To: **Climate and Ecological Emergency Working Group**

Date: **13th May 2021**

SUBJECT: **BASELINE EVIDENCE FOR FOLKESTONE AND HYTHE'S DISTRICT EMISSIONS AND RELATIONSHIP WITH KENT AND MEDWAY PATHWAYS TO NET ZERO**

SUMMARY: This report reviews the baseline figures for the Folkestone & Hythe local authority area produced by SCATTER cities and the Department of Business Energy and Industrial Strategy (BEIS). It considers the baseline for the district in relation to the Kent and Medway Emissions Analysis and Pathways to Net Zero Study. This report suggests a baseline for the Folkestone and Hythe District Climate Change Strategy.

1. BACKGROUND

1.1 There are different approaches to setting baseline evidence on carbon emissions on a district-wide basis.

1.2 The Working Group received a presentation on the SCATTER Cities approach to district-wide emissions on 18 March 2021. Members raised a number of questions about the data, particularly around what elements were included or excluded. Concern was also expressed that any headline figure included in a district-wide strategy should not include elements which the council has no ability to influence.

1.3 Other data sets are available, for example, the Department for Business, Energy and Industrial Strategy (BEIS) also produce figures for local authority carbon emissions. These figures are used in the Council's Authority Monitoring Report.

1.4 Within this report:

- **Section 2** - sets out the background to the SCATTER Cities data;
- **Section 3** - sets out the background to the BEIS data;
- **Section 4** - draws out the main differences between the SCATTER Cities and BEIS data;
- **Section 5** - summarises the findings of Kent County Council's 'Kent and Medway Emissions Analysis and Pathways to Net Zero' report; and

- **Section 6** - provides recommendations for a position that could form the baseline for a district-wide climate change strategy.

2. SCATTER CITIES DATA

2.1 The SCATTER Cities tool is an online resource for local authorities and city regions designed to standardise greenhouse gas reporting, in alignment with international frameworks.[1] The tool has been developed in collaboration between the Department for Business, Energy & Industrial Strategy (BEIS), Nottingham City Council, the Greater Manchester Combined Authority and the Tyndall Centre for Climate Research at the University of Manchester. The tool allows local authorities to generate an inventory of greenhouse gas emissions arising from activities within their administrative areas and to model how these could be reduced.

2.2 Given that much of the data is derived from national datasets, there is a time lag in reporting; the tool was recently updated (6 May 2021) with data from the 2018 monitoring year. The recent update reflects amendments BEIS has made to reporting the split of emissions across the Commercial, Industrial and Institutional Buildings categories and to the way that livestock emissions are apportioned.

2.3 The inventory for Folkestone & Hythe district is provided in Appendix 1. Figures are presented by sector for direct, indirect and other emissions. Required data is highlighted in green, with optional data also available, highlighted in blue. Summing only the required (green highlighted) data for Folkestone & Hythe district for carbon emissions would give a total of 506,691 tCO_2e, or **506.6 $ktCO_2e$** (kilo tonnes carbon dioxide equivalent).

3. DEPARTMENT FOR BUSINESS, ENERGY AND INDUSTRIAL STRATEGY DATA

3.1 The Department for Business, Energy and Industrial Strategy (BEIS) publishes data for carbon emissions on a national and local authority basis.

3.2 Estimates for emissions of carbon dioxide by local authority area are published annually, but given the time needed to collate, analyse and publish the data, there is usually a gap of two years between the monitoring year and publication.

3.3 The BEIS figures were last published in June 2020 and relate to the monitoring year 2018.[2] Figures are given:

- By sector and sub-sector;
- As grand totals;
- As emissions per capita; and

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1 SCATTER (Setting, City, Area, Targets and Trajectories for Emissions Reduction). See: https://scattercities.com/

2 Available to view at: https://data.gov.uk/dataset/723c243d-2f1a-4d27-8b61-cdb93e5b10ff/emissions-of-carbon-dioxide-for-local-authority-areas

- As emissions per square kilometre.[3]

3.4 2020 published figures (for the 2018 monitoring year) for the Kent and Medway authorities are given in Table 1 below.

