and fuel type

Scope	Emissions source	Energy (MWh)	Emissions (tCO ₂ e) ²
2	Electricity	9,937	2,540
1	Natural Gas	19,349	3,557
1	Heating Oil	150	37
1	LPG	96	21
1	Biomass Heat	282	4
Total		29,813	6,159

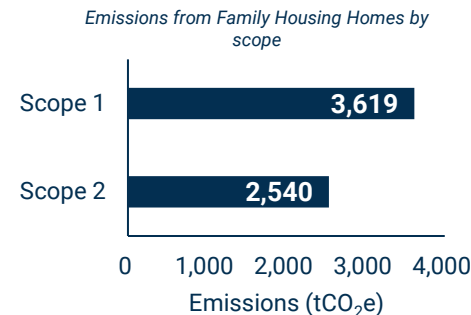
¹ Heating costs estimated at 3.4p/kWh and electricity costs estimated at 17.4p/kWh sourced from quarterly energy prices for South Wales for CY 2020 [QEP 2.2.4 and QEP 2.3.4.]

² Scope 3 emissions for WTT and T&D associated with the extraction, refining, transportation and distribution of fuels used are not included (1,073 tCO₂e).

Emissions Breakdown – Emissions¹ from Family Housing homes by dwelling type (FY19/20)

Emissions from Family Housing Homes

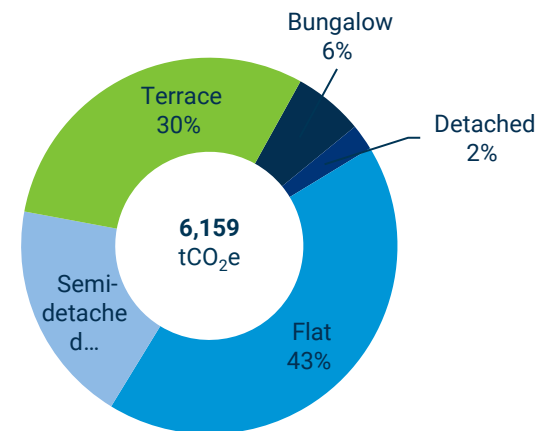
- Family Housing Home’s **6,159 tCO₂e** total estimated carbon emissions¹ are composed of **59% scope 1** emissions (combustion of fossil fuels), **41% scope 2** emissions (electricity consumption).
- Flats and terrace properties contribute **73%** to total Homes emissions. However, detached houses have the highest average emissions intensity across Homes.
- The table below shows the average emission intensity breakdown by dwelling type.



Emissions and energy intensity metrics by dwelling type

Family Housing Dwelling type	Number of units	Carbon Emission intensity (kgCO ₂ e/m ²) ¹	Total Energy Consumption intensity (kWh/m ²)
Detached	26	68.9	293
Flat	1,594	39.2	156
Semi-detached	392	44.7	188
Terrace	623	42.0	178
Bungalow	193	41.1	174

Scope 1+2 emissions from Family Housing Homes by dwelling type



¹Scope 3 emissions for WTT and T&D associated with the extraction, refining, transportation and distribution of fuels used are not included (1,073 tCO₂e).

Emissions Breakdown – Emissions¹ from Family Housing homes by EPC (FY19/20)

