

Warwickshire Waste Partnership

29 September 2021

Carbon emissions estimates from waste disposal, treatment and recycling in Warwickshire since 2013/14

Recommendation(s)

1. The Waste Partnership is asked to note the estimated data from 2013/14 to 2020/21.

1.0 Data Overview

- 1.1 This report contains a mixture of data taken from Waste Data Flow (WDF) and from Warwickshire County Council (WCC) in-house records and at the publication of this report are considered estimates.
- 1.2 The calculations are based on verified waste tonnage data up to 2019/20 and provision for 2020/21. The 2021 data will not be verified by the Environment Agency (EA) and Department for Environment, Food and Rural Affairs (Defra) in the Waste Data Flow System until late 2021 or early 2022.
- 1.3 The calculations have been carried out using the Zero Waste Scotland Carbon Factors for waste, published here: <https://zerowastescotland.org.uk/our-work/carbon-metric-publications> these are the most local and relevant factors available for use.

2.0 Summary Table

Section 2 Table – Summary Estimated Carbon Emissions from waste disposal, treatment and recycling in Warwickshire

	Carbon emissions (tCO ₂ e)							
	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21
Recycling Kerbside	-37,530	-36,790	-35,910	-36,245	-35,890	-36,116	-38,419	-41,865
Recycling HWRC	-12,609	-14,087	-16,110	-17,099	-16,143	-16,432	-15,326	-7,833
Bio	-2,647	-3,139	-3,114	-2,707	-2,890	-2,854	-3,270	-3,217
Residual Landfill	31,263	17,168	16,561	16,343	19,980	18,523	13,970	9,040
Residual EFW	22,453	33,337	36,034	36,366	33,723	35,270	36,446	41,282
Totals	930	-3,511	-2,539	-3,342	-1,220	-1,609	-6,598	-2,592

- 2.1 Section 2 Table shows the tonnes of carbon emitted from the processes involved in the disposal, treatment and recycling of all waste collected in Warwickshire. It includes waste collected at the kerbside as well as at the 9 Household Waste Recycling Centres (HWRCs) and other waste streams as listed in Section 3 Table, e.g., clinical waste. It shows 2019/20 and 2020/21 data which has not previously been published alongside previous data which was published for the County Council's climate change task and finish group in the autumn of 2019.
- 2.2 The final two columns of the Section 2 table have been calculated using the tonnages (taken from WDF and WCC records) in Section 3 Table multiplied by the relevant carbon factor in the Section 5 Table. It is a summarised version of the section 4 Table.
- 2.3 This data does not include any carbon emissions from the vehicles used to collect waste in the County, manage waste at the HWRCs and waste transfer stations (WTS) or haul waste from the HWRCs or WTSs to disposal, treatment and recycling points.

3.0 Waste Disposal, Treatment and Recycling Tonnes 19-20 and 20-21

Section 3 Table – Waste Disposal, Treatment and Recycling Tonnes in 19/20 and 2021 (data taken from WDF and WCC records)