Local authority	Total emissions (net) (kt CO_2)	Per capita emissions (t CO_2)	Emissions per km^2 (kt CO_2)
Ashford	598.6	4.6	1.0
Canterbury	578.0	3.5	1.8
Dartford	644.4	5.9	8.4
Dover	451.6	3.9	1.4
Folkestone & Hythe	459.0	4.1	1.3
Gravesham	470.2	4.4	4.5
Maidstone	804.9	4.7	2.0
Sevenoaks	808.9	6.7	2.2
Swale	1,157.9	7.8	2.7
Thanet	543.5	3.8	4.8
Tonbridge & Malling	867.8	6.6	3.6
Tunbridge Wells	415.5	3.5	1.3
Kent total	**7,800.3**	**5.0**	**2.1**
Medway	871.8	3.1	3.2

Table 1: Carbon dioxide emissions for 2018 (BEIS, 2020)

3.5 BEIS figures for Folkestone & Hythe district by sector are provided in Appendix 1. The full dataset for the district gives a figure for carbon dioxide emissions of **459.0 ktCO2**. BEIS also publishes a subset of the data, intended to identify areas within local authorities' influence, and this is described further in Section 4 below.

4. SCATTER CITIES AND BEIS BASELINES COMPARED

4.1 In assessing district-wide emissions local authorities have adopted a variety of approaches. Some councils make use of SCATTER Cities' data and others, such as Dover District Council, use figures produced by BEIS. Canterbury City Council used published evidence and guidance from Government departments (Business Energy and Industrial Strategy, Department for Agriculture and Rural Affairs, Department for Transport) and from Kent County Council's Environment Strategy, Energy and Low Emissions Strategy (ELES) and Climate Change Risk and Impact Assessment.

[3] Available to view at: https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-to-2018

4.2 Both the SCATTER Cities and BEIS data work by attributing emissions to local authorities from a national figure. There are some differences between the two.

4.3 The BEIS data is a spatial disaggregation of CO_2 emissions in the UK greenhouse gas inventory (GHGI) by region and local authority which is produced annually on an 'end-user' basis. This means that emissions from the production and processing of fuels, including the production of electricity, are reallocated to users of these fuels to reflect total emissions for each type of fuel consumed. These local and regional CO_2 emissions estimates are produced in order to provide a nationally consistent evidence base and a consistent time series is maintained back to 2005. The statistics can be used by local authorities and other relevant organisations as an important body of information to help identify high emitting sources of CO_2 and energy intensive sectors, to monitor changes in CO_2 emissions over time, and to help design carbon reduction strategies.

4.4 The statistics provide a breakdown of CO_2 emissions in the key sectors: Industry and Commercial; Domestic; Railways; Road Transport; and Land Use, Land Use Change and Forestry (LULUCF). These differ slightly from the sectors reported under the National and Devolved Administration End User Emissions Inventories. A reconciliation report is produced each year to explain the differences between the local authority, devolved administration and UK end-user datasets. There are a number of smaller methodological differences, but large sectors excluded from the local authority CO_2 emission estimates are shipping, aviation and military transport.

4.5 The full dataset – which is classified as a National Statistic – and statistical summary can be found on the BEIS website along with supporting methodology documents.

4.6 In addition, a subset of the local authority data, that excludes emissions from the EU Emissions Trading Scheme, motorways, railways and LULUCF, is also published, which BEIS identifies as being within the scope of influence of local authorities. This subset is provided in Appendix 1. For Folkestone & Hythe district this gives a figure for carbon emissions of **406.5 ktCO_2**.

4.7 An additional difference between the BEIS and SCATTER Cities datasets is that the BEIS summary represents CO_2 only; SCATTER Cities' figures also include emissions factors for other greenhouse gases such as Nitrous Oxide and Methane. These are reported as a CO_2 'equivalents (e)'. The BEIS summary also does not attribute the results to different scopes; SCATTER Cities reports emissions by scope 1, 2, and 3 (i.e. direct, indirect or other categories).

4.8 The BEIS summary categories are not directly consistent or mapped to the BEIS local authority fuel data which is available as a separate data set. SCATTER Cities uses published fuel data and applies current-year emissions factors, whereas the BEIS data calculations scale down national emissions in each transport area. Specifically with regard to road transport, BEIS data splits total emissions across road type (A roads, motorways and minor roads);

SCATTER Cities uses fuel consumption for on-road transport per local authority without further disaggregation.

4.9 The two methods also treat 'rural' emissions differently. SCATTER Cities uses the category of Agriculture, Forestry and Other Land Use (AFOLU), while BEIS uses Land Use, Land Use Change and Forestry (LULUCF). These categories are derived from different underlying data sets and yield different results: the AFOLU category leads to a net figure for Folkestone & Hythe district for this sector of -7.4 $ktCO_2e$ (i.e. more emissions absorbed than released), whereas the LULUCF category leads to a net figure of -25.5 $ktCO_2$ (noting the difference between CO_2e and CO_2 reporting already outlined).

