Report To:	**EXECUTIVE CABINET**
Date:	12 March 2018
Reporting Officer:	Councillor Allison Gwynne – Executive Member (Clean and Green) Emma Varnam - Assistant Director – Operations & Neighbourhoods
Subject:	**LED STREET LIGHTING**
Report Summary:	A report was presented at the Council's Strategic Planning & Capital Monitoring Panel in December 2014 seeking permission to consider the way forward for the Council's street lighting assets, including energy costs. It was recommended that a wholesale LED lantern replacement scheme for residential streets should be undertaken. Also recommended was an assessment on the viability of an LED lantern replacement for the main roads to be undertaken after 3 years (2018).
Recommendations:	IT IS RECOMMENDED TO COUNCIL that a wholesale LED lantern replacement programme should be approved IN PRINCIPLE for the remaining main road traffic routes over two years with an initial allocation of £3.6M subject to any expenditure or financial commitment being SUBJECT to a detailed business case being considered by Members, setting out key assumptions, specified works and costs, and a more detailed plan for delivery. It is intended that this scheme should deliver revenue savings of £282,328 per year based on current prices.
Links to Community Strategy:	The Street Lighting LED Main Road Programme seeks to provide an improved and more sustainable highway related asset for the residents and businesses of Tameside, thereby contributing to a safe environment, continuing economic regeneration and contributing to a low carbon economy; key priorities within the 2012-22 Tameside Sustainable Community Strategy.
Policy Implications:	The proposed programme supports the Council's Corporate Plan priorities around the Sustainable Community Strategy. It also supports the objectives of the Greater Manchester 3rd Local Transport Plan and associated strategies thereby underpinning its aims and objectives at a regional and local level.
Financial Implications: **(Authorised by the Section 151 Officer)**	The Council's three year capital programme approved in October 2017 included an earmarked sum of £3.6m for further investment in LED street lighting. This report provides further detail on the proposed capital investment and forecast energy savings or cost avoidance. Table 4 of this report provides an outline of estimated costs of the LED Street Lighting replacement for main roads. A further detailed business case should be brought back to

Members, setting out key assumptions, specified works and costs, and a more detailed plan for delivery.

Tables 2, 3 and 6 provide analysis of forecast savings (or cost avoidance) expected from the delivery of LED Street Lamp replacement on residential and main roads. The Medium Term Financial Plan assumes revenue budget savings from 2019/20 of £250k as a result of this project. The actual reductions to revenue budgets will not be the same as the forecast cost savings set out in this report due inflationary pressures on energy costs. The service should ensure that robust arrangements are in place to monitor costs and delivery of the project, and to demonstrate the savings being delivered by this investment.

Legal Implications:

(Authorised by the Borough Solicitor)

A detailed business case should be brought back to Members, setting out key assumptions, specified works and costs, and a more detailed plan for delivery for approval.

Risk Management:

- Inclement weather preventing commencement and completion of schemes.

  A comprehensive programme of works will be agreed between partners to ensure completion by approved dates. However, should the programme not be achieved it may be necessary to arrange for any outstanding financial resources to be transferred into the following financial year.

- Inability of suppliers to deliver materials within a time frame to meet completion targets.

  If the successful supplier cannot meet the demand in line with the proposed installation schedule, then approval will be sought to carry over the project into the subsequent year for completion.

- The ability of the Council's own *Operational Services* or external contractors to implement the programme in the two year timescale of the project.

  This risk will be managed by ensuring that should Operational Services or the external contractor be unable to complete the works during the timescale, approval will be sought to carry over the project into the subsequent year for completion.

Access to Information:

The background papers relating to this report can be inspected by contacting the report authors, Lee Holland

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1. BACKGROUND INFORMATION

1.1 The 1980 Highways Act empowers Highway Authorities to provide and maintain lighting on highways for which they are responsible (Section 97). The legal requirements for the illumination of traffic signs are set out in the 2002 Traffic Signs Regulations and General Directions. Street lighting is provided as an aid to road safety, to assist in the prevention of crime (public safety), and to improve the visual amenity of the street scene.

1.2 Street Lighting is a major area of expenditure for the Authority, with a revenue budget of just over £2 million per year, £1.56 million of which is for energy (see Table 1 below) and the remainder used for repairs and maintenance. The Council is responsible for the following total illuminated street furniture worth around £49m in Gross Replacement Cost terms (as submitted as part of Whole of Government accounts 2017/18):

- 26,026 Street Lighting Columns
- 2,556 illuminated signs
- 912 illuminated bollards

1.3 As well as ensuring that the lights are adequately situated and that the lamps are providing adequate light, street lighting lamps need replacing approximately once every five years (meaning around 5,600 lamps will need to be replaced over the course of each year). Electrical testing of all our installations needs to be carried out and the structure of the lighting equipment also needs to be maintained and monitored to ensure it is safe. In order to ensure that the columns remain in a safe condition it is estimated that up to 1,000 columns should be replaced every year.

1.4 Managing these replacements is a major task with heavy reliance being placed on the inventory records held by the Authority which need to provide accurate information regarding the position of the street lighting, the type of equipment that is being used and the date any components were last replaced in order to ensure the right columns and lamps are replaced at the right time.

