

# ENERGY SAVING/SUSTAINABILITY INITIATIVES APPRAISAL

Initiative	Capital cost of initiative £	Conventional alternative system	Capital cost of conventional alternative system	Extra over capital cost (less cost of conventional system)
<b>Change generator to biofuel and run at times of peak electricity tariff (based on 100 hours per year). 230kVA unit</b>	3000 Excl transport costs and any additional storage costs	Extra over cost	-	3000
<b>Lighting</b> New lighting to retail areas, based on a plasterboard ceiling to 1st floor & membrane ceiling to ground floor New lighting to staff areas New lighting to storage areas Controls (daylight modulating to 2500m <sup>2</sup> area)	869,000  Incl above Incl above Incl above All above excl strip-out of existing	New lighting to suit new plasterboard ceilings throughout  Extra over cost as existing would remain Extra over cost as existing would remain Extra over cost	729,000  - - -	140,000  Incl above Incl above Incl above
<b>Energy sub-metering</b> Based on 30 in total (27 electricity and 3 energy meters)	35,000	Extra over cost	-	35,000
<b>Variable fresh air supply</b> Motorised dampers to AHU fresh air inlets and variable speed drives to AHU supply and extract fan motors	15,000	Extra over cost as assume conventional option would not have these	-	15,000
<b>Displacement ventilation to gd floor areas</b> Low level air distribution via bespoke columns  Solar water heating Option 1, based on 110m <sup>2</sup> area Option 2, based on 50m <sup>2</sup> area	242,000 excl strip-out of existing  77,000 35,000	Replacement of existing system high level all air system  Conventional hot water system retained as back-up, so extra over cost Conventional hot water system retained as back-up, so extra over cost	100,000  - -	142,000  77,000 35,000
<b>Micro CHP fuelled by gas</b> (to supply heating to cold isles in food hall)	29,000	Extra over cost as existing boilers feed the system	-	29,000
<b>Wind turbines</b> 3 x 2.5kW turbines	48,000	Extra over cost	-	48,000
<b>Photo-voltaics, based on 110m<sup>2</sup> area</b>	102,000	Extra over cost	-	102,000
<b>Heat recovery</b> Use of heat recovery on AHUs (plate heat exchangers) Use of heat recovery from food refrigeration condensers	30,000 Say 20,000 Subject to review, as to whether this could be made to work effectively	Assume runaround coils would be the conventional alternative	19,500	10,500 20,000
<b>Use of windcatcher/sunpipes to reduce ventilation/lighting requirements to staff areas</b>	40,000	Extra over cost	-	40,000
<b>PIRs on extract fans</b>	750	Extra over cost	-	750
<b>Reduction in water consumption</b> PIR urinals Dual flush WCs using PIR detection Sensor taps Flow restrictors on taps	1100 700 4550 350	Extra over cost as assume Assumes single flush PIR system in place, therefore cost is extra over Standard taps Extra over cost	- - 1000 -	1100 700 3550 350
<b>Rainwater harvesting and refrigeration condensate recovery for WC flushing (6000l capacity tank)</b>	45,000	Extra over cost	-	45,000
<b>Heating system</b> Condensing boilers, TRVs to radiators, compensated radiator circuit	45,000	Conventional boilers are not being replaced Extra over cost	-	45,000

	<b>Saving in annual energy consumption cost over conventional system</b>	<b>Service life</b>	<b>Effect on annual maintenance over conventional system</b>	<b>Grant availability</b>	<b>Qualification for enhanced capital allowance (ECA)</b>	<b>Approx payback period (discounted @ 4% allowance)</b>	<b>Tonnes of CO<sub>2</sub> saved per annum</b>
	612	Appreciable Standby 25-30 years Frequent use 15-20 yrs	Significant additional annual maintenance circa £10,000 at years 5 and 8 for major works	No	No	No payback Costs more to maintain than it saves, CO <sub>2</sub> saving is substantial	65
	25,300	25 years	-	No	Yes	6 years	78
	Incl above		-	No	Yes	Incl above	47
	Incl above	25 years	-	No	Yes	Incl above	Incl above
	Incl above	10-15 years	-	No	Yes	Incl above	2
	10,000	15 years	Say less than £500 annual maintenance	No	Yes	3 years	58
	6900	Damper actuators 10-15 yrs VDSs 10-15 years	Say less than £500 annual maintenance	No	Yes	1-2 yrs incl ECA saving	38
	4500	20-25 years	No significant difference	No	No	30 years	26
	2058	25 years	< £500 additional annual maintenance	Yes	Yes	Over 25 years incl ECA saving	24
	1200	25 years	Less than £500 additional annual maintenance	Yes	Yes	Over 25 years incl ECA saving	9
	2800	-	£1200 maintenance charge	Yes	Yes	19 years incl ECA saving	10
	858	25 years	Allow £900 annual maintenance	Yes	No	No payback Costs as much to maintain as it saves	6
	1000	20-25 years	Allow £100 additional annual maintenance	Yes	Yes	Over 25 years incl ECA saving	4
	850	Negligible	< £500 additional annual maintenance	No	Yes	21 years incl ECA saving	3.7
	1600	-	< £500 additional annual maintenance	No	Yes	15 years	12
	960	-	< £500 additional annual maintenance	No	No	Over 25 years	2
	180	Negligible	Negligible	No	No	4 years	1
	313	Say 15 years	Minimal	No	Yes	4 years incl ECA saving	-
	425	Say 15 years	Negligible	No	Yes incl ECA saving	2 years	-
	468	Negligible	Allow £100 additional annual maintenance negligible	No	Yes	10 years incl ECA saving	1
	128	Say 10 years		No	No	3 years	0.3
	3600	20 years	< £500 additional annual maintenance	No	Yes	12 years incl ECA saving	0
	2050	20 years	< £500 additional	No annual maintenance	Yes	21 years incl ECA saving	14