4.10 The SCATTER Cities tool does allow the Council to calculate a carbon budget for itself and to model potential solutions. The BEIS figures simply produce a set of carbon emissions data for various sectors.

5. KENT & MEDWAY EMISSIONS ANALYSIS AND PATHWAYS TO NET ZERO

5.1 Kent County Council commissioned Anthesis Group to undertake an analysis of carbon emissions across Kent and Medway and to propose how the area could move to net zero emissions. Anthesis's report, 'Kent & Medway Emissions Analysis and Pathways to Net Zero', was published in December 2020. (Appendix 2 provides the executive summary.)

5.2 The objectives of the study include to help local authorities within Kent and Medway by providing an evidence base for future action and aiding the development of local strategies.

5.3 The report defines the current emissions profile in Kent and Medway using the SCATTER Cities methodology (Anthesis are also one of the originators of SCATTER Cities). It sets out an evidence-based carbon budget for Kent and Medway, based on academic research at the Tyndall Centre for Climate Change Research. It produces future emissions pathways defined by a range of measures and interventions across the energy system. The report defines the scale and nature of these interventions and the speed of implementation needed. It also includes further in-depth analysis of Kent and Medway's domestic housing, transport and land use emissions.

5.4 As noted, there is a time lag in compiling the SCATTER Cities data and, given the date of publication of the Anthesis report, figures in the report come from 2017. The report states that, in 2017, Kent and Medway's energy system was responsible for emissions totalling 9,290 $ktCO_2e$. The analysis found that the majority of emissions arose from energy used in buildings (56 per cent) and transport (38 per cent).

5.5 The Kent and Medway emissions profile produced in the report is as follows:

- Industrial and institutional buildings: 21%
- Residential buildings: 31%
- Commercial buildings and facilities: 4%

- Agricultural fuel use: <1%
- On-road transport: 35%
- Rail transport: <0.5%
- Waterborne navigation: 2%
- Aviation: <0.5%
- Off-road transport: <0.5%
- Solid waste disposal: <1%
- Wastewater: 1%
- Industrial processes: 2%
- Livestock: 2%

5.6 The study includes all emissions arising from sources within the county boundary, as well as emissions occurring as a consequence of the use of grid-supplied electricity, heat, steam and/or cooling within the boundary. All emissions related to out-of-boundary activities have been excluded (e.g. the embodied carbon of products and services). The 'carbon sink' effect of land use is also calculated, with forests and grassland sequestering 367 $ktCO_2e$ and 124 $ktCO_2e$ respectively.

5.7 The study does not set out separate carbon emissions figures for the individual Kent and Medway authorities, but a 'heat map' is included which represents emissions in diagrammatic form (see Figure 1 below). This follows the broad pattern of emissions recorded by the BEIS data (see Table 1 above).

5.8 The study proposes a carbon budget based on research at the Tyndall Centre for Climate Change Research. This allocates Kent and Medway a carbon budget of 57,700 $ktCO_2$ for the period 2020-2050 for emissions arising from the county's energy system. To remain in-budget, the county must achieve an average annual reduction rate of 13.3%. The average annual reduction rate since 2005 was just over 3.5%. Following this approach, at 2017 rates, Kent and Medway will exceed its carbon budget within seven years.

5.9 Having proposed a carbon budget the report then uses SCATTER Pathways to project future emissions based on a set of user-defined interventions across various activities within Kent and Medway. The emissions reduction interventions used correspond to delivery of interventions, which the report terms the 'High Ambition Pathway'. This includes measures such as travelling shorter distances so by 2050 there has been a 25% reduction in the average number of passenger miles travelled per person. A measure for buildings includes reduced energy demand for heating, cooling and hot water; the intervention by 2050 would be for domestic buildings a 43% reduction and non-domestic buildings a 40% reduction. The report does not consider how the High Ambition Pathway actions can be delivered e.g. policy, feasibility, financing or skills required.

