Appendix 2: Indicative Cost of Implementing the Carbon Offset Framework

This appendix sets out:
1) Examples of different types of carbon offsets in the voluntary offset market, the cost per tonne of carbon and examples of recent customers (table 2).
2) The possible cost to the Council of purchasing carbon offsets from the UK's voluntary carbon market, based on the assumptions set out within figure 3.

This appendix is for information only and does not form part of the carbon offset framework.

Type of scheme	Example of schemes	Example of customers	£ per tonne of carbon
Emissions avoidance			
Methane abatement	'Mootral ruminant', natural feed supplement to reduce ruminants burping, Europe	Fungi Perfecti, 89up	£65
Wind farm	Salkhit wind farm, Mongolia	UNESCO, Southampton Airport	£4
Emissions reduction with short-lived storage			
Woodland creation	Woodland Carbon Code, UK	PwC, Basingstoke Borough Council	£50
Rainforest protection	Ecologi, Brazil	Vodafone, BBC	£13
Emissions capture with long-lived storage			
Carbon capture & storage	Low Carbon Fuel Standard, US	Regulated industries	£125
	Orca, Iceland	Microsoft, Swiss Re	£1,100

Table 3. Examples of carbon offset schemes.

Voluntary carbon markets are based on trading "units" of carbon, where 1 'unit' represents 1 tonne of CO_2 removed from the atmosphere. Currently, there are only 2 standards that the Council could purchase through that would meet the requirements set out in the carbon offset framework above, namely the Woodland Carbon Code and the Peatland Code, although a handful of other standards are in development. There are two types of carbon units typically available for sale under these two codes, which indicate whether the carbon removal is either *promised* or *achieved.* Units which represent *promised* removals are issued to a project developer once a project has started and the quantity of carbon it is expected to remove has been calculated. In UK carbon codes these are known varyingly as "estimated issuance units (EIUs)" or "pending issuance units (PIUs)". Carbon units which have been achieved are known to sell at approximately double the price of PIUs, most likely because the carbon removal is certain, and they can be used immediately. Once used, credits are then retired and cannot be traded or used to offset any other emissions, to avoid the risk of double-counting.

Figure 3 and table 4 below provide a simple illustration of the potential annual cost up to 2050 of offsetting 10% of the Council's scope 1 and 2 carbon emissions, assuming the County Council keeps within its carbon budget trajectory. The assumptions are:
1) The cost of offsetting a tonne of CO_2e is £77 and remains fixed up to 2050. This price is based on recent advice from the consultancy EY, in the absence of actual market rates because there are no carbon credits available from either the Woodland Carbon Code or the Peatland Code.
2) An inflation rate of 3% has been applied to the cost of £77/tonne.

