

## September Cabinet Paper: BCC Corporate Estate Decarbonisation Programme

### Appendix A

#### ***Background***

Bristol City Leap (BCL) (the City Leap council/Ameresco joint venture company) in partnership with the council have developed a Decarbonisation Programme for the council's corporate estate. This programme sets out how the council's 2025 net zero objective for its corporate estate will be achieved. This programme was devised by a strategic property decarbonisation working group (SPWG) consisting of officers from the council's Corporate Landlord, Sustainability, and Property teams and the council's internal City Leap team (referred to as the Client Function) as well as representatives from BCL. The SPWG was established by the Client Function with the purpose of reviewing various options and data to establish the proposed decarbonisation programme. The approach taken by the working group is set out below.

The SPWG proposes to prioritise capital investment in the top 30 energy consuming buildings in the Corporate Estate. The top 30 list accounts for 88% of gas carbon emissions (75% of all carbon emissions) from the buildings which are in the scope of this cabinet report. The top 30 consumers list has been created in partnership with stakeholders across the council, taking into account carbon emissions, asset condition, ongoing or planned capital projects, and long term strategic asset retention as set out below.

#### ***Identifying the top 30 consumers and their route to decarbonisation***

Each site within the Corporate Estate was initially ranked in order of carbon emissions. Following this, a series of consultations were conducted across the council to ensure that there are no conflicting proposals for a Corporate Estate building which would mean that the building should be treated as out of scope (e.g. the building is to be disposed of or leased leading to the building falling into the Investment Estate category). Additional information about each site was also sought in the working groups (for example, information about planned capital projects, issues which impact provision of public services from the site or improvements that are required to a site to meet statutory or regulatory improvements). This information was used to adjust and refine the list of properties falling within the top 30 for prioritisation under this decarbonisation programme. Table A "Corporate Properties" sets out the current expected top 30 prioritisation list, together with their route to decarbonisation and expected cost of that route.

Each building in the top consumers list that was not removed from scope or added into the top 30 priority list as a result of this refining process was allocated a route to heat decarbonisation. This is either through connecting the building to the heat network, implementing a multi-measure programme funded through any successful PSDS bid or green gas contracting. The allocation was determined by the expected grant criteria for PSDS, the proposed heat network expansion plans and the level of gas consumption (it being the council's preference that green gas is utilised for smaller gas consumers).



The primary objective of the decarbonisation programme is to decarbonise heating in the estate and not to make savings on energy bills. The revenue costs of the programme are currently estimated to be cost neutral, as running costs will increase through swapping out a cheaper fuel (gas) with a more expensive one (electricity) and anticipated increase in maintenance required for ASHP systems, but this will be countered by savings to the estate through energy conservation measures.

Decarbonising the top 30 buildings will remove 88% of gas carbon emissions from the Corporate Estate. The remaining 12% of gas carbon emissions will be addressed by the proposed Green Gas procurement exercise (for which a separate paper will be brought to cabinet also in September 2023). Green Gas procurement will also be included for sites with a heat decarbonisation plan after 2025.

Capital investments will focus on the decarbonisation of heat, prioritising connection to the heat network as the principle measure for decarbonisation. For buildings which are not near a planned heat network, a multi measure programme will be developed by Bristol City Leap engineers on a building by building basis, promoting whole building solutions.