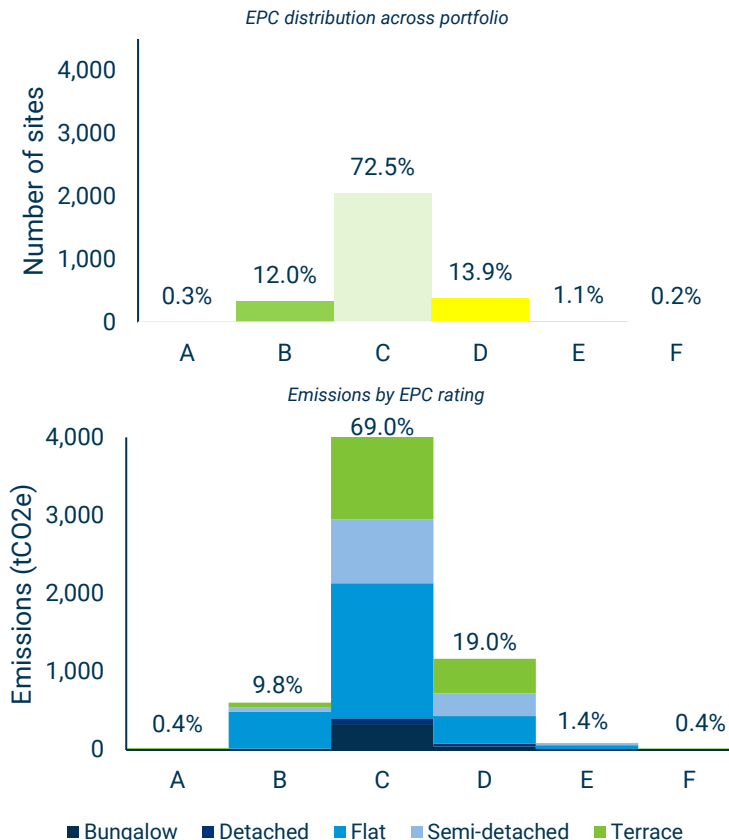
Emissions from Family Housing Homes

The graph on the top-right depicts the amount of homes in each EPC rating band. EPC certificates were available for **94%** of properties in Family Housing’s Homes.

- Of these properties:
 - **84.8%** are EPC rating C and above;
 - **72.0%** are EPC rating C;
 - **15.2%** are EPC rating D and below.

The graph on the bottom-right shows the total emissions estimated for the home type broken down by EPC rating.

- **69.0%** of greenhouse gas emissions arise from dwellings rated **EPC C**.
- Even though only **13.9%** of dwellings have an EPC rating of D, these contribute to **19.0%** of the overall emissions.
- It should be noted here that partial EPC coverage of buildings often comes with a bias in that better performing properties usually have an EPC as they are new developments, or recently renovated.
- EPC ratings can be improved within the Homes through measures such as improving fabric efficiencies (loft insulation, double glazing, smart thermal systems).
- Tenant behaviour and uptake of low-carbon upgrades is also a critical aspect. Family Housing should look to develop and message its decarbonisation ambitions in a targeted and useful way to help build support with tenants.

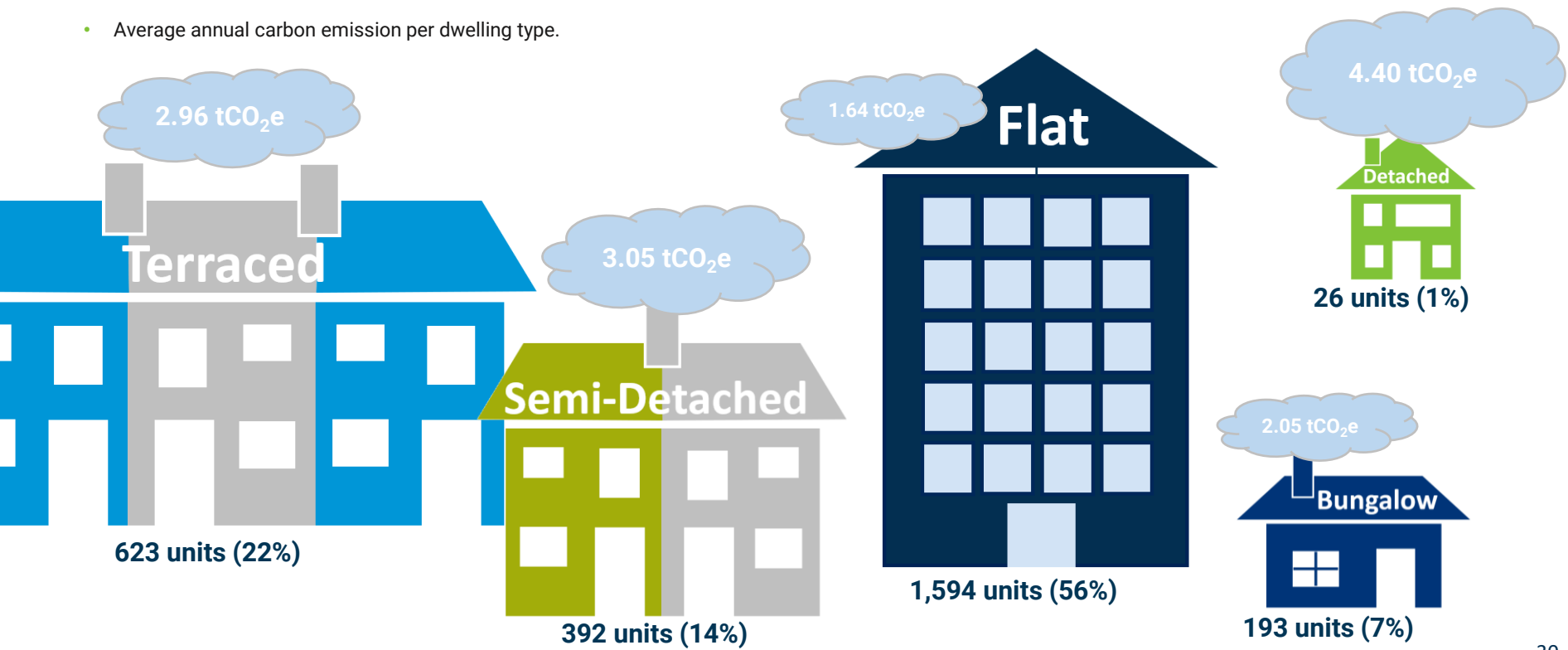


¹Scope 3 emissions for WTT and T&D associated with the extraction, refining, transportation and distribution of fuels used are not included (1,073 tCO₂e).