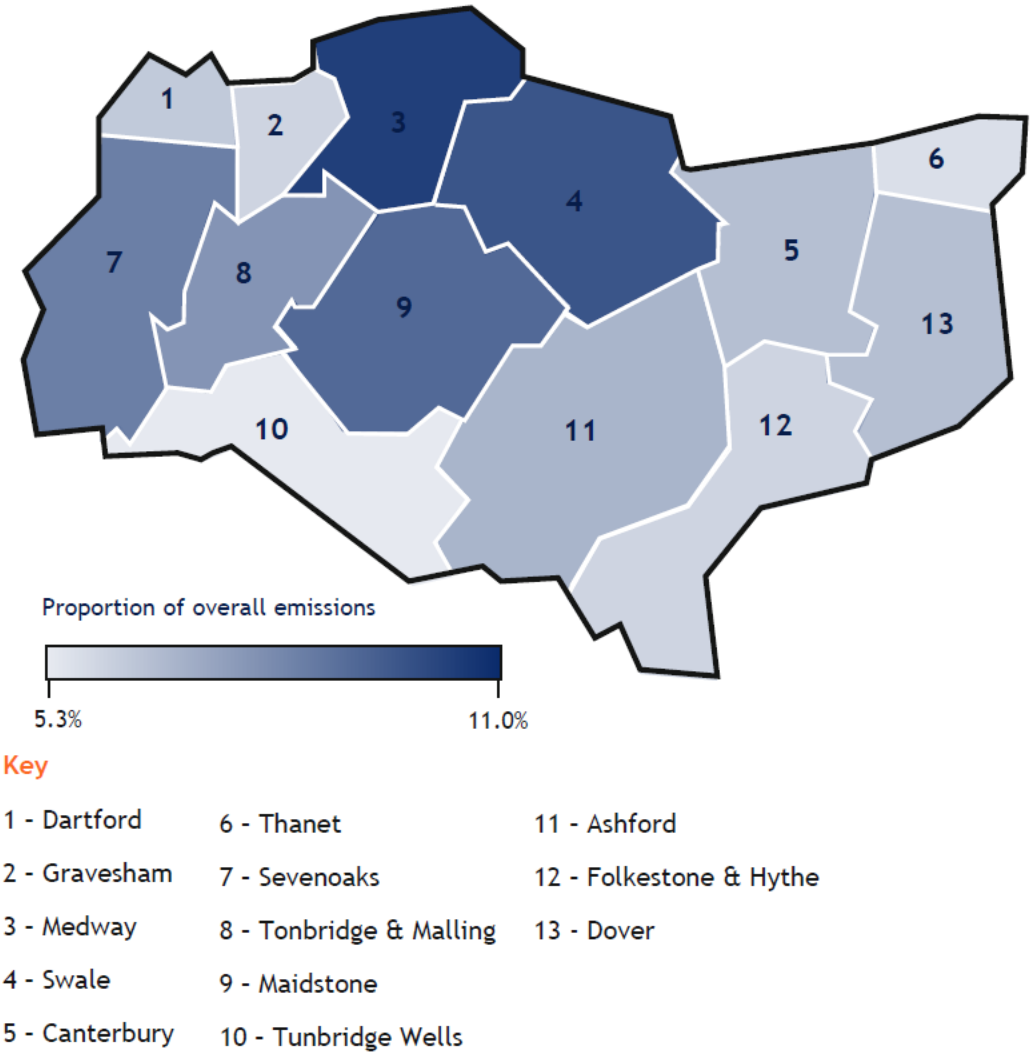

Figure 1: Regional Emissions Map, 'Kent & Medway Emissions and Pathways to Net Zero', Anthesis, December 2020

5.10 Adoption of the High Ambition Pathway would not achieve zero emissions by 2050. Further action and offsetting/insetting strategies are recommended as a means of addressing these residual emissions. However the report does support the development of an action plan to prioritise specific projects to implement such as the Energy and Low Emissions Strategy Implementation Plan. The report does provide high level categories for intervention that this Council can consider when framing its own district-wide Climate Change Strategy.

6. SUMMARY AND CONCLUSION

6.1 As outlined above, there is some variation in the ways that organisations report climate change emissions on an area-wide basis depending on what greenhouse gases are measured and what sectors are included. There is also

a time-lag of two to three years between the recording and publication of the data.

6.2 It is suggested that, as a starting point, the Council uses the subset of figures published by BEIS (see paragraph 4.6 and Appendix 1), most recently reported as **406.5 ktCO_2**.

6.3 This is the approach that Dover District Council has taken in its Climate Change Strategy published this year.[4] Despite differences between SCATTER Cities and the BEIS figures there are areas of commonality, i.e. transportation and domestic energy use. It would still be possible to use the SCATTER Cities modelling to explore different options for those issues. The Council would also continue to cooperate with the County Council on implementing the ELES and work that the County Council is carrying out on carbon emissions reduction pathways. Such cooperation will inform and support the District Council's Climate Change Strategy.

6.4 The BEIS local authority subset would also allow comparison across a longer timeframe as data is available annually from 2005, meaning that current interventions could be distinguished from longer-term trends.