	Tonnes													
	NWBC		NBBC		RBC		SDC		WDC		HWRC		Total	
	19-20	20-21	19-20	20-21	19-20	20-21	19-20	20-21	19-20	20-21	19-20	20-21	19-20	20-21
Green garden waste only	6,523	6,678	7,750	7,942	7,329	8,165	19,054	20,461	14,451	15,789	7,551	2,472	62,658	61,507
Food Waste	525	589	600	615	566	631	1,277	1,372	1,153	1,260	0	0	4,121	4,467
Mixed garden and food waste	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other compostable waste	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Plasterboard	0	0	0	0	0	0	0	0	0	0	478	300	478	300
Rubble	0	0	0	0	0	0	0	0	0	0	7,144	4,079	7,144	4,079
Soil	0	0	0	0	0	0	0	0	0	0	251	221	251	221
Paper and Card	2,499	2,521	3,357	3,412	4,896	4,955	5,967	5,902	4,320	4,928	3,360	2,034	24,400	23,752
Plastics	652	671	1,197	1,121	1,114	1,104	1,085	1,141	1,198	1,210	77	32	5,323	5,279
Glass	1,219	1,321	2,770	2,972	2,532	3,299	4,653	6,530	3,827	4,946	298	298	15,298	19,366
Weee			72	51			66	55	1	4	1,232	1,034	1,371	1,144
Wood	0	0	0	0	0	0	0	0	0	0	1,082	884	1,082	884
Used Oils	0	0	0	0	0	0	0	0	0	0	219	219	219	219
Textiles & Footwear	0	0	66	23	19	30	5	5	64	73	745	139	899	270
Batteries	0	0	0	0	0	0	0	0	0	0	128	128	128	128
Scrap Metal	0	0	73	76	0	0	57	83	0	0	3,245	1,985	3,375	2,144
Ferrous Metals	196	201	509	551	286	305	387	451	422	465		2	1,800	1,975
Non Ferrous	109	113	124	141	178	199	167	232	94	127	2	6	674	818
Tyres	23	45	3	3	13	19	4	2	1	1	11	11	55	81
Landfill	0	0	0	0	13,603	10,146	3,475	610	3,810	371	10,020	8,874	30,908	20,001
EFW	14,198	15,094	28,832	31,393	8,158	12,168	19,298	22,400	20,577	23,405	2,871	1,937	93,934	106,397
Chemical	0	0	0	0	0	0	0	0	0	0	26	19	26	19
Clinical	5	5	20	19	0	0	2	0	12	12	11	13	50	49
Abandoned vehicles	0	0	0	0	17	22	0	0	0	0	0	0	17	22
Total	25,949	27,238	45,373	48,319	38,711	41,043	55,496	59,244	49,930	52,591	38,751	24,688	254,211	253,123

4.0 Detailed Estimated Carbon Emissions 19-20 and 20-21

Section 4 Table - Detailed Estimated Carbon Emissions from waste disposal, treatment and recycling in Warwickshire (kgCO₂e)

