

Street Lighting - LED replacement**1 Estimated Savings in annual Energy Costs**

Road type	Current number of LED lights (trial areas)	Non LED energy usage (kWh per light per year) ¹	LED Energy Usage (kWh per light per year)	Reduction in kWh per year	Cost per kWh (pence) ³	Saving per light (£)	Total number of lights in the borough	Total saving expected (£)
Residential	74	372	131	241	10.6	25.55	6,276	160,327
Main roads (primary)	50	1,246	610	636	10.6	67.42	780	52,584
Main roads (secondary)	93	745	417	328	10.6	34.77	1,287	44,746
Totals	217						8,343	257,658

¹Based on current average energy usage²Average energy usage based on trial of LED lighting³Assuming a constant price per unit of 10.6 pence. The budget will be adjusted through inflation bids for any fluctuation in this rate.⁴Average of 4,140 hours of lighting per light per year**2 Estimated Savings in annual Maintenance Costs**

Maintenance type	Residential Roads (£/yr)		Main roads (big) (£/yr)		Main roads (small) (£/yr)		Total (£/yr)		% Saving from LED	Comments
	non LED	LED	non LED	LED	non LED	LED	non LED	LED		
Routine/planned mtce										
Software licences										Lighting reality design software, Power data associates energy management, cost cannot be adjusted
Electrical testing	1,950	1,950	350	350	700	700	3,000	3,000	0%	Statutory item, costs cannot be changed
Structural testing	11,000	11,000	1,000	1,000	3,000	3,000	15,000	15,000	0%	Statutory item, costs cannot be changed
Bulk Clean and Change of 1 scout area	11,100	0	2,500	0	5,000	0	18,600	0	-100%	Not statutory, could be reduced
Painting	2,000	2,000	0	0	0	0	2,000	2,000	0%	Not statutory, could be reduced
Nightscoouts	10,500	10,500	1,500	1,500	3,000	3,000	15,000	15,000	0%	Contract agreed costs to meet requirements of Well Lit Highways, costs cannot be changed without impacting service and safety
Emergency on-call	9,000	9,000	1,000	1,000	3,000	3,000	13,000	13,000	0%	Contract agreed costs to meet requirements of Well Lit Highways, costs cannot be changed without impacting service and safety
Reactive mtce										
Road Traffic Accidents/Callouts	36,500	36,500	8,000	8,000	14,000	14,000	58,500	58,500	0%	Cost outside our control, cannot be changed without impacting service and safety
investigate defect	17,500	7,000	3,500	2,000	4,500	3,000	25,500	12,000	-53%	Should be reduced as part of LED replacement
lamp replacement	5,100	1,250	1,100	450	800	300	7,000	2,000	-71%	Should be reduced as part of LED replacement
private cabling repairs/replacement	3,500	3,500	2,000	2,000	500	500	6,000	6,000	0%	Cost outside our control, cannot be changed without impacting service and safety
replace missing signs or posts	29,500	29,500	5,500	5,500	7,000	7,000	42,000	42,000	0%	Cost outside our control, cannot be changed without impacting service and safety
replace damaged bollards	15,000	15,000	7,500	7,500	10,700	10,700	33,200	33,200	0%	Cost outside our control, cannot be changed without impacting service and safety
replace damaged columns	14,700	14,700	2,100	2,100	4,200	4,200	21,000	21,000	0%	Cost outside our control, cannot be changed without impacting service and safety
replace damaged lanterns	2,800	0	400	0	800	0	4,000	0	-100%	Should be reduced as part of LED replacement
replace damaged cut outs	1,050	1,050	150	150	300	300	1,500	1,500	0%	Cost outside our control, cannot be changed without impacting service and safety
replace damaged photocells	2,800	2,800	400	400	800	800	4,000	4,000	0%	Cost outside our control, cannot be changed without impacting service and safety
missing doors	1,050	1,050	150	150	300	300	1,500	1,500	0%	Cost outside our control, cannot be changed without impacting service and safety
Illuminated signage mtce	6,000	6,000	1,200	1,200	4,000	4,000	11,200	11,200	0%	Not statutory, but costs outside our control. Costs could be reduced but not as a result of LED work
Non-illuminated signage mtce	42,150	42,150	750	750	2,000	2,000	44,900	44,900	0%	Not statutory, but costs outside our control. Costs could be reduced but not as a result of LED work
Totals (£/yr)	223,200	194,950	39,100	34,050	64,600	56,800	326,900	285,800		
Number of lights	6,276	6,276	780	780	1,287	1,287	8,343	8,343		
Cost per light (£/yr)	35.56	31.06	50.13	43.65	50.19	44.13	39.18	34.26		
Saving per light (£/yr)		4.50		6.47		6.06		4.93		
Total Saving (£/yr)		28,250		5,050		7,800		41,100		