6.5 As noted, BEIS publishes this subset as being within the scope of local authorities' influence. However, even within this more limited subset, any progress on reducing carbon emissions would be largely dependent on the individual decisions of business people, landowners, institutions and homeowners.

6.6 The Kent & Medway Emissions and Pathways to Net Zero report suggests a model with different spheres of influence appropriate to different areas of intervention (such as leadership, action and engagement):

- Direct control, e.g. council-owned buildings;
- Stronger influence, e.g. procurement of infrastructure and other services;
- Weaker influence, e.g. citizen behaviours; and
- Concern, e.g. other companies' operations within boundaries.

A similar approach is used by Dover District Council in its Climate Change Strategy, and this could perhaps be used to structure Folkestone & Hythe's strategy. Any document would need to stress that progress can only be achieved with the help of the many different stakeholders across the district.

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[4] See: www.dover.gov.uk/Environment/Climate-Change/Climate-Change-Strategy-January-2021-web.pdf

Appendices:

Appendix 1: Folkestone & Hythe Carbon Emissions Inventories:

a. **BEIS Subset**
b. **BEIS Full Dataset**
c. **SCATTER Cities**

Appendix 2: Kent & Medway Emissions Analysis and Pathways to Net Zero – Executive Summary, Anthesis / Kent County Council, December 2020

APPENDIX 1:

FOLKESTONE & HYTHE CARBON EMISSIONS INVENTORIES

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Appendix 1 (a). BEIS SUBSET – FOLKESTONE & HYTHE DISTRICT (Department for Business, Energy and Industrial Strategy, 2020) ($KtCO_2$)

Year	A. Industry and Commercial Electricity	B. Industry and Commercial Gas	C. Large Industrial Installations	D. Industrial and Commercial Other Fuels	E. Agriculture	**Industry and Commercial Total**	F. Domestic Electricity	G. Domestic Gas	H. Domestic 'Other Fuels'	**Domestic Total**	I. Road Transport (A roads)	K. Road Transport (Minor roads)	M. Transport Other	**Transport Total**	**Grand Total**	Population ('000s, mid-year	Per Capita Emissions (t)	Area (km^2)	Emissions per km2 (kt)
2018	56.6	23.0	-	21.2	6.6	**107.4**	43.9	96.9	18.8	**159.6**	73.4	61.3	4.8	**139.5**	**406.5**	112.6	3.6	365.5	1.1

Appendix 1 (b). BEIS FULL DATASET – FOLKESTONE & HYTHE DISTRICT (Department for Business, Energy and Industrial Strategy, 2020) ($KtCO_2$)

Year	A. Industry and Commercial Electricity	B. Industry and Commercial Gas	C. Large Industrial Installations	D. Industrial and Commercial Other Fuels	E. Agriculture	**Industry and Commercial Total**	F. Domestic Electricity	G. Domestic Gas	H. Domestic 'Other Fuels'	**Domestic Total**	I. Road Transport (A roads)	J. Road Transport (Motorways)	K. Road Transport (Minor roads)	L. Diesel Railways	M. Transport Other	**Transport Total**	N. LULUCF Net Emissions: Forest	O. LULUCF Net Emissions: Cropland	P. LULUCF Net Emissions: Grassland	Q. LULUCF Net Emissions: Wetlands	R. LULUCF Net Emissions: Settlements	S. LULUCF Net Emissions: Harvested Wood Products	**LULUCF Net Emissions**	**Grand Total**	Population ('000s, mid-year estimate)	**Per Capita Emissions (t)**	Area (km^2)	**Emissions per km^2 (kt)**
2018	56.6.	23	-	21.2	8.9	**109.8**	43.9	96.9	18.8	**159.6**	73.4	72.9	61.3	0.1	7.5	**215.1**	26.7	5.1	12.2	-	8.3	-	**25.2**	**459**	112.6	**4.1**	365.5	**1.3**

Appendix 1 (c). SCATTER CITIES – FOLKESTONE & HYTHE DISTRICT (downloaded 6 May 2021)

Summary Greenhouse Gas emissions (tonnes CO_2e)

