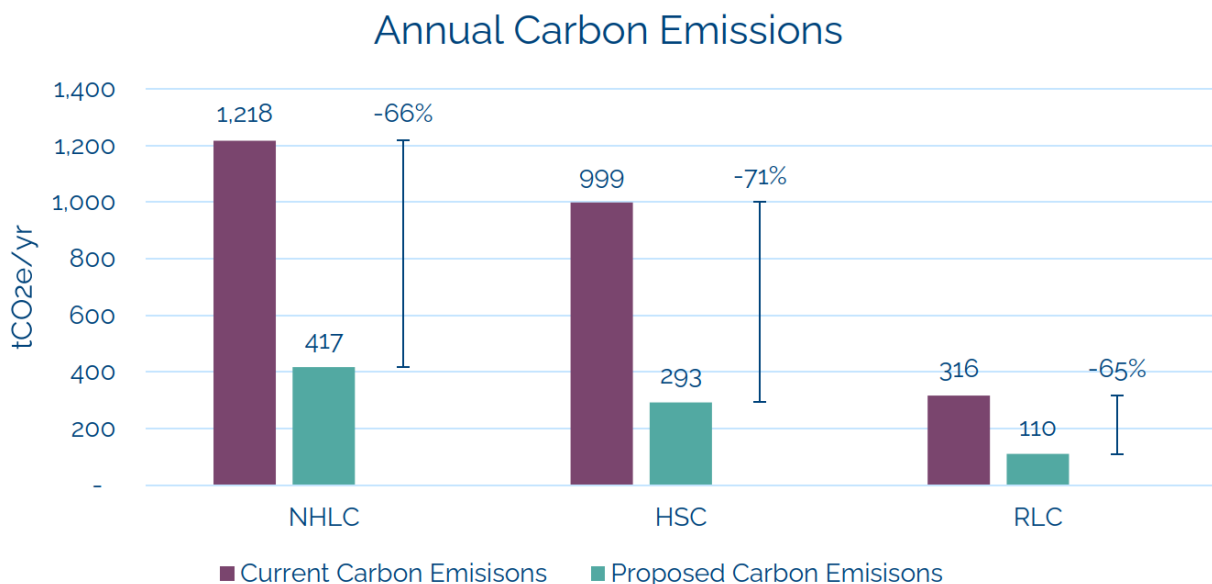


ENERGY COST MODELLING PROVIDED TO 11 JULY 2024 COUNCIL MEETING

8.1 The annual carbon emissions before and after low-carbon interventions have been calculated using the 2023 UK government carbon factors, published by DESNZ. The proposed carbon emissions include both the additional grid import due to the loss of CHP-generated electricity, and PV generation. After the decarbonisation measures, there would be over 60% reduction in CO₂e emissions for all sites. There are still some carbon emissions for each site, partly due to residual emissions from energy consumption. These will reduce year-on-year as the UK's power grid transitions to renewable sources, in line with the Government's 2050 net-zero target. NHLC also has gas boilers for the learner pool which are not included in the project, due to the boilers not being eligible for funding, as they are not end of life (less than 10 years old). At Hitchin, the emissions include those from the outdoor pool which also are not included in the project, due to the boilers being too new to qualify. The following graph demonstrates the carbon savings at each facility following completion of the decarbonisation project:



8.2 Once the works are complete there will be anticipated revenue savings from lower energy consumption, of approximately £32,000 per year (based on the leisure operator's current energy prices). Due to current low gas prices and the decarbonisation project leading to a higher reliance on grid electricity, the anticipated savings based on current prices are low.

8.3 The future savings will be affected by any change in gas and electricity prices, especially where the changes are relatively different. Electricity has the potential to be produced with a lower (or zero) carbon impact, relative to gas. Electricity production can also be achieved without using limited resources. This could be an indication that electricity prices are more likely to move downwards relative to any movement in gas prices. The heatmap below shows a comparison of estimated current usage (pre decarbonisation interventions) and estimated future energy usage (after decarbonisation interventions). Each usage estimate is costed at various relative prices for gas and electricity. The difference between the total cost is shown (in £000's) and shaded as green to red. Green shows cost decreases and red shows cost increases. The £32k annual cost reduction is highlighted at that shows the impact at current prices. Under the leisure contract, the Council takes on the risk and reward in

relation to energy prices. If energy prices increase with general inflation, then it is estimated that they would increase by around 20% over a 10 year period. In that scenario the estimated savings would actually reduce slightly to £26k annually. In paragraph 8.13 it shows a revenue cost of capital of around £450k. The heatmap shows that there would need to be a significant increase in gas prices (80%+ increase) and a significant fall in electricity prices (20%+ decrease) to move to a point where the cost of capital would be covered by energy savings.