At £77/tonne and an inflation rate of 3% p.a. the total cost to offset 10% of scope 1 and 2 emissions up to 2050 would be approximately £1.87m.
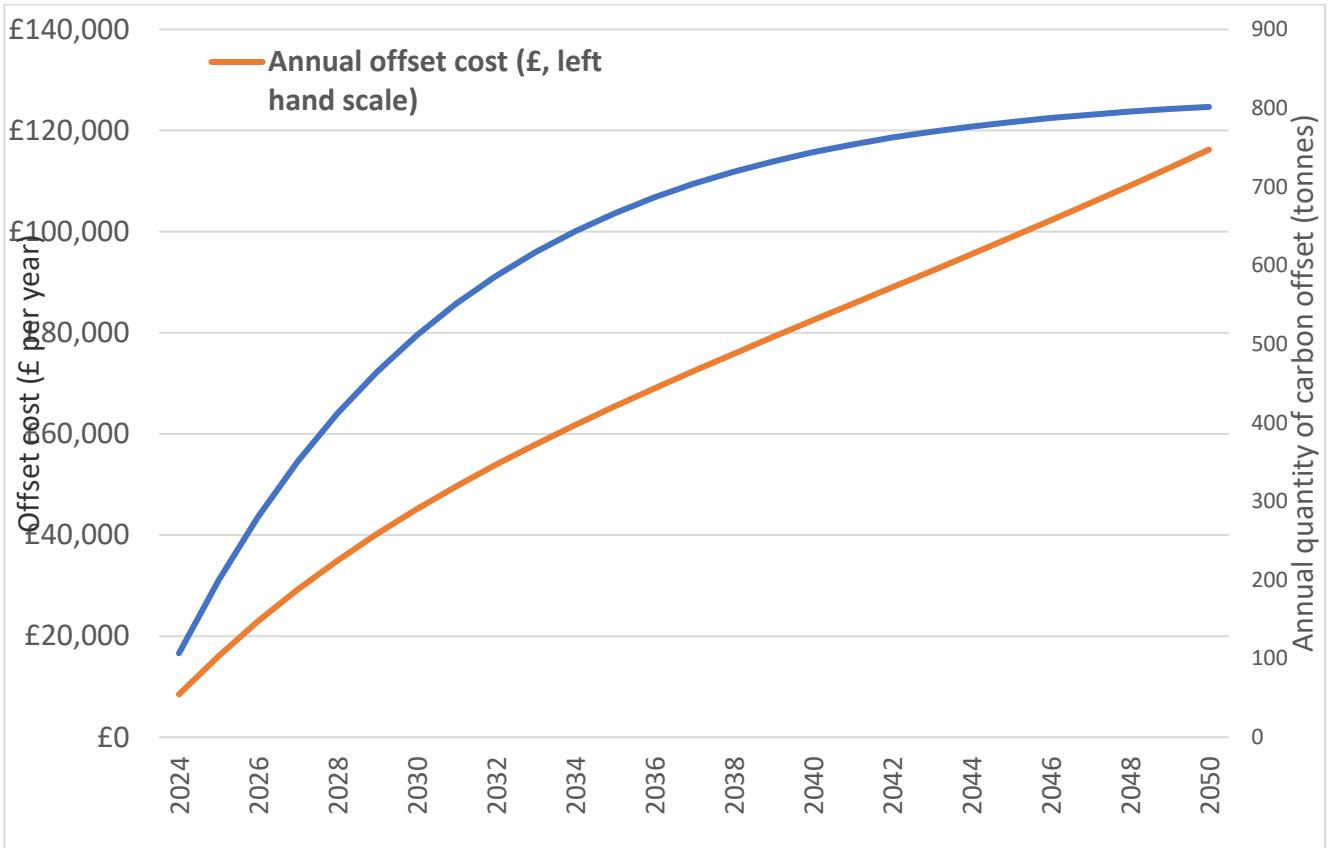
Figure 3. The cost of purchasing 10% of each year's scope 1 & 2 carbon reduction target at 77/tonne and 3% inflation p.a.

Figure 1 is a graph which shows the cumulative cost of purchasing 10% of each year's scope 1 and 2 carbon reduction target emissions between 2024 and 2050, if the cost of each tonne of carbon is assumed to be £77, and the cumulative tonnes of carbon that would be offset during this period.

Year	Current Annual Carbon Budget	13% Carbon Reduction p.a.	10% Maximum Offset p.a.	£77 per Tonne of Carbon
2024	7139	1,067	107	8460
2025	6211	928	93	16074
2026	5403	807	81	22960
2027	4701	702	70	29220
2028	4090	611	61	34944
2029	3558	532	53	40209
2030	3096	463	46	45083
2031	2693	402	40	49628
2032	2343	350	35	53893
2033	2038	305	30	57926
2034	1773	265	27	61765
2035	1543	231	23	65447
2036	1342	201	20	69001
2037	1168	175	17	72455
2038	1016	152	15	75833
2039	884	132	13	79155
2040	769	115	11	82441
2041	669	100	10	85707
2042	582	87	9	88968
2043	506	76	8	92237
2044	441	66	7	95527
2045	383	57	6	98847
2046	333	50	5	102207
2047	290	43	4	105617
2048	252	38	4	109085
2049	220	33	3	112618
2050	191	29	3	116223
		Totals:	**1,227**	**1,871,530**

Table 4. Data table to support figure 3.

Table 4 provides the numbers that are used in figure 3.