**Table B – PSDS3c Bid package of measures**

Site Name	Gas t/CO2e	Top 30 Prioritisation	HN Connection	Approach to heat decarbonisation	Survey	Total CAPEX	PSDS grant	BCC/BCL match*
REDFIELD LODGE - PwD	92.16	6	No	PSDS	Due September 23	£700,082	£233,361	£466,721
M SHED	88.53	7	N	PSDS	Due September 23	£1,236,099	£412,033	£824,066
BRISLINGTON TRANSPORT DEPOT	71.95	8	N	PSDS	Complete	£481,106	£160,369	£320,737
ASHTON COURT MANSION HOUSE & VISITORS CENTRE	62.58	9	N	PSDS	Due September 23	£979,297	£326,432	£652,864
CORONERS COURT & MORTUARY - FLAX BOURTON - Mortuary	53.21	10	N	PSDS	Due September 23	£474,726	£158,242	£316,484
NORTH BRISTOL INTERMEDIATE CARE CENTRE - REHAB	52.50	11	N	PSDS	Complete	£826,915	£275,638	£551,277
BRISTOL COMMUNITY LINKS - SOUTH	40.10	12	N	PSDS	Complete	£690,496	£230,165	£460,331
TRINITY LODGE	38.33	15	N	PSDS	Due September 23	£739,363	£246,454	£492,909
THROGMORTON HOUSE - NHS & EDUCATION CTR	31.41	16	N	PSDS	Due September 23	£670,832	£223,611	£447,222
SOUTHMEAD CHILDRENS CENTRE	30.67	17	N	PSDS	Due September 23	£688,642	£229,547	£459,095
RIDINGLEAZE HOUSE	28.41	18	N	PSDS	Complete	£753,593	£251,198	£502,396
BRISTOL COMMUNITY LINKS - NORTH	27.97	19	N	PSDS	Due September 23	£636,820	£212,273	£424,546
BUSH RESIDENTIAL UNIT - RESPITE CARE	26.78	20	N	PSDS	Due September 23	£624,993	£208,331	£416,662
STOKE LODGE - ADULT LEARNING	24.15	22	N	PSDS	Due September 23	£598,986	£199,662	£399,324
BELBROOK SHORT BREAK UNIT	13.28	23	N	PSDS	Complete	£748,376	£249,459	£498,918
BLAISE CASTLE HOUSE MUSEUM	13.21	24	N	PSDS	Due September 23	£786,431	£262,144	£524,287
STOCKWOOD LIBRARY	12.91	25	N	PSDS	Due September 23	£487,711	£162,570	£325,141
JUNCTION 3 LIBRARY & LEARNING CENTRE	12.22	26	N	PSDS	Due September 23	£480,923	£160,308	£320,615
SYMES HOUSE	11.63	27	N	PSDS	Complete	£689,045	£229,682	£459,364
TIER 3.5 CHILDREN'S HOME.	6.98	28	N	PSDS	Due September 23	£429,120	£143,040	£286,080
ADOLESCENT MALES CHILDREN'S HOME	4.31	29	N	PSDS	Due September 23	£402,624	£134,208	£268,416
						£14,126,181	£4,708,727	£9,417,454

*\*Match funding is currently planned to come from the decarbonisation fund. BCL and Ameresco are exploring commercial models which may reduce the reliance on the decarbonisation fund*

### **Spend To Save Measures**

The main proposed route for the decarbonisation of electricity supplied to buildings on the council’s estate will be via the council’s Sleeved Pool (which is outside the scope of this cabinet report). This will create a link between the council’s generation assets, such as solar farms and wind turbines, and the electricity consumption of the Corporate Estate. This will mean that the council’s electricity consumption will be directly zero carbon. Energy efficiency projects that reduce electricity consumption will still be pursued alongside this. Projects which can save the council money on its energy bills are defined as “Spend to Save” projects, as a return can be made on them. These spend to save projects are being developed by City Leap, however, it is estimated that a total package of c.£2.3m of spend to save works will be undertaken during 23/24. The maintenance cost impact of the spend to save measures is expected to be positive for BCC as the equipment replaced is new and hence requiring less call out maintenance than the existing equipment.

The spend to save measures will be financed through a variety of sources, as set out below:

Proposed Funding Model			
Funding Source	Capital Investment required	Savings per annum	Payback Period (years)
Council Allowable Solutions	£300,000	n/a	
Existing Council Maintenance Budgets	£100,000	n/a	
Salix Recycling Fund	£900,000	£90,000	10
Council Decarbonisation Fund	£987,470	£99,871.91	9.9
	£2,287,470	£189,871.91	

The funding model was created based on utilising available BCC capital funds, grants and developer contributions to deliver the maximum savings possible whilst meeting the requirements of the individual funding sources.