		Scope 1	Scope 2	Scope 3	
Sector	Sub-sector	Total tCO2e	Total tCO2e	Total tCO2e	Total tCO2e
		DIRECT	INDIRECT	OTHER	TOTAL
Stationary energy	Residential buildings	112,640.47	52,885.77	27,176.03	192,702.27
	Commercial buildings & facilities	6,686.90	27,973.64	5,513.15	40,173.68
	Institutional buildings & facilities	4,994.54	6,073.82	1,671.81	12,740.17
	Industrial buildings & facilities	31,131.48	34,146.69	12,243.13	77,521.29
	Agriculture	5,885.85	1.68	1,389.14	7,276.67
	Fugitive emissions	15,909.03	0.00	0.00	15,909.03
Transportation	On-road	183,309.73	IE	60,534.49	243,844.22
	Rail	2,630.83	IE	413.89	3,044.72
	Waterborne navigation	0.00	IE	0.00	0.00
	Aviation	10,353.23	IE	57,986.24	68,339.47
	Off-road	1,833.10	0.00	NE	1,833.10
Waste	Solid waste disposal	3,607.48	0.00	IE	3,607.48
	Biological treatment	NO	0.00	IE	0.00
	Incineration and open burning	NO	0.00	IE	0.00
	Wastewater treatment and discharge	6,626.95	0.00	NO	6,626.95
Industrial Processes and Product Use (IPPU)	Industrial process	29,304.04	0.00	0.00	29,304.04
	Industrial product use	0.00	0.00	NE	0.00
Agriculture, Forestry and Other Land Use (AFOLU)	Livestock	18,130.79	0.00	0.00	18,130.79
	Land use	-25,538.90	0.00	0.00	-25,538.90
	Other AFOLU	NE	0.00	0.00	0.00
Generation of grid-supplied energy	Electricity-only generation	0.00	0.00	0.00	0.00
	CHP generation	0.00	0.00	0.00	0.00
	Heat/cold generation	NO	0.00	0.00	0.00
	Local renewable generation	6.67	0.00	0.00	6.67

Notation keys:

NO: Not Occuring

IE: Integrated Elsewhere

NE: Not Estimated

C: Confidential

Colour keys:

Green: Required

Blue: Optional

Grey: Not Applicable

APPENDIX 2:

KENT & MEDWAY EMISSIONS ANALYSIS AND PATHWAYS TO NET ZERO – EXECUTIVE SUMMARY, KENT COUNTY COUNCIL / ANTHESIS, DECEMBER 2020

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KENT COUNTY COUNCIL

Kent & Medway Emissions Analysis and Pathways to Net Zero

EXECUTIVE SUMMARY

December 2020

Anthesis

White Cliffs at St. Margaret's Bay

Report Overview & Scope

This Executive Summary highlights the key findings from the **Kent & Medway Emissions Analysis and Pathways to Net Zero** report which was commissioned by Kent County Council on behalf of all local authorities in Kent & Medway, who together have committed to reduce greenhouse gas emissions in the area to Net Zero by 2050 at the latest. The report defines:

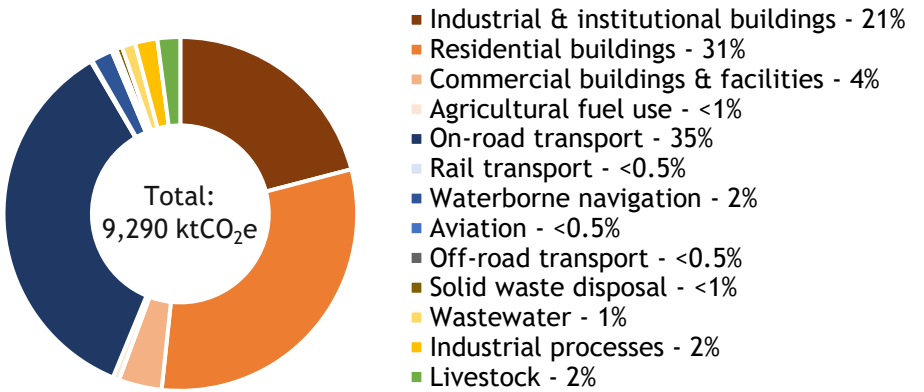
- the current emissions profile in Kent & Medway.
- a science-based carbon budget for Kent & Medway, based on academic research at the Tyndall Centre for Climate Change Research.
- future emissions pathways defined by a range of measures and interventions across the energy system.
- the scale and nature of these interventions and the speed of implementation needed.
- further in-depth analysis of Kent & Medway's domestic housing, transport & land use emissions.

Policy context

In 2015, the UK adopted the Paris Agreement, committing to encouraging efforts to limit the increase in global temperatures below 1.5°C and has committed to achieving net zero carbon emissions by 2050. In May 2019, Kent County Council recognised the climate emergency with a declaration of its own Net Zero target for Kent. All local authorities within Kent & Medway have now committed to Net Zero Targets.

