Appendix 1 – Cost benefit analysis for LED with CMS – 12-year repayment

LED on Principal Roads repaid over 12 years including Central Management System (CMS) - Current electricity prices

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total (check)
	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2026/27	2027/28	2028/29	2029/30	
	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£
Capital Financing Costs																	
Opening CFR	0	2,429,000	4,655,583	4,250,750	3,845,917	3,441,083	3,036,250	2,631,417	2,226,583	1,821,750	1,416,917	1,012,083	607,250	202,417	0	0	
New expediture 2016/17																	
Cost of Light Emitting Diodes (LEDs)	1,454,500																**1,454,500**
Cost of Central Management System (CMS)	693,000																**693,000**
Cost of Installation & Project Management	281,500																**281,500**
Principal Repayment		202,417	202,417	202,417	202,417	202,417	202,417	202,417	202,417	202,417	202,417	202,417	202,417				**2,429,000**
New expediture 2017/18																	
Cost of Light Emitting Diodes (LEDs)		1,454,500															**1,454,500**
Cost of Central Management System (CMS)		693,000															**693,000**
Cost of Installation & Project Management		281,500															**281,500**
Principal Repayment			202,417	202,417	202,417	202,417	202,417	202,417	202,417	202,417	202,417	202,417	202,417	202,417			**2,429,000**
Closing CFR	**2,429,000**	**4,655,583**	**4,250,750**	**3,845,917**	**3,441,083**	**3,036,250**	**2,631,417**	**2,226,583**	**1,821,750**	**1,416,917**	**1,012,083**	**607,250**	**202,417**	**0**	**0**	**0**	
Interest	0	0	0	0	0	0	56,677	48,580	40,483	32,387	24,290	16,193	8,097	2,024	0	0	**228,731**
Principal repayments	0	202,417	404,833	404,833	404,833	404,833	404,833	404,833	404,833	404,833	404,833	404,833	404,833	202,417	0	0	**4,858,000**
Total Capital Financing Costs **	**0**	**202,417**	**404,833**	**404,833**	**404,833**	**404,833**	**461,510**	**453,413**	**445,317**	**437,220**	**429,123**	**421,027**	**412,930**	**204,441**	**0**	**0**	5,086,731
Columns replaced	6,804	6,804															
Columns Generating savings (Mid point)	1,701	11,907	13,608	13,608	13,608	13,608	13,608	13,608	13,608	13,608	13,608	13,608	13,608	13,608	13,608	13,608	
Energy Saving on current prices per column (£)	58.16	58.16	58.16	58.16	58.16	58.16	58.16	58.16	58.16	58.16	58.16	58.16	58.16	58.16	58.16	58.16	
Est Savings from reduced energy bills	**98,927**	**692,489**	**791,416**	**791,416**	**791,416**	**791,416**	**791,416**	**791,416**	**791,416**	**791,416**	**791,416**	**791,416**	**791,416**	**791,416**	**791,416**	**791,416**	11,871,240
Difference (Deficit)/Surplus	**98,927**	**490,072**	**386,583**	**386,583**	**386,583**	**386,583**	**329,906**	**338,003**	**346,099**	**354,196**	**362,293**	**370,389**	**378,486**	**586,975**	**791,416**	**791,416**	**6,784,509**
Savings Target (Budget 2016)	**(150,000)**	**(250,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	
Difference (Deficit)/Surplus compared to Savings	**(51,073)**	**240,072**	**86,583**	**86,583**	**86,583**	**86,583**	**29,906**	**38,003**	**46,099**	**54,196**	**62,293**	**70,389**	**78,486**	**286,975**	**491,416**	**491,416**	
Cumulative (Deficit)/Surplus	**(51,073)**	**188,999**	**275,582**	**362,165**	**448,747**	**535,330**	**565,236**	**603,239**	**649,338**	**703,534**	**765,827**	**836,216**	**914,702**	**1,201,677**	**1,693,093**	**2,184,509**	
Sensitivity																	
Energy Saving on current prices - 2% increase energy	57.77	57.37	56.96	56.55	56.12	55.69	55.25	54.80	54.34	53.87	53.40	52.91	52.42	51.91	51.39	50.87	
Est Savings from reduced energy bills	98,262	683,080	775,124	769,475	763,712	757,834	751,839	745,724	739,486	733,124	726,634	720,015	713,263	706,377	699,352	692,187	
Difference (Deficit)/Surplus	**98,262**	**480,663**	**370,291**	**364,641**	**358,879**	**353,001**	**290,329**	**292,310**	**294,170**	**295,904**	**297,511**	**298,988**	**300,333**	**501,936**	**699,352**	**692,187**	**5,988,757**
Savings Target (Budget 2016)	**(150,000)**	**(250,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	
Difference (Deficit)/Surplus compared to Savings	**(51,738)**	**230,663**	**70,291**	**64,641**	**58,879**	**53,001**	**(9,671)**	**(7,690)**	**(5,830)**	**(4,096)**	**(2,489)**	**(1,012)**	**333**	**201,936**	**399,352**	**392,187**	
Cumulative (Deficit)/Surplus	**(51,738)**	**178,925**	**249,216**	**313,857**	**372,735**	**425,736**	**416,065**	**408,376**	**402,545**	**398,449**	**395,960**	**394,948**	**395,282**	**597,218**	**996,570**	**1,388,757**	
Energy Saving on current prices - 5% increase energy	57.18	56.15	55.07	53.94	52.75	51.51	50.19	48.82	47.37	45.86	44.26	42.59	40.83	38.99	37.05	35.02	
Est Savings from reduced energy bills	97,263	668,616	749,459	734,052	717,875	700,889	683,053	664,326	644,662	624,015	602,336	579,573	555,671	530,575	504,224	476,555	
Difference (Deficit)/Surplus	**97,263**	**466,200**	**344,626**	**329,219**	**313,042**	**296,055**	**221,543**	**210,913**	**199,345**	**186,795**	**173,213**	**158,546**	**142,741**	**326,134**	**504,224**	**476,555**	**4,446,415**
Savings Target (Budget 2016)	**(150,000)**	**(250,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	**(300,000)**	
Difference (Deficit)/Surplus compared to Savings	**(52,737)**	**216,200**	**44,626**	**29,219**	**13,042**	**(3,945)**	**(78,457)**	**(89,087)**	**(100,655)**	**(113,205)**	**(126,787)**	**(141,454)**	**(157,259)**	**26,134**	**204,224**	**176,555**	
Cumulative (Deficit)/Surplus	**(52,737)**	**163,463**	**208,089**	**237,308**	**250,350**	**246,405**	**167,948**	**78,861**	**(21,794)**	**(134,998)**	**(261,786)**	**(403,239)**	**(560,498)**	**(534,364)**	**(330,140)**	**(153,585)**	

****** **Note any Capital Financing Costs will need to be met by the Directorate irrespective of whether it meets the required level of savings identified.**

Simple Payback - including CMS

Capital cost of the scheme	4,858,000
Estimated yearly savings (excluding maintenance and CRC)	791,416
Simple Payback in Years	6.14

Assumptions

Salix required payback over 6 years
Financial impact of CRC not currently included
First principal repayments commence in year following expenditure
Assumes columns implemented mid year on average
No provision has been made for cost avoidance i.e. that doing nothing will result in an increase in electricity costs
Following repayment of SALIX loan, balance of capital financing requitrement (CFR) outstanding to be borrowed with interest