	Carbon emissions (kg CO ₂ e)													
	North Warwickshire		Nuneaton and Bedworth		Rugby		Stratford		Warwick		HWRC		WCC Combined	
	19-20	20-21	19-20	20-21	19-20	20-21	19-20	20-21	19-20	20-21	19-20	20-21	19-20	20-21
Green garden waste only	-332,673	-340,578	-395,250	-405,042	-373,779	-416,415	-971,754	-1,043,511	-737,001	-805,239	-385,095	-126,072	-3,195,552	-3,136,857
Food Waste	-9,450	-10,602	-10,800	-11,070	-10,188	-11,358	-22,986	-24,696	-20,754	-22,680	0	0	-74,178	-80,406
Mixed garden and food waste														
Other compostable waste														
Plasterboard	0	0	0	0	0	0	0	0	0	0	22,483	14,100	22,483	14,100
Rubble	0	0	0	0	0	0	0	0	0	0	14,287	8,158	14,287	8,158
Soil	0	0	0	0	0	0	0	0	0	0	502	442	502	442
Paper and Card	-1,366,953	-1,378,987	-1,836,137	-1,866,364	-2,678,380	-2,710,385	-3,263,905	-3,228,394	-2,363,309	-2,695,616	-1,838,128	-1,112,598	-13,346,811	-12,992,344
Plastics	-350,055	-360,327	-642,887	-601,977	-598,111	-592,848	-582,871	-612,717	-643,115	-649,770	-41,349	-17,184	-2,858,388	-2,834,823
Glass	-920,314	-997,355	-2,091,499	-2,243,860	-1,911,464	-2,490,745	-3,512,728	-4,930,150	-2,889,029	-3,734,230	-224,952	-224,952	-11,549,987	-14,621,292
Weee	0	0	-12,985	-9,231	0	0	-11,919	-9,955	-261	-724	-222,992	-187,154	-248,157	-207,064
Wood	0	0	0	0	0	0	0	0	-65	-65	-194,738	-159,120	-194,803	-159,185
Used Oils	0	0	0	0	0	0	0	0	0	0	-158,942	-158,942	-158,942	-158,942
Textiles & Footwear	-490	-490	-384,065	-134,044	-111,490	-174,840	-27,287	-27,287	-372,759	-425,444	-4,340,811	-810,092	-5,236,901	-1,572,196
Batteries	0	0	0	0	0	0	0	0	0	0	-74,344	-74,344	-74,344	-74,344
Scrap Metal	0	0	-186,279	-193,040	0	0	-144,196	-210,820	0	0	-8,241,767	-5,041,900	-8,572,241	-5,445,760
Ferrous Metals	-346,459	-355,971	-900,630	-975,821	-506,772	-540,155	-685,997	-798,721	-747,284	-823,515	0	-3,542	-3,187,141	-3,497,725
Non Ferrous	-1,089,494	-1,125,932	-1,236,562	-1,404,924	-1,771,599	-1,982,836	-1,660,501	-2,311,648	-934,394	-1,265,428	-20,327	-59,784	-6,712,876	-8,150,552
Tyres	-11,822	-23,130	-1,542	-1,542	-6,682	-9,766	-2,056	-1,028	-514	-514	-5,654	-5,654	-28,270	-41,634
Landfill	0	0	0	0	6,148,556	4,585,992	1,570,700	275,720	1,722,120	167,692	4,529,040	4,011,048	13,970,416	9,040,452
EFW	5,508,824	5,856,472	11,186,816	12,180,484	3,165,304	4,721,184	7,487,624	8,691,200	7,983,876	9,081,140	1,113,948	751,556	36,446,392	41,282,036
Chemical	0	0	0	0	0	0	0	0	0	0	9,983	7,372	9,983	7,372
Clinical	0	0	0	0	0	0	0	0	0	0	4,606	3,401	4,606	3,401
Abandoned vehicles	0	0	0	0	-27,591	-35,706	0	0	0	0	0	0	-27,591	-35,706
Total	1,081,115	1,263,100	3,488,180	4,333,569	1,317,805	342,122	-1,827,875	-4,232,007	997,511	-1,174,393	-10,054,248	-3,185,261	-4,997,512	-2,652,869

5.0 Zero Waste Scotland Carbon Factors for Waste

Section 5 Table – Zero Waste Scotland Carbon Factors for waste, 2018 dataset

Material type (WSR)	Household (kgCO ₂ eq per tonne of material)			
	Generated	Recycled/Composted	Incinerated	Landfilled
Food waste	3,744	-18	-3	989
Batteries	12,107	-579	0	0
Chemical wastes	1,321	4,039	388	0
WEEE	1,754	-181	47	4
Discarded vehicles	6,850	-1,623	328	0
Glass	1,210	-755	54	4
Clinical	0	0	179	420
Household waste	3,208	-653	388	452
Ferrous metal	2,922	-1,771	0	0
Mixed metal	3,893	-2,540	47	4
Non-ferrous metal	12,946	-9,964	0	0
Hardcore and plasterboard	21	2	47	3
Paper and cardboard	882	-547	-118	499
Plastic	3,185	-537	1,824	4
Tyres	3,100	-514	1,729	0
Textiles	20,444	-5,828	216	571
Used oils	1,401	-725	0	0
Green garden	0	-51	-21	214
Wood and chip	516	-288	-180	861
Mixed food and green	328	-48	-20	282

- 5.1 Zero Waste Scotland have been publishing carbon factors for waste since 2017. The publications can be accessed via <https://www.zerowastescotland.org.uk/our-work/carbon-metric-publications>
- 5.2 There is not yet an equivalent set of metrics published for England. This set of factors are the best available to use currently.
- 5.3 The carbon impacts of three different disposal methods (recycling, incineration and landfill) for 20 different waste streams that Warwickshire produces are shown in Section 5 Table. They have been used to estimate the carbon impact of waste disposal, treatment and landfill of Warwickshire waste over the past 8 years.
- 5.4 The figures are shown in equivalent kilograms of Carbon Dioxide per tonne of waste disposed of.

Background papers

None.

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