1.5 As budgets across the Authority are reduced it is important to ensure that the controls in place within street lighting are robust and effective in order to ensure that a potentially reduced service does not result in increased risk to the Authority or to the safety of the general public.

2. REVENUE BUDGETS (2017/18)

2.1 Revenue budgets to support the delivery of this service are detailed below (Table 1) indicating the relative expenditure levels for street lighting related functions:

Table 1 – Revenue Budgets 2017/18

Function	Budget £000's	% of Total
Street Lighting energy	1,561	76.5%
Street Lighting reactive maintenance	243	11.9%
Street Lighting Bulk Change & Clean (planned maintenance)	164	8.0%
Bollards maintenance	4	0.2%
Bollards Bulk Change & Clean	28	1.4%
Signs Maintenance	20	1.0%
Signs Bulk Change & Clean	10	0.5%
Street Lighting painting	10	0.5%

Total	**2,040**	**100%**

2.2 The revenue budget for energy costs has previously been reduced to reflect anticipated energy savings from the installation of LED lamps in residential areas. The Medium Term Financial Plan assumes further net savings of £250k from 2019/20 after inflationary pressures for energy costs.

3. STREET LIGHTING LED RESIDENTIAL ROADS PROJECT

3.1 In December 2014 the Council's Strategic Planning & Capital Monitoring Panel supported a recommendation for a wholesale LED lantern replacement programme starting initially with the residential roads (circa 17,000 lanterns) at a cost of £5M, over a three year period. This was subsequently approved by the Executive Cabinet.

3.2 The council's in-house Design and Delivery team started this project in April 2015 and are due to complete by December 2018. Table 2 below shows the costs / savings envisaged in the December 2014 report and the anticipated outturn figures:

Table 2 – LED Residential Roads Project Forecast Outturn

	December 2014 Report	Estimated outturn figures
Capital Expenditure	£5,000,000	£5,000,000
Annual Energy Savings	£451,270	£494,053

These energy savings have been calculated based on January 2018 tariffs.

3.3 As can be seen from the table above the project will be delivered on budget and the energy cost savings (or cost avoidance) should exceed the original forecast. The revenue budget reductions referenced in section two above are a net saving after taking account of inflationary pressures on energy costs.

3.4 At the time of the December 2014 report it was not economically viable to undertake a replacement programme for the Main Road lanterns. It was estimated that a capital investment of £4.1M for these lanterns would have a payback period of 28 years.

3.5 The report recommended that after three years another feasibility assessment should be undertaken on the financial viability of an LED replacement scheme for the main roads, due to the anticipated improvements in this technology and expected reductions in lantern costs.

4. FINANCIAL VIABILITY ASSESSMENT FOR LED MAIN ROAD LANTERNS

4.1 The energy budget for 2017/18 is £1.56M and this will be reduced in 2019/20 to reflect the installation of the residential roads LED scheme. The amount of this budget attributable to the main road energy costs is £627K.

4.2 There are not only energy savings when the lanterns are changed to LED's, additional savings are achieved in the CO2 emissions, although this is a notional saving at present because we are not charged for these emissions yet. Further savings will be achieved in maintenance costs due to fewer lamp changes and lamp failures associated with LEDs. The lamp changes savings are based on a 6 year life expectancy for non LED lamps, with one sixth of our lamps being replaced per year. The lamp failures saving is based on a 17% failure rate during the 6 year life expectancy of the non LED lamps. Table 3 below shows

the anticipated total savings attributable to the main road LED lantern replacement scheme (per year) based on current energy costs:

Table 3: Forecast savings

Lamp Number	Lamp Type	Existing energy cost	New energy cost	Co2 saving	Energy savings	Saving in lamp changes	Saving in lamp failures
2252	100w	£137,912	£102,624	£1,808	£35,288	£11,658	£1,333
3684	150w	£324,786	£214,210	£5,570	£110,576	£19,732	£2,274
1066	250w	£144,628	£73,151	£3,665	£71,477	£5,713	£665
220	90w	£15,098	£10,026	£260	£5,072	£1,875	£252
273	135w	£25,653	£12,441	£677	£13,212	£2,644	£367
5	180w	£649	£544	£5	£105	£74	£11
7500		£648,726	£412,996	£11,985	**£235,730**	**£41,696**	**£4,902**
					Total Savings:		**£282,328**

4.3 As can be seen savings totalling £282,328 (based on current energy costs) can be achieved per year if the main road lanterns were replaced with LED lanterns. Forecast future savings (or cost avoidance) based on assumed inflation is set out in Table 6.

4.4 Table 4 below indicates the amount of investment required for the main road scheme and the payback period.

Table 4: Proposed Main Road LED Investment

	Main Roads
Number of Lanterns in need of replacement	7,500
Lantern replacement cost	£2,400,000
Installation costs (including electrical testing)	£900,000
Design Fees	£100,000
Traffic Management Costs	£200,000
Total Capital Investment required	**£3,600,000**
Payback period based forecast savings in Table 3	13 years

(Payback Period - The length of time required to recover the cost of an investment. The payback period of a given investment or project is an important determinant of whether to undertake the project, as longer payback periods are typically not desirable for investment proposals).