Emissions Breakdown – Emissions¹ from Family Housing homes by dwelling type (FY19/20)

Emissions from Family Housing Homes

- Average annual carbon emission per dwelling type.



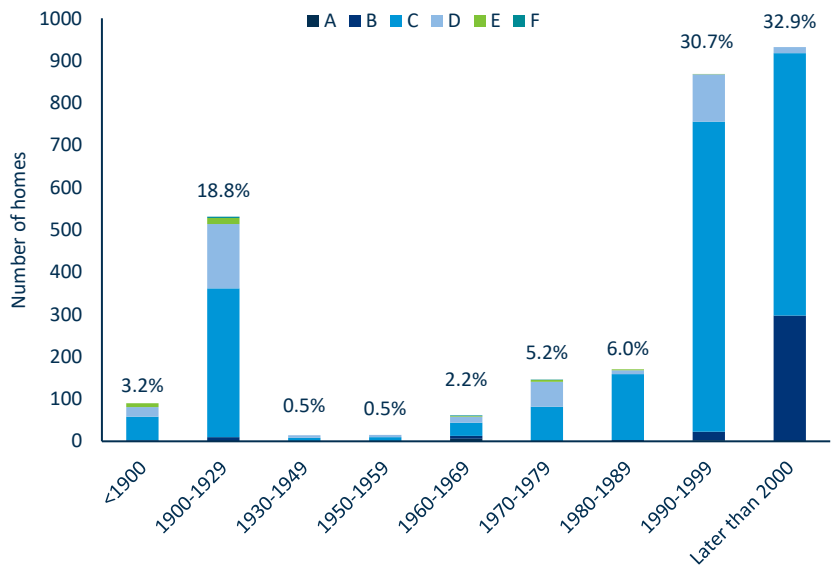
¹Scope 3 emissions for WTT and T&D associated with the extraction, refining, transportation and distribution of fuels used are not included in intensity calculations.

Emissions Breakdown – Emissions¹ from Family Housing homes by age band (FY19/20)

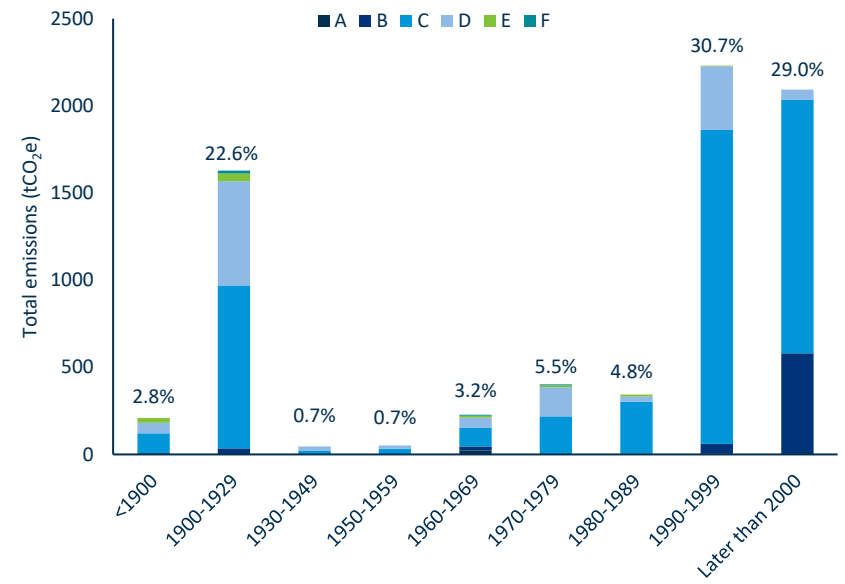
Emissions from Family Housing Homes

- Family Housing homes are constructed predominantly post 1990s (64%) and pre 1930s (22%). The associated carbon emissions follow this trend while the dwellings constructed before the 1930s stand out by their higher emission intensity, particularly those with EPC D and below.