3 Reduction in annual capital expenditure

(funded from the Parking surplus, which can then be used to fund other revenue expenditure)

Capital Cost	non LED		LED		Saving
	Unit Cost (£)	Total Cost (£)*	Unit Cost (£)	Total Cost (£)*	
ELECTRICAL TEST ON LANTERN	8.54	2,178	8.54	2,178	0
ERECT FROM STORE RECTANGULAR SIGN	13.34	3,402	13.34	3,402	0
SUPPLY & INSTALL LAMP COLUMN COMPLETE, WILLOW BRACKET	598.41	152,594	222.12	56,640	95,953
SUPPLY & INSTALL SINGLE WILLOW BRACKET		0	52.30	13,337	-13,337
SUPPLY & INSTALL COLUMN IDENTIFICATION NUMBER SIGN	9.50	2,423	9.50	2,423	0
TAKE UP & DISPOSE/RECYCLE LAMP COLUMN COMPLETE	87.51	22,314	87.51	22,314	0
RE-WIRE LAMP COLUMN	33.58	8,564		0	8,564
ERECT FROM STORE		0	29.21	7,448	-7,448
SUPPLY & INSTALL CUT-OUT		0	39.09	9,968	-9,968
Transfer UMC service to Street Lighting					
Column	642.00	163,710	642.00	163,710	0
WRP Noticing	52.00	13,260	52.00	13,260	0
Contingency				3,764	-3,764
Totals	1,444.88	368,446	1,155.61	298,445	70,000

*based on a column replacement programme of 255 per year

4 Programme of replacement

	25%	49%	76%	100%		
1 Year Replacement	Number of Lights Year 1				Year 2 - 25	Total
Road type	Qtr 1	Qtr 2	Qtr 3	Qtr 4		
Residential roads		2,000	2,276	2,000		6,276
Main roads (primary)	780					780
Main roads (secondary)	1,287					1,287
Supply and Installation Costs (£)	1,233,180	580,000	660,040	580,000		3,053,220

Operational Savings (cumulative £)

Reduction in annual energy costs		97,331	148,423	206,566	257,658
Reduction in annual maintenance costs		12,850	21,853	32,097	41,100
		17,343	34,123	53,220	70,000
Total Annual reduction in costs (£)		127,524	204,399	291,883	368,758

1.5 Year Replacement

	17%	33%	50%	67%	83%	100%	100%	100%		
1.5 Year Replacement	Number of Lights Year 1				Number of Lights Year 2				Year 2 - 25	Total
Road type	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4		
Residential roads		714	1,391	1,391	1,391	1,389				6,276
Main roads (primary)	780									780
Main roads (secondary)	610	677								1,287
Supply and Installation Costs (£)	867,600	572,640	403,390	403,390	403,390	402,810	0	0		3,053,220

Operational Savings (cumulative £)