4.5 Current estimates as outlined above indicate that an initial capital outlay of £3.6M on the main roads would payback over a period of 13 years. The LED lanterns installed would be expected to be operational for a total of 25 years under the manufacturer's guarantee.

4.6 It is proposed to undertake the main road lantern replacement scheme using the Council's in-house Design and Delivery team over a two year timescale. The procurement of the LED lanterns will be undertaken via an existing Greater Manchester Supplier Framework (if suitable) or a tendering process similar to the side road lantern purchase. The intended profiling of Capital Expenditure and lantern replacements is shown in Table 5 below.

Table 5 – Investment profile

	2018/19	2019/20	2020/21
Capital Expenditure	£1,600,000	£2,000,000	

Number of Lanterns Replaced	3,500	4,000	
Forecast Energy Savings	£0	£113,308	£250,068

4.7 The anticipated energy saving (or cost avoidance) over the 25 year useful life of the lanterns is shown in Table 6 below. The current and LED energy costs are based on current tariffs, assuming inflationary increases of 3% per annum. There will be additional savings in a reduction to lamp changes and lamp failures that are costs associated with maintaining the current inventory.

Table 6 – Forecast energy cost avoidance over 25 year life of LED Lanterns

Year	Current Main Rd Energy Costs (3% inflation)	Forecast LED Main Rd Energy Costs (3% Inflation)	Forecast Annual Energy Savings (3% Inflation)	Forecast Annual Energy Savings (5% Inflation)	Annual Energy & Maintenance Savings (3% Inflation)	Annual Energy & Maintenance Savings (5% Inflation)
1	£648,726	£412,996	£235,730	£235,730	£282,328	£282,328
2	£668,188	£425,386	£242,802	£247,517	£290,798	£296,444
3	£688,233	£438,147	£250,086	£259,892	£299,522	£311,267
4	£708,880	£451,292	£257,589	£272,887	£308,507	£326,830
5	£730,147	£464,831	£265,316	£286,531	£317,763	£343,171
6	£752,051	£478,776	£273,276	£300,858	£327,296	£360,330
7	£774,613	£493,139	£281,474	£315,901	£337,114	£378,347
8	£797,851	£507,933	£289,918	£331,696	£347,228	£397,264
9	£821,787	£523,171	£298,616	£348,281	£357,645	£417,127
10	£846,440	£538,866	£307,574	£365,695	£368,374	£437,983
11	£871,833	£555,032	£316,801	£383,979	£379,425	£459,883
12	£897,989	£571,683	£326,305	£403,178	£390,808	£482,877
13	£924,928	£588,834	£336,095	£423,337	£402,532	£507,021
14	£952,676	£606,499	£346,177	£444,504	£414,608	£532,372
15	£981,256	£624,694	£356,563	£466,729	£427,046	£558,990
16	£1,010,694	£643,434	£367,260	£490,066	£439,858	£586,940
17	£1,041,015	£662,737	£378,277	£514,569	£453,054	£616,287
18	£1,072,245	£682,619	£389,626	£540,297	£466,645	£647,101
19	£1,104,413	£703,098	£401,315	£567,312	£480,645	£679,456
20	£1,137,545	£724,191	£413,354	£595,678	£495,064	£713,429
21	£1,171,671	£745,917	£425,755	£625,462	£509,916	£749,100
22	£1,206,821	£768,294	£438,527	£656,735	£525,213	£786,555
23	£1,243,026	£791,343	£451,683	£689,572	£540,970	£825,883
24	£1,280,317	£815,083	£465,234	£724,050	£557,199	£867,177
25	£1,318,726	£839,536	£479,191	£760,253	£573,915	£910,536
Total	**£23,652,073**	**£15,057,530**	**£8,594,542**	**£11,250,709**	**£10,293,471**	**£13,474,696**

5. PROPOSED DELIVERY PROGRAMME

5.1 If the council was to approve the installation of LED lanterns on the main roads, then we would need to undertake a procurement exercise to establish a supplier, or use an existing supplier framework. During this procurement period the installation programme would be agreed to determine which areas should be delivered first and in what order. Once the supplier contract has been sourced the lighting design for each of the areas can be finalised. It is envisaged that a start on site to replace the lanterns would commence in July 2018. The actual installation would be undertaken by the Design & Delivery team, together with contractors off our framework. The street lighting inventory will be updated on a monthly basis, this will enable us to determine and monitor the energy savings we are

achieving. The financial spend against this project will be monitored via the council's usual capital monitoring process.

6. CONCLUSION

6.1 The use of LED technology is fundamental in order for the council to achieve its savings targets by reducing energy consumption and associated costs. Energy prices are likely to increase in the future requiring additional corporate support. The fact that other councils are employing this technology and taking more drastic measures will reduce demand which is only likely to drive the cost of raw energy up further. The availability of a new generation of LED technology increases the attraction in terms of cost savings and serious consideration of replacing the remaining main road lanterns needs to be made.

7. RECOMMENDATIONS

7.1 As detailed on the front page of this report.