Percentage split of homes in each age band



Emissions by age band and EPC



¹Scope 3 emissions for WTT and T&D associated with the extraction, refining, transportation and distribution of fuels used are not included (1,073 tCO₂e).



Emissions breakdown – Emissions¹ from Family housing fleet (FY19/20)

Company-owned fleet

- Family Housing owns/leases 21 vehicles; 3 passenger vehicles and 18 vans. These vans are used for homes maintenance and repairs, as well as specific functions such as for temporary bathroom/kitchen facilities.
- Emissions from the fleet were **65 tCO₂e** in 2019/20, which is **1%** of Family Housing's total footprint.
- In 2019/20, Family Housing's owned fleet covered **145,436 miles**, equivalent to **1,040 return trips from Swansea to Aberystwyth***.
- The vehicles in Family Housing's diesel fleet were manufactured in 2019. Family Housing do not currently own or lease any electric vehicles.



Pool Cars
9,134 miles



Vans
136,302 miles

gCO ₂ /km		
	170	39

The average tCO₂/km of vans in Family Housing's fleet is **~272 gCO₂/mile**. The average electric van emits **50 gCO₂/mile**, ~4 times less than a diesel van.

Road transport is **91% of domestic transport emissions** in the UK².

Future UK targets will state manufacturers have to achieve a 15% reduction by 2025 and 31% reduction by 2030 for vans from the new 2021 baseline.

As part of this drive, the Government announced a ban on the sale of new petrol/diesel vehicles from 2030 and to support this, is investing in the development of charge point infrastructure at homes, workplaces and other areas. There are also grants available for plug-in vans, in the hope of increasing the convenience of owning this type of vehicle and encouraging their uptake. Electrification or switching to low/zero carbon fuels for Family Housing's fleet will be the main option to decarbonise this area.

Cost parity in the near future and the resulting business case for EVs is likely to make it a cost-effective solution for Family Housing in the near future.

¹Scope 3 emissions for WTT and T&D associated with the extraction, refining, transportation and distribution of fuels used are not included (16 tCO₂e).

²CO₂ emission performance standards for new passenger cars and light commercial vehicles - GOV.UK (www.gov.uk)

*equivalence based on the journey from Swansea to Aberystwyth to be approximately 70 miles by road one-way.





Family housing carbon footprint FY 19/20 Summary

The below table summarises Family Housing's total scope 1 and 2 greenhouse gas emissions³ for the FY 19/20 by source.

Source	Scope 1 Emissions (tCO ₂ e)	Scope 2 Emissions (tCO ₂ e)	Total Emissions ¹ (tCO ₂ e)
Building energy from the office and communal areas	1,314	664	1,978
Family Housing Homes ²	3,619	2,540	6,159
Fleet	65	---	65
Total	4,998	3,203	8,202

¹Scope 3 emissions for WTT and T&D associated with the extraction, refining, transportation and distribution of fuels used are not included (1,464 tCO₂e).

²Emissions from Family Housing Homes are estimated based on EPC, dwelling type and floor area. The estimation approach is described in more detail in the Methodology section of this report.

³CO₂ emissions associated with burning biofuels are considered "net 0", because the same amount of CO₂ released during combustion is absorbed during material growth. CO₂ emissions arising from corporate and landlord biomass combustion are 21 tCO₂. CO₂ emissions from tenant biomass combustion are 4 tCO₂. These emissions are excluded from final reporting but included for transparency here as per the GHG Protocol.

Recommendations and Next Steps

Next Steps: Developing a decarbonisation strategy

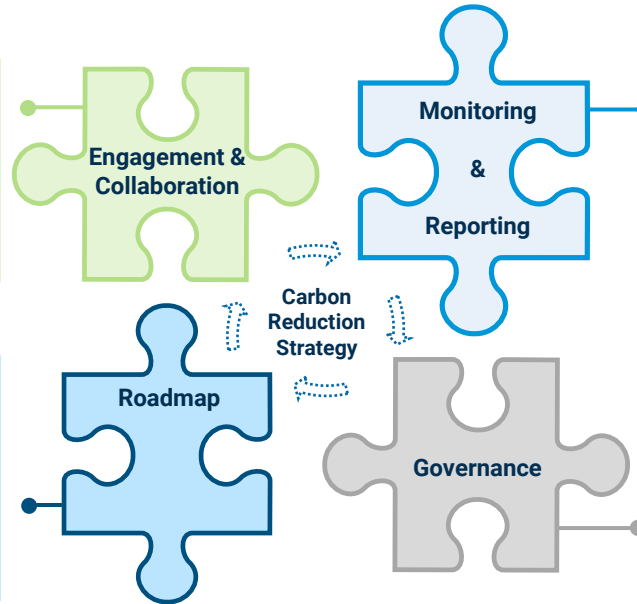
The carbon footprint provides a starting point, from which Family Housing can begin to consider developing a strategy to manage climate-related risk and capitalise on the opportunities that it could bring. A strategy will ensure that Family Housing is prepared for the future in a changing climate. The key building blocks to consider are below, which form the strategic elements of the work proposed for Phase 2 of this work.