COMPARING COST OF CURRENT USAGE WITH FORECAST USAGE (POST DECARBONISATION) AT VARIOUS PRICE POINTS FOR ELECTRICITY AND GAS																
Amounts are £000		ELECTRICITY PRICES AS A PERCENTAGE OF CURRENT														
		60%	70%	80%	90%	100%	110%	120%	130%	140%	150%	160%	170%	180%	190%	200%
GAS PRICES AS A PERCENTAGE OF CURRENT	60%	-46	-12	22	56	89	123	157	191	225	259	293	327	360	394	428
	70%	-77	-43	-9	25	59	93	127	161	194	228	262	296	330	364	398
	80%	-107	-73	-39	-5	29	62	96	130	164	198	232	266	300	333	367
	90%	-137	-104	-70	-36	-2	32	66	100	134	167	201	235	269	303	337
	100%	-168	-134	-100	-66	-32	2	35	69	103	137	171	205	239	272	306
	110%	-198	-164	-131	-97	-63	-29	5	39	73	107	140	174	208	242	276
	120%	-229	-195	-161	-127	-93	-59	-26	8	42	76	110	144	178	212	245
	130%	-259	-225	-191	-158	-124	-90	-56	-22	12	46	80	113	147	181	215
	140%	-290	-256	-222	-188	-154	-120	-86	-53	-19	15	49	83	117	151	185
	150%	-320	-286	-252	-218	-185	-151	-117	-83	-49	-15	19	53	86	120	154
	160%	-351	-317	-283	-249	-215	-181	-147	-113	-80	-46	-12	22	56	90	124
	170%	-381	-347	-313	-279	-245	-212	-178	-144	-110	-76	-42	-8	26	59	93
	180%	-411	-378	-344	-310	-276	-242	-208	-174	-140	-107	-73	-39	-5	29	63
	190%	-442	-408	-374	-340	-306	-273	-239	-205	-171	-137	-103	-69	-35	-2	32
200%	-472	-438	-405	-371	-337	-303	-269	-235	-201	-167	-134	-100	-66	-32	2	

8.4 The issue with the heatmap above is that it is comparing relative costs, and in some cases both impacts would be unaffordable against current budgets. The revised heatmap below compares the costs at various gas and electricity prices, with the cost of current usage at inflated current prices. The inflation that has been added is based on 10 years of general price inflation, which is estimated at around 22%. This shows that we get towards the right size of savings (to cover the revenue costs of capital) when there is a fall in electricity prices by 40%, with a lower impact from any change in gas prices.

COMPARING COST OF FORECAST USAGE (POST DECARBONISATION) AT VARIOUS PRICE POINTS FOR ELECTRICITY AND GAS WITH ESTIMATED IMPACT OF INFLATION (2% PER YEAR OVER 10 YEARS) ON CURRENT USAGE AND PRICES

Amounts are £000		ELECTRICITY PRICES AS A PERCENTAGE OF CURRENT														
		60%	70%	80%	90%	100%	110%	120%	130%	140%	150%	160%	170%	180%	190%	200%
GAS PRICES AS A PERCENTAGE OF CURRENT	60%	-469	-402	-334	-267	-199	-132	-64	3	71	138	206	273	341	408	476
	70%	-465	-397	-330	-262	-195	-127	-60	8	75	142	210	277	345	412	480
	80%	-461	-393	-326	-258	-191	-123	-56	12	79	147	214	282	349	417	484
	90%	-456	-389	-321	-254	-186	-119	-51	16	84	151	219	286	354	421	489
	100%	-452	-385	-317	-250	-182	-115	-47	20	88	155	223	290	358	425	493
	110%	-448	-380	-313	-245	-178	-110	-43	25	92	160	227	295	362	430	497
	120%	-443	-376	-308	-241	-173	-106	-38	29	96	164	231	299	366	434	501
	130%	-439	-372	-304	-237	-169	-102	-34	33	101	168	236	303	371	438	506
	140%	-435	-367	-300	-232	-165	-97	-30	38	105	173	240	308	375	443	510
	150%	-431	-363	-296	-228	-161	-93	-26	42	109	177	244	312	379	447	514
	160%	-426	-359	-291	-224	-156	-89	-21	46	114	181	249	316	384	451	519
	170%	-422	-354	-287	-219	-152	-85	-17	50	118	185	253	320	388	455	523
	180%	-418	-350	-283	-215	-148	-80	-13	55	122	190	257	325	392	460	527
	190%	-413	-346	-278	-211	-143	-76	-8	59	127	194	262	329	397	464	531
200%	-409	-342	-274	-207	-139	-72	-4	63	131	198	266	333	401	468	536	