

Report to: EXECUTIVE CABINET

Date: 25 October 2023

Executive Member: Councillor Jan Jackson, Executive Member for Planning, Transport and Connectivity

Reporting Officer: Emma Varnam, Assistant Director of Operations & Neighbourhoods

Subject: PROPOSAL STREET LIGHTING SAVINGS - DIMMING AND TRIMMING

Report Summary: The purpose of this report is to consider options for the council to reduce energy consumption for street lighting. The council seeks to decrease its energy consumption to achieve its commitment to 'Net Zero' by 2038. Options are presented to 'dim and trim' or turn off lighting on the public highway or public realm.

Recommendations: That Executive Cabinet APPROVES:

The implementation of option C2 in principle, to trim and dim the lighting provisions on the council's main road lanterns, subject to:

- a. options to finance the capital investment of £0.284m required to carry out improvements to the street lighting columns to facilitate dimming and trimming, and this be delegated to the Director of Place in consultation with the Section 151 Officer.
- b. Progress reporting to on the programme forming part of the regular report to Strategic Planning and Capital Monitoring Panel meetings.

Corporate Plan: The scheme set out in this report supports the objectives of the Corporate Plan, in particular the "Infrastructure and Environment" strand of the Corporate Plan.

Policy Implications: This project will support the councils Climate Change and Environmental Strategy 2021-26 by reducing energy consumption.

Financial Implications: There is an annual revenue budget for the running costs associated with street lighting. These budgets cover the costs associated with street lighting columns and other lit street furniture such as bollards and lit signs. Major repairs or improvements to Street lighting (such as replacement of lamp columns and upgrade to LED lighting) have previously been funded through Capital budgets.

(Authorised by the statutory Section 151 Officer & Chief Finance Officer)

Street Lighting - Electricity		£m
2022/23 Net Revenue Budget		1.310
2022/23 Outturn		1.592
(Under) / Over spend		0.282

Street Lighting - Repairs and maintenance		£m
2022/23 Net Revenue Budget		0.417
2022/23 Outturn		0.420
(Under) / Over spend		0.003

This report is concerned with options to reduce energy consumption, which in turn should generate cost savings. The total cost of electricity for street lighting includes both variable and fixed elements, and the impact of energy consumption reductions will not impact the budget proportionately. The main elements of the gross electricity costs in 2022/23 are summarised below – the changes proposed in this report will only impact on the £0.929m of energy consumption costs for lighting columns.

Electricity Gross Expenditure analysis	£m
Energy Consumption - Lighting Columns	0.929
Energy Consumption - Other lit street furniture	0.368
Distribution & transmission charges	0.272
Other charges & tariffs	0.080
Total Gross Expenditure	1.649

The 2023/24 Budget proposals approved by Full Council in February 2023 included a savings proposal for street lighting of £0.108m which was predicated on the ability to dim, trim or turn off lamp columns. This savings proposal has reduced the net budget available for street lighting energy in 2023/24.

Irrespective of options proposed and then approved by the Executive Cabinet, the savings proposal will not be delivered in 2023/24. Procurement of goods and retrofitting the entire street lighting column estate will take at least 12 months. As such, the savings proposal cannot be considered viable until at least October 2024.

The Section 151 Officer has reviewed the process for budget setting and reported to Executive Cabinet in June 2023 on the changes in train to improve governance and savings delivery for future years, however this proposal is an example of ambitious delivery and lacking the necessary information around up front investment for Members to take strategic decisions around approving the Council budget, which all Members of the Council share in equally. Had the correct information and timeframes been provided, this proposal would not be placing adverse pressure on the General Fund in 2023/24 as it would be correctly profiled to deliver from 2024/25. As such, Place Directorate have put in place management actions to offset the pressure in 2023/24 – but the key point is they need not have done with the right information and delivery planning.

