

APPENDIX 1

Summary of Options:

- **Option A – Trimming - Reducing the operating hours of street lighting so the lights go on and off when it is darker.**
- **Option B – Dimming – Reducing the brightness of street lighting to minimum standards (already in place for side roads).**
- **Option C – Trimming and Dimming – reducing brightness and reducing the operating hours so lights go on and off when it is darker.**
- **Option D – Trimming and Switching lights off between certain times. D(1) would switch lights off between midnight and 5am, D(2) would switch lights off between midnight and 6am.**

Option A- Trimming is reducing the operating hours of the lighting, so the lights go on & off when it's darker.

Option A1 Side Road Lanterns	Savings at current rate	Cost to implement	Payback at current rate
Trimming- slightly increased darkness switch on/off	£3,676 per annum	£614,950	$£614,950 \div £3,676 = 167.3$ years

A1 Energy savings Side Road Lanterns	Current energy consumption per kWh	Energy savings per kWh	Energy savings per column
Number of columns- 17,570	1,692,520	16,404	0.93 kWh

Option A2 Main Road Lanterns	Savings at current rate	Cost to implement	Payback at current rate
Trimming- slightly increased darkness switch on/off	£5,332 per annum	£284,200	$£284,200 \div £5,332 = 53.3$ years

A2 Energy savings Main Road Lanterns	Current energy consumption per kWh	Energy savings per kWh	Energy savings per column
Number of columns- 8,120	2,454,806	23,793	2.93 kWh

Option B- Dimming, turning the light levels down.

Option B1 Side Road Lanterns	Savings at current rate	Cost to implement	Payback at current rate
Dimming to 75% light output 00.00-06.00	£0	£ 0	N/A

B1 Energy savings Side Road Lanterns	Current energy consumption per kWh	Energy savings per kWh	Energy savings per column
Number of columns- 17,570	1,692,520	N/A	N/A

There is no scope to dim the side road lanterns, as these have already been designed to the minimum level allowable.

Option B2 Main Road Lanterns	Savings at current rate	Cost to implement	Payback at current rate
Dimming to 75% light output 00.00-06.00	£59,984	£284,200	$£284,200 \div £59,584 = 3.4$ years

<u>B2 Energy savings</u> Main Road Lanterns	Current energy consumption per kWh	Energy savings per kWh	Energy savings per column
Number of columns- 8,120	2,454,806	267,667	32.96 kWh

Option C- Trimming and dimming, reducing the operating hours and turning the light levels down.

<u>Option C1</u> Side Road Lanterns	Savings at current rate	Cost to implement	Payback at current rate
Trimming- less darker switch on/off & dimming to 75% light output 00.00-06.00 (No scope to dim side roads further)	£5,330	£614,950	115 years

<u>C1 Energy savings</u> Side Road Lanterns	Current energy consumption per kWh	Energy savings per kWh	Energy savings per column
Number of columns- 17,570	1,692,520	23,786	

<u>Option C2</u> Main Road Lanterns	Savings at current rate	Cost to implement	Payback at current rate
Trimming- less darker switch on/off & dimming to 75% light output 00.00-06.00	£73,614 per annum	£284,200	$£284,200 \div £73,614 = 3.9$ years

<u>C2 Energy savings</u> Main Road Lanterns	Current energy consumption per kWh	Energy savings per kWh	Energy savings per column
Number of columns- 8,120	2,454,806	328,487	40.45 kWh

Option D - Trimming and switching off the lights during specific times.

<u>Option D1</u> Side Road Lanterns	Savings at current rate	Cost to implement	Payback at current rate
A. Trimming- slightly increased darkness switch on/off 00.00-05.00	£168,738 per annum	£797,870	4.7 years
B. Trimming- slightly increased darkness switch on/off 00.00-06.00	£191,990 per annum		4.2 years

<u>D1 Energy savings</u> Side Road Lanterns	Current energy consumption per kWh	Energy savings per kWh	Energy savings per column
A. Number of columns- 17,570	1,692,519.84	750,732	42.85 kWh
B. Number of columns- 17,570	1,692,519.84	856,713	44.88 kWh

<u>Option D2</u> Main Road Lanterns	Savings at current rate	Cost to implement	Payback at current rate
A. Trimming- slightly increased darkness switch on/off 00.00-05.00	£244,736 per annum	£351,060	1.4 years
B. Trimming- slightly increased darkness switch on/off 00.00-06.00	£278,460 per annum		1.3 years

<u>D2 Energy savings</u> Main Road Lanterns	Current energy consumption per kWh	Energy savings per kWh	Energy savings per column
A. Number of columns- 8,120	2,454,805.63	1,092,059	134.49 kWh
B. Number of columns- 8,120	2,454,805.63	1,242,522	140.86 kWh

1. Side Roads		Current	Option A1	Option B1	Option C1	Option D1 (A)	Option D2 (B)
Number of lanterns		17,570	17,570	17,570	17,570	17,570	17,570
22/23 Consumption Total (kWh)		1,692,520	1,676,116	1,692,520	1,668,734	939,560	835,802
22/23 Energy Consumption Charge (per kWh)		0.2241	0.2241	0.2241	0.2241	0.2241	0.2241
22/23 Energy Usage Cost		£379,294	£375,618	£379,294	£373,963	£210,555	£187,303
23/24 Energy Consumption Charge (per kWh)		0.3156	0.3156	0.3156	0.3156	0.3156	0.3156
23/24 Forecast Energy Usage Cost		£534,159	£528,982	£534,159	£526,652	£296,525	£263,779
Cost saving at 22/23 prices			-£3,676	£0	-£5,330	-£168,738	-£191,991
Cost saving at 23/24 prices			-£5,177	£0	-£7,507	-£237,634	-£270,380
Implementation Cost			£614,950	£0	£614,950	£797,870	£797,870
Payback period (22/23 prices)			167.3	n/a	115.4	4.7	4.2
Payback period (23/24 prices)			118.8	n/a	81.9	3.4	3.0
2. Main Roads		Current	Option A2	Option B2	Option C2	Option D2 (A)	Option D2 (B)
Number of lanterns		8,120	8,120	8,120	8,120	8,120	8,120
22/23 Consumption Total (kWh)		2,454,806	2,431,013	2,187,139	2,126,319	1,362,724	1,212,235
22/23 Energy Consumption Charge (per kWh)		0.2241	0.2241	0.2241	0.2241	0.2241	0.2241
22/23 Energy Usage Cost		£550,122	£544,790	£490,138	£476,508	£305,386	£271,662
23/24 Energy Consumption Charge (per kWh)		0.3156	0.3156	0.3156	0.3156	0.3156	0.3156
23/24 Forecast Energy Usage Cost		£774,737	£767,228	£690,261	£671,066	£430,076	£382,581
Cost saving at 22/23 prices			-£5,332	-£59,984	-£73,614	-£244,736	-£278,460
Cost saving at 23/24 prices			-£7,509	-£84,476	-£103,670	-£344,661	-£392,155
Implementation Cost			£284,200	£284,200	£284,200	£351,060	£351,060
Payback period (22/23 prices)			53.3	4.7	3.9	1.4	1.3
Payback period (23/24 prices)			37.8	3.4	2.7	1.0	0.9
Total Potential Savings			Option A	Option B	Option C	Option D (1)	Option D (2)
Cost saving at 22/23 prices			-£9,008	-£59,984	-£78,944	-£413,474	-£470,451
Cost saving at 23/24 prices			-£12,686	-£84,475	-£111,177	-£582,295	-£662,535