Engagement and Collaboration

Engage key stakeholders from across Family Housing to drive action forwards and develop internal capability and knowledge around climate-related issues. It can be in the form of communications to raise awareness and encourage behaviour change internally or collaboration with external suppliers to improve data quality and performance tracking.

Roadmap

A roadmap is an essential component of a strategy, and maps out how the target set will be reached through policies, projects and interventions. Once an ambitious target has been set, a detailed strategy should be produced that demonstrates how to reach the target, including how to manage residual emissions that cannot be mitigated by considering offsetting mechanisms.



Setting targets

Setting ambitious emissions reduction targets drives momentum for change, can spark innovation and investment and ensures reductions meet national commitments. We recommend setting science based targets that align to the latest climate science and national targets to meet Net Zero by 2030 and developing a complementary Roadmap for how to meet them.

Developing a monitoring and reporting framework

Implement an inventory management framework to facilitate future reporting which puts procedures in place for preparing emissions inventories and monitoring progress against defined KPIs. The framework should address key areas such as:

Methodology – Ensuring there is a clear methodology agreed for emissions calculation for each source, and that any estimation methods chosen accurately represent the characteristics of the source category.

Data – Identify data owners, and ensure that quality data is available for included emissions sources.

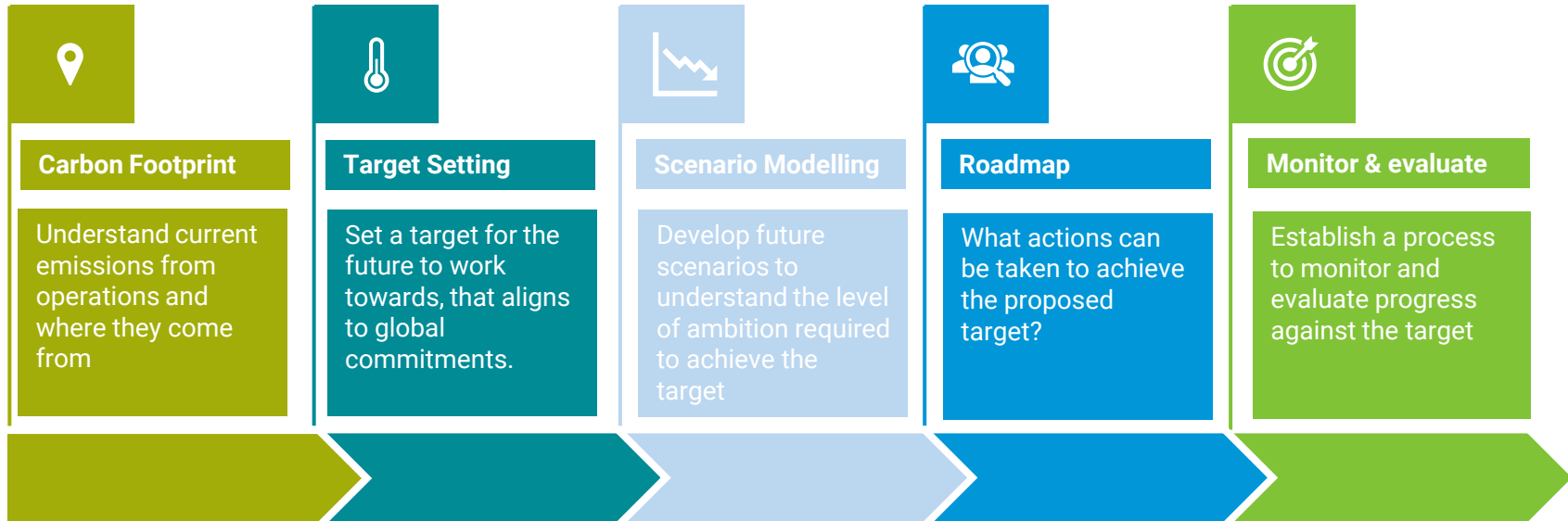
Processes – Identify a team responsible for the collection and review of data used for the inventory, integrating this into existing organisational processes.

Documentation – Develop a comprehensive blueprint for reporting the inventory each year aligned to best practises, which will ensure credibility and consistency in future reporting years.