Future Spend to Save packages will be brought forward by BCL depending on the results of other surveys into the estate, priorities of the council, and funding available. These packages will be subject to further BCC decision making processes

Table C: Spend to Save Package

Premises	ECM Name	Electricity Baseline (kWh/yr)	Gas Baseline (kWh/yr)	Energy Savings (kWh/yr)	£ Savings with (£/yr)	Carbon Savings (tCO2e/yr)	Energy Savings (kWh/yr)	£ Savings (£/yr)	Carbon Savings (tCO2e/yr)	Total Capex (£)	Simple Payback (years)	Abatement Cost (£/tCO2e LT)
100 Temple Street	Replacement with high efficiency motors	2,326,899	4,659,403	195,249	£ 66,384.68	49.40	0	£ -	0.00	£ 664,975.00	10.00	£ 2,962.00
100 Temple Street	Energy efficient chillers	2,326,899	4,659,403	188,736	£ 64,170.22	47.80	0	£ -	0.00	£ 1,140,987.00	17.80	£ 5,461.00
Bishopston Library	LED (new fitting)	22,088	97,139	4,228	£ 1,606.53	1.07	0	£ -	0.00	£ 30,400.10	18.92	£ 4,777.87
Bishopsworth Library	LED (new fitting)	14,705	38,189	2,630	£ 946.80	0.67	0	£ -	0.00	£ 15,759.07	16.64	£ 3,981.41
Central Library	LED (new fitting)	164,342	589,153	23,134	£ 9,947.76	5.86	0	£ -	0.00	£ 147,009.98	14.78	£ 4,222.34
Clifton Library	LED (new fitting)	12,892	40,125	2,755	£ 1,239.72	0.87	0	£ -	0.00	£ 19,015.75	17.04	
Filwood Library	LED (new fitting)	50,317	0	2,456	£ 933.17	0.62	0	£ -	0.00	£ 11,874.21	12.72	£ 3,212.87
Horfield Library	LED (new fitting)	4,913	29,540	2,179	£ 1,024.00	0.55	0	£ -	0.00	£ 7,352.44	7.18	£ 2,242.28
Junc 3 Lib & Learning Centre	LED (new fitting)	60,612	184,829	16,363	£ 9,163.49	4.14	0	£ -	0.00	£ 67,509.49	7.37	£ 2,741.29
Marksbury Rd Lib	LED (new fitting)	4,662	32,052	1,239	£ 545.09	0.31	0	£ -	0.00	£ 5,976.04	10.96	£ 3,205.25
Sea Mills Lib	LED (new fitting)	9,260	23,912	1,837	£ 679.56	0.47	0	£ -	0.00	£ 5,742.05	8.45	£ 2,077.32
Stockwood Lib-Southern Links	LED (new fitting)	20,947	45,445	6,033	£ 2,171.74	1.53	0	£ -	0.00	£ 31,850.34	14.67	£ 3,508.10
Westbury Lib	LED (new fitting)	15,171	36,255	2,170	£ 1,106.48	0.55	0	£ -	0.00	£ 7,682.33	6.94	£ 2,352.78
18-20 Ellsworth	LED (new fitting)	60,213	327,439	22,889	£ 8,240.00	6.00				£ 39,919.00	4.80	£ 1,158.79
Ridingleaze	LED (new fitting)	86,663	139,894	31,962	£ 11,506.00	8.00				£ 47,647.00	4.10	
Southmead House	LED (new fitting)	69,228	101,133	22,188	£ 10,206.66	5.62				£ 43,769.52	4.29	£ 1,310.72
				526,047	£189,872	133				£ 2,287,469.30		

The 100 Temple Street Replacement Chiller Savings were calculated using simulations of existing and proposed equipment using known parameters (flow / temperature / efficiency ratios) and referenced against historical weather data for the location. The pump upgrade savings were calculated by taking the power consumption of the current pump set and comparing this to the power consumption of the proposed pump set.

The LED savings were calculated by comparing the power consumption rating of the existing lighting to the power consumption rating of the proposed LED lighting system. This creates a before and after kWh consumption which shows energy saving when subtracted from each other.

The Total CAPEX costs are from the Investment Grade Proposals for the projects produced by Ameresco. These are subject to a value for money exercise via the City Leap project approval processes.