Current Emissions Profile

Kent's current emissions profile was calculated using the Anthesis SCATTER tool, which allows local authorities to calculate and report their greenhouse gas emissions using international standards.



Land use acts as a net carbon sink for the county, sequestering 333 $ktCO_2e$ from the local environment (equivalent to 4% of the gross total). Kent & Medway is also responsible for 2,317 $ktCO_2e$ of emissions associated with in-boundary energy generation, though these are excluded from the overall emissions profile as per reporting guidelines.

The scope of study of these emissions includes all emissions arising from sources within the county boundary, as well as emissions occurring as a consequence of the use of grid-supplied electricity, heat, steam and/or cooling within the boundary. All emissions related to out-of-boundary activities have been excluded (e.g. embodied carbon of products and services).

Carbon budget

A carbon budget is a fixed limit of cumulative emissions that are allowed over a given time in order to keep global temperatures within a certain threshold. Carbon budgeting reinforces the importance of cumulative emissions and delivery of carbon reduction measures in the immediate term in order to avert the most serious impacts of climate change.

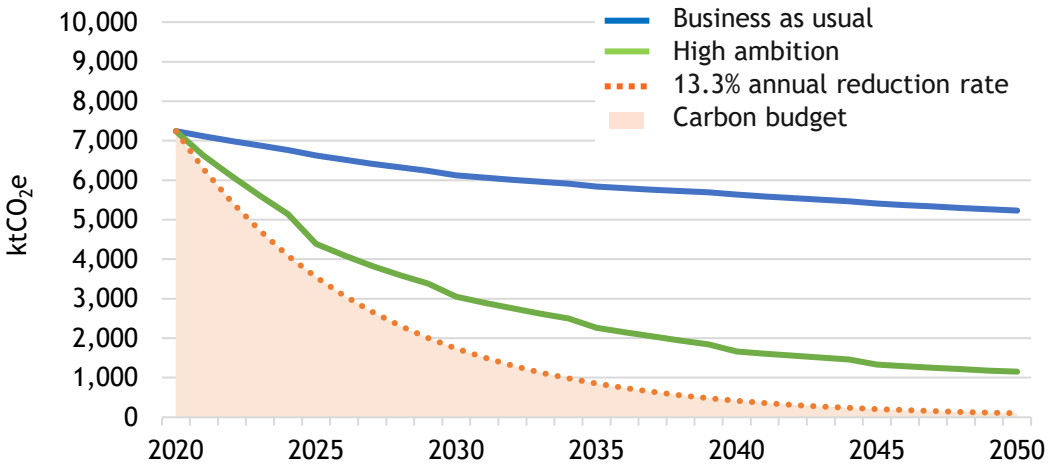
Based on research at the Tyndall Centre for Climate Change Research, Kent & Medway has been allocated a carbon budget of 57,700 $ktCO_2$ for the period 2020-2050 for emissions arising from the county's energy system.

In order to remain in budget, this means the county must achieve an average annual reduction rate of **13.3%** (see beige area opposite). The average annual reduction rate since 2005 was just over 3.5%. At 2017 rates, Kent & Medway will exceed its carbon budget within 7 years.

SCATTER Pathways

SCATTER Pathways is a forward-looking modelling tool which projects future emissions based upon a set of user-defined interventions across various activities within Kent & Medway.

SCATTER Pathways serve as an indication of whether the adoption of certain interventions can drive the transition to a low-carbon economy. Along a business-as-usual pathway (blue line), SCATTER projects a 44% reduction in emissions by 2050 against 2017 levels across Kent & Medway. Along the highest ambition pathway (green line) within SCATTER, Kent & Medway achieves an 88% reduction by 2050 against 2017 levels.



The emissions reduction interventions described in this report correspond to delivery of the High Ambition Pathway (see tables overleaf).

SCATTER Pathways are underpinned by activity across all emissions sectors within the county. Some examples are:

- Buildings: fabric efficiency improvements & switching from gas technologies for heating and cooking.
- Transport: travelling more efficiently, modal shift & phasing out fossil-fuel vehicles.
- Renewable energy supply: scaling up the installed capacity of renewable technologies such as wind and solar PV.
- Waste & industry: producing less waste, recycling more, and shifting away from carbon-intensive fuels for industrial processes.
- Agriculture & land use: increasing tree coverage & sequestration potential, shifting to less carbon-intensive livestock management.