Governance

Integrating climate-related issues into decision-making at board and management level is key to ensuring sufficient action is taken to reduce the risks of climate change. Governance mechanisms that increase accountability and transparency could be introduced, such as frequent board meetings or KPIs linked to remuneration.

Next Steps



Appendices & References

Appendix – References

- Energy utilities data, fleet vehicle mileage, staff business mileage claims, waste volumes, contract values – Family Housing Association
- Emission Factors – BEIS <https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting>
- EEIO emission factors https://ghgprotocol.org/sites/default/files/standards/Scope3_Calculation_Guidance_0.pdf
- Policies – Welsh Government <https://gov.wales/welsh-public-sector-be-carbon-neutral-2030>
- Average monthly fuel prices <https://www.gov.uk/government/statistical-data-sets/oil-and-petroleum-products-monthly-statistics>
- UK Housing Association domestic energy consumption by EPC rating and dwelling type <https://www.gov.uk/government/publications/energy-trends-december-2017-special-feature-article-domestic-energy-consumption-by-energy-efficiency-and-environmental-impact-2015>

Appendix – Data collection Query log

Post code	Average floor area (m2)	MIN	MAX	Floor area variance (m2)	CT Questions	FH Response	CT response 2
SA15 2RH	92	58	126	68	2 mid terrace houses with very different floor areas. Please can you confirm if this is correct?	The areas are correct	OK, thank you
SA6 8JW	83	36	132	96	Large variations in floor areas for the same archetypes. Can you confirm these floor areas are correct?	The areas are correct	OK, thank you
SA5 8JP	66	43	126	83	Entry 560 looks much larger than other entries. Please can you confirm if this is correct?	Updated	OK, thank you
SA1 1TY	63	38	168	130	All flats here	Yes- some 2x floor maisonettes	OK, thank you for confirming
SA1 1LL	52	37	103	66	Is Entry 1356 correct?	Updated	OK, thank you
SA1 4LH	34	13	80	67	Flats with small floor areas. Are these rooms in bedsits?	Correct - bedsits	OK, can see the updates to the dwelling type which is clear