Reduction in annual energy costs		73,793	115,571	151,105	186,640	222,174	257,658	257,658	257,658
Reduction in annual maintenance costs		8,747	16,064	22,325	28,586	34,848	41,100	41,100	41,100
		11,663	23,333	35,004	46,675	58,346	70,000	70,000	70,000
Total Annual reduction in costs (£)		94,202	154,968	208,435	261,901	315,368	368,758	368,758	368,758

2 Year Replacement

	12%	24%	37%	50%	63%	75%	88%	100%		
2 Year Replacement	Number of Lights Year 1				Number of Lights Year 2				Year 3 - 25	Total
Road type	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4		
Residential roads		400	600	1,100	1,050	1,050	1,050	1,026		6,276
Main roads (primary)	780									780
Main roads (secondary)	200	600	487							1,287
Supply and Installation Costs (£)	646,200	440,000	436,980	319,000	304,500	304,500	304,500	297,540		3,053,220

Operational Savings (cumulative £)

Reduction in annual energy costs		59,538	90,617	122,877	150,977	177,801	204,624	231,447	257,658
Reduction in annual maintenance costs		6,262	11,699	17,351	22,303	27,029	31,755	36,482	41,100
Reduction in column replacement costs		8,223	16,613	25,733	34,962	43,772	52,582	61,392	70,000
Total Annual reduction in costs (£)		74,023	118,929	165,961	208,243	248,602	288,962	329,321	368,758

3 Year Replacement

	9%	18%	27%	35%	43%	51%	60%	68%	75%	84%	92%	100%		
3 Year Replacement	Number of Lights Year 1				Number of Lights Year 2				Number of Lights Year 3				Year 4 - 25	Total
Road type	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4		
Residential roads			150	700	650	700	700	676	650	700	700	650		6,276
Main roads (primary)	780													780
Main roads (secondary)		700	587											1,287
Supply and Installation Costs (£)	538,200	378,000	360,480	203,000	188,500	203,000	203,000	196,040	188,500	203,000	203,000	188,500		3,053,220

Operational Savings (cumulative £)

Reduction in annual energy costs		52,584	76,922	101,163	119,045	135,650	153,532	171,414	188,683	205,288	223,170	241,053	257,658
Reduction in annual maintenance costs		5,050	9,292	13,525	16,676	19,602	22,753	25,904	28,947	31,872	35,023	38,174	41,100
		6,544	12,418	18,601	24,475	29,928	35,801	41,675	47,347	52,800	58,673	64,547	70,000
Total Annual reduction in costs (£)		64,179	98,632	133,289	160,196	185,180	212,086	238,993	264,976	289,961	316,867	343,774	368,758

5 Summary of annual savings

	£			
	1 Year Replacement	1.5 Year Replacement	2 Year Replacement	3 Year Replacement
Year 1	291,883	208,435	165,961	133,289
Year 2	368,758	368,758	329,321	238,993
Year 3	368,758	368,758	368,758	343,774
Years 4 - 25	368,758	368,758	368,758	368,758
Payback period (years)	8.49	8.71	8.94	9.34

6 MTFS Profile

Replacement programme beginning in June 2016

	18 Month Replacement (£)
2016-17	154,968
2017-18	368,758
2018-19	368,758

For a bulk supply and install cost:

	£ per lantern
Residential	290
Main roads (primary)	690
Main roads (secondary)	540

1 Estimated Savings in annual Carbon emissions

Road type	Current number of LED lights (trial areas)	Non LED energy usage (kWh per light per year) ¹	LED Energy Usage (kWh per light per year)	Reduction in kWh per year	Cost per kWh (pence) ³	Saving per light (£)	Total number of lights in the borough	Total saving expected (£)
Residential	74	372	131	241	10.6	25.55	6,276	160,327
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Totals	217						8,343	257,658

Non LED carbon usage (T)	LED carbon usage (T)	carbon saving per light (T)	total carbon saving expected (T)
0.17	0.06	0.11	690.36
0.56	0.27	0.29	226.2
0.33	0.19	0.14	180.18
			1,097