Reaching High Ambition at 2050

The following tables describe the scale of interventions required by 2050 in order to meet the High Ambition Pathway for Kent & Medway. All reductions are against a 2017 baseline except where stated otherwise. The degree to which this scale can feasibly be achieved is not considered in this modelling, rather these figures are a demonstration of what needs to be done to meet the High Ambition Pathway. It is intended that the next stages of the action planning process will identify priority areas where the council will need to use its influence to overcome particular barriers in achieving these interventions.

Sector	Measure	2050 Intervention
Domestic buildings	More energy efficient homes & new builds	• 75,700 “medium” retrofit • 605,900 “deep” retrofit • 181,300 new builds to PassivHaus standard
Buildings	Reduced energy demand for heating, cooling & hot water	• Domestic: 43% reduction • Non-domestic: 40% reduction
	Reduced energy demand for appliances, lighting and cooking	• Domestic: 73% reduction • Non-domestic: 25% reduction
	Switching from gas heating systems	• Domestic: 100% of heating systems are electrified • Non-domestic: 80% of heating systems are electrified, remaining 20% supplied by CHP systems
	Shifting from gas to electric cookers	• Domestic: 84% increase in electric fuel usage for cooking • Non-domestic: 33% increase in electric fuel usage for cooking
Transport	Travelling shorter distances	• 25% reduction in the average number of passenger miles travelled per person
	Driving less	As a percentage of passenger mileage: • 10% active transport • 25% public transport • 65% private vehicle
	Switching to electric vehicles	• 100% of private vehicles, buses and trains are electric (though this transition is heavily frontloaded)
Freight transport	Improving freight emissions	• 28% increase in waterborne freight mileage • 22% decrease in road freight mileage • 75% decrease in energy used per mile travelled • 234% increase in fuel use at UK ports for *international* shipping

Sector	Measure	2050 Intervention
Waste	Producing less waste	• 57% reduction in the volume of waste
	Increased recycling rates	• 85% recycling rate
Industry	Switching from fossil fuels	• 15% reduction in oil fuel usage • 2% increase in electricity consumption • 38% increase in the use of natural gas
	More efficient processes	Process emissions reduced: • 30% for chemicals • 21% for metals • 25% for minerals • 80% for other industries
Renewable energy supply	Wind	• Local wind: 550 MW installed capacity • Large installations (on- and off-shore): 1,466 MW installed capacity
	Solar PV	• Local PV: 4,171 MW installed capacity • Large scale PV: 242 MW installed capacity
	Biomass	• Declining usage having displaced fossil fuel sources in power stations
	Other renewables	• Local hydro: 69 MW installed capacity • Large-scale hydro: 47 MW installed capacity
Agriculture & land use	Forest coverage & tree planting	• Increase in lone tree coverage to around 40 lone trees per hectare • 24% increase in forest coverage
	Land & livestock management	• 48% decrease in livestock numbers • 7% decrease in grassland; 1% decrease in cropland

Additional sectoral analysis

Further analysis was completed for the domestic, transport and land use emissions sectors to offer greater visibility on the specific contexts within Kent & Medway and how this relates to emissions reduction.

In the domestic sector, additional modelling for a low-retrofit scenario indicates that the potential for emissions reductions in the domestic sector relies most heavily on improving new-build standards and switching to electrified heating systems.

In the transport sector, additional modelling for a slow EV-uptake scenario indicates that the impact of bringing forward the date of transition to low-carbon transport cuts cumulative transport emissions roughly in half, with other significant contributions coming from improved journey efficiency gains.

In the land use sector, analysis indicates that agricultural emissions observe a 60:40 split between livestock and fertilizer usage. The county is a net carbon sink, however, with forest- and grass-land sequestering 367ktCO_2e and 124ktCO_2e respectively.

Conclusions & next steps

This report is intended to form the basis for deeper conversations and the development of an action plan to prioritise specific projects to implement within Kent & Medway in support of the county's net zero ambition.

It is critical that key stakeholders are engaged throughout the process, as the council cannot achieve its goals without participation from these actors.

Suggested next steps:

1. Define where the Council may influence different emissions sectors directly and indirectly, supported by the current emissions profile to highlight key sources of emissions.
2. Understand the council's ability to influence within each intervention area (e.g. **lobbying, engagement, leaderhip, action**) and identify and engage key external stakeholders such as businesses and the wider public.
3. Use this evidence base to enable discussion on challenges and opportunities across each sector.
4. Develop robust action plan and accountability structure to monitor progress.
5. Develop working groups and governance to share knowledge and best practice across the county.
6. Encourage collaboration within the county's districts and across other councils nationally to share best practice.

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