Appendix – Data collection Query log continued

Status	Query number	Tab	Questions	FH Response	CT response 2	FH Response 2
Closed	1	Tenanted Dwellings	Number of dwellings is 2,865. Website states there are 2,800.	This figure has been reduced to account for recent property disposals. The website figure excludes rooms and recent acquisitions.	OK	
Closed	2	Tenanted Dwellings	Dwelling type: "block external". Can you define what type of area this refers to?	None	OK, thank you.	
Closed	3	Tenanted Dwellings	Additional categorisations – Are there any additional categorisations that you would like to use when we present the carbon footprint? At the moment, we can break down the houses stock by dwelling type and EPC band for example, but would an area-based breakdown also be interesting to see? If so, please feel free to add an additional column with the tags you could like to use.	Nothing to add	OK	
Closed	4	Tenanted Dwellings	There are dwelling types that are blank which mainly refer to flats and "rooms". Most of the rooms have been labelled as "bedsits" (besides 2750-2752 which are labelled detached houses). Is it fair to assume that all rooms are probably bedsits and complete these 'could you also confirm the dwelling type for entries 2750-2752 are correct?	Lines 2750 & 2752 should be rooms. These are rooms within shared houses not bedsits. I have changed the designation to room including the blanks.	Should I update 2750-2752 as rooms? They still state Detached house	They are rooms in a three bedroom detached house
Closed	5	Tenanted Dwellings	There site codes that appear more than once in the site code column; GW4TS05005121, HE1H102009Z. Are these duplicates or do they refer to unique sites?	Duplicates - Amended.	OK, thank you.	
Closed	6	Tenanted Dwellings	Some properties have been built in 2020/2021. When applying a reporting period 2019/20, we might exclude some of these sites depending on when they were considered "operational". For properties built during the reporting period is it possible to specify when they became operational? For properties that were built after the reporting period (i.e. After April 2020), I suggest we still calculate the emissions associated with these properties but report this separately as "current state". Are you happy with this approach?	Dates amended. Happy with the separate report for current state.		There are still some entries that specify 2019 or 2020 as the year built date. For these rows, please could you specify when the site was occupied within the year? This is so we can adjust the consumption for that year to reflect the maximum time the property would have been occupied for during the reporting period.
Closed	7	Tenanted Dwellings	Heating type "Communal boiler" at Ty Derw is described as a biomass boiler in the renewables tab. This is the same with Mill Court. Please can you confirm that these are biomass boilers and update the labelling accordingly in the "Tenanted Dwellings" tab?	This is correct. The Biomass at Hazel Court serves Ty Derw and Mill Court. Data amended.	OK, I will make sure the "primary heating source" and "heat source detail" columns reflect this. For Ty Derw, I will change heating source to "biomass" from "natural gas".	
Closed	8	Renewables	Renewables tab - Are the Solar PV figures provided referring to capacity?	Correct - capacity of PV array	OK	
Closed	9	Renewables	Solar PV capacity information (gas) - Is there a reason why this can't be provided?	Outspace	OK, thank you.	
Closed	10	Tenanted Dwellings	Entry 3274 on the "Tenanted Dwellings" Tab has a floor area of 0m ² . Is this correct?	Fixed	OK, thank you.	
Closed	11	Tenanted Dwellings	Reviewing floor areas recorded at specific post codes, where we have a couple of data points to clarify. Please see "Query 11" tab for details	Review completed - see notes	OK, thank you.	
Closed	12	Property - Electricity	Entry 17 has a low energy consumption, resulting in a considerably higher than average calculated electricity rate ~40p/kWh. Is this correct?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	
Closed	13	Property - Electricity	Entry 18 has a low energy consumption, resulting in a considerably higher than average calculated electricity rate ~42p/kWh. Is this correct?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	
Closed	14	Property - Electricity	Entry 19 does not have an energy consumption value, could you please check if you have that information?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	
Closed	15	Property - Electricity	Entry 23 has a very low consumption and relatively very high costs (~£1.38/kWh), could you please check if this correct?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	
Closed	16	Property - Electricity	Entry 24 has a very low consumption and relatively very high costs (~£1.65/kWh), could you please check if this correct?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	
Closed	17	Property - Electricity	Entry 30 has a very low consumption and relatively very high costs (~£1.66/kWh), could you please check if this correct?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	
Closed	18	Property - Electricity	Entry 33 has a low energy consumption, resulting in a considerably higher than average calculated electricity rate ~44p/kWh. Is this correct?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	
Closed	19	Property - Electricity	Entry 44 has a low energy consumption, resulting in a considerably higher than average calculated electricity rate ~47p/kWh. Is this correct?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	
Closed	20	Property - Electricity	Entry 47 has a very low consumption and relatively very high costs (~£1.11/kWh), could you please check if this correct?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	
Closed	21	Property - Electricity	Entry 51 does not have an energy consumption value, could you please check if you have that information?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	
Closed	22	Property - Electricity	Entry 63 has a low energy consumption, resulting in a considerably higher than average calculated electricity rate ~74p/kWh. Is this correct?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	
Closed	23	Property - Electricity	Entry 71 has a low energy consumption, resulting in a considerably higher than average calculated electricity rate ~44p/kWh. Is this correct?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	
Closed	24	Property - Electricity	Entry 76 has a low energy consumption, resulting in a considerably higher than average calculated electricity rate ~49p/kWh. Is this correct?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	
Closed	25	Property - Electricity	Entry 78 has a low energy consumption, resulting in a considerably higher than average calculated electricity rate ~80p/kWh. Is this correct?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	
Closed	26	Property - Electricity	Entry 79 does not have an energy consumption value, could you please check if you have that information?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	
Closed	27	Property - Electricity	Entry 82 has a very low negative energy consumption value - could you please check the reason for that? And what would the correct value be? And checking if the cost is correct?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	
Closed	28	Property - Electricity	Entry 83 has a low energy consumption, resulting in a considerably higher than average calculated electricity rate ~51p/kWh. Is this correct?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	
Closed	29	Property - Electricity	Entry 86 has a very low consumption and relatively very high costs (~£1.38/kWh), could you please check if this correct?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	
Closed	30	Property - Electricity	Entry 87 has a low energy consumption, resulting in a considerably higher than average calculated electricity rate ~65p/kWh. Is this correct?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	
Closed	31	Property - Electricity	Entry 93 has a low energy consumption, resulting in a considerably higher than average calculated electricity rate ~46p/kWh. Is this correct?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	
Closed	32	Property - Electricity	Entry 97 has a low energy consumption, resulting in a considerably higher than average calculated electricity rate ~55p/kWh. Is this correct?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	
Closed	33	Property - Electricity	Entry 99 has a very low consumption and relatively very high costs (~£1.49/kWh), could you please check if this correct?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	
Closed	34	Property - Electricity	Entry 104 has a low energy consumption, resulting in a considerably higher than average calculated electricity rate ~44p/kWh. Is this correct?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	
Closed	35	Property - Heat	Entry 6 has a higher than average calculated gas rate ~69p/kWh and for the same property, in the "Property - Electricity" tab, Entry 6 both have higher than average rates. Is this correct?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	
Closed	36	Property - Heat	Entry 11 has a higher than average calculated gas rate ~66p/kWh and for the same property, in the "Property - Electricity" tab, Entry 10 both have higher than average rates. Is this correct?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	
Closed	37	Property - Heat	Entry 8 has a higher than average calculated gas rate ~69p/kWh and for the same property, in the "Property - Electricity" tab, Entry 7 both have higher than average rates. Is this correct?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	
Closed	38	Property - Heat	Entry 10 has a higher than average calculated gas rate ~66p/kWh and for the same property, in the "Property - Electricity" tab, Entry 9 both have higher than average rates. Is this correct?	Due to irregular meter readings being provided, usage and billing out of sink. Usage on sheet to be used	OK, we will use this information for the carbon footprint but recognise there may be a degree of uncertainty in the results.	

Appendix – Sites operational after the reporting period end

Site Name	Postcode	Street Address	Year built	Age band	Heat source	Heat source detail
0008TER	SA10 7NB	8 Terminus House	2021	Later than 2000	Electric	Storage Radiators
0009TER	SA10 7NB	9 Terminus House	2021	Later than 2000	Electric	Storage Radiators
0010TER	SA10 7NB	10 Terminus House	2021	Later than 2000	Electric	Storage Radiators
0011TER	SA10 7NB	11 Terminus House	2021	Later than 2000	Electric	Storage Radiators
BE2H2970001Z	SA4 3JR	1 Benson Road	July 2020	Later than 2000	Natural Gas	Gas Condensing Combi
BE2H2970003Z	SA4 3JR	3 Benson Road	July 2020	Later than 2000	Natural Gas	Gas Condensing Combi
BE2H2970005Z	SA4 3JR	5 Benson Road	July 2020	Later than 2000	Natural Gas	Gas Condensing Combi
HE4T5050036Z	SA17 4JG	36 Heol Y Plas	Dec 2020	Later than 2000	Natural Gas	Gas Condensing Combi
HE4T5050062Z	SA17 4JG	62 Heol Y Plas	Dec 2020	Later than 2000	Natural Gas	Gas Condensing Combi
HIG0001	SA1 1NF	Flat 1 High Street	2021	Later than 2000	Electric	Storage Radiators
HIG0002	SA1 1NF	Flat 2 High Street	2021	Later than 2000	Electric	Storage Radiators
HIG0003	SA1 1NF	Flat 3 High Street	2021	Later than 2000	Electric	Storage Radiators
HIG0004	SA1 1NF	Flat 4 High Street	2021	Later than 2000	Electric	Storage Radiators
HIG0005	SA1 1NF	Flat 5 High Street	2021	Later than 2000	Electric	Storage Radiators
MA4D5040036Z	SA14 9PX	36 Maes Delfryn	Dec 2020	Later than 2000	Natural Gas	Gas Condensing Combi
SW2H2970001Z	SA4 3JW	1 Sw n y mor	July 2020	Later than 2000	Natural Gas	Gas Condensing Combi
SW2H2970002Z	SA4 3JW	2 Sw n y Mor	July 2020	Later than 2000	Natural Gas	Gas Condensing Combi
SW2H2970003Z	SA4 3JW	3 sw n y mor	July 2020	Later than 2000	Natural Gas	Gas Condensing Combi
SW2H2970004Z	SA4 3JW	4 Sw n y Mor	July 2020	Later than 2000	Natural Gas	Gas Condensing Combi
SW2H2970005Z	SA4 3JW	5 sw n y mor	July 2020	Later than 2000	Natural Gas	Gas Condensing Combi
SW2H2970006Z	SA4 3JW	6 sw n y mor	July 2020	Later than 2000	Natural Gas	Gas Condensing Combi
SW2H2970007Z	SA4 3JW	7 Sw n y Mor	July 2020	Later than 2000	Natural Gas	Gas Condensing Combi
SW2H2970008Z	SA4 3JW	8 Sw n y Mor	July 2020	Later than 2000	Natural Gas	Gas Condensing Combi
SW2H2970009Z	SA4 3JW	9 Sw n y Mor	July 2020	Later than 2000	Natural Gas	Gas Condensing Combi
WAL0001	SA1 5RG	White rose - Flat 1	Feb 2021	Later than 2000	Electric	Storage Radiators
WAL0002	SA1 5RG	White rose - Flat 2	Feb 2021	Later than 2000	Electric	Storage Radiators
WAL0003	SA1 5RG	White Rose - Flat 3	Feb 2021	Later than 2000	Electric	Storage Radiators
WAL0004	SA1 5RG	White Rose - Flat 4	Feb 2021	Later than 2000	Electric	Storage Radiators



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