Appendix 1 provides details of the various options that have been considered for reducing street lighting energy consumption, and the related costs. One option is being recommended for approval (C2) which is the dimming (reducing brightness) and trimming (reducing the operating hours) of main road street lights. This option is expected to deliver cost savings of £0.074m based on 2022/23 tariffs. (The saving increases to £0.104m if calculated using the 2023/24 tariff). The annual level of saving or cost avoidance will be dependent on the annual tariff, and will reduce if energy prices drop.

Implementation of option C2 will require capital investment of £0.284m to fit dimming and trimming components to the lamp columns. The Council passed a resolution to not undertake external borrowing and does not have sufficient capital reserves or receipts to finance this investment. To progress with this implementation

requires Executive Cabinet to review its Capital Programme and determine which schemes it wishes to pause or delay starting until such time as receipts are increased to deliver them. Until such a time as this is undertaken, the Section 151 Officer cannot recommend progressing with the actions proposed in this report as the power is not delegated to Officers without Executive Cabinet approval on budget allocation.

Legal Implications:
(Authorised by the
Borough Solicitor)

Under Section 28 of the Local Government Act 1966 the Council has the power to provide lighting for the purposes of any highway and also has the power to alter that lighting.

The proposals are part of a savings strategy which includes an investment to upgrade with lighting system in order that the lighting can be dimmed and trimmed. The rationale for this invest to save is set out in the main body of the report and the financial implications.

A compliant procurement exercise supported by STaR should be undertaken for the delivery of the improvement works and such works should be closely managed to ensure that costs remain as set out in this report.

It would be advisable for there to be a period of monitoring after the dimming and trimming has been implemented to ensure that there are no adverse impacts arising.

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 Engineering Services or external contractors to implement the programme in the timescale of the project.

This risk will be managed by ensuring that should Engineering 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.

- Reduction in lighting levels

Any changes in the lighting levels will be in accordance with the design codes to ensure the Council still has compliant highway lighting in terms of levels of uniformity for the specific area in question.

Access to Information:

This report is not confidential

Background Information:

The background papers relating to this report can be inspected by contacting Lee Holland, Head of Engineering Services:

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1. INTRODUCTION

Proposed approach to variable lighting in Tameside.

- 1.1 The council currently supplies dusk till dawn street lighting on the adopted highway network. The purpose of this report is to consider options for the council to reduce energy consumption and the financial cost of providing the service. The report considers how this will impact the council and its residents, and also if there could be further implications should the council deviate from following recommended best practice and guidance.
- 1.2 The Council has significantly impacted our environmental ambitions by installing LED street lighting across 98% of columns within the borough. The report looks to further reduce the energy consumption and negative impact on our environment by reducing the lighting on our highways and public realm.
- 1.3 The term “street lighting” encompasses all illuminated assets on the adopted highway including streetlights, signs, and bollards. Under the Highways Act 1980, the council has the power (ability), but not a duty (obligation) to provide street lighting. The council currently manages and maintains 25,491 streetlights as well as illuminated signs and bollards on the adopted highway. The inventory grows as new developments are adopted although no extra funding is given to the council, by the developers, to cover these additional revenue costs.
- 1.4 Dimming (reduction in lighting levels) and trimming (putting lights on at a later time and switching off lights at an earlier time) of street lighting are well established options for local authorities looking to make savings. A number of local authorities that have implemented a variable lighting option include Blackpool MBC, Rochdale MBC and Oldham MBC as well as Cornwall County Council, and Northamptonshire County Council. Any decision to reduce lighting levels needs to consider the potential impacts as street lighting plays an important role in relation to crime prevention (including the operation of CCTV) and reducing fear of crime. Street lighting is also relevant to traffic management and road safety and a factor in relation to promoting the night time economy in town centres.
- 1.5 Lighting levels can be set at the individual lighting columns. It is therefore possible to deploy variable lighting that takes account of the characteristics of different areas. This means that the potential benefits of dimming and trimming can be achieved whilst ensuring other objectives are not compromised.
- 1.6 As well as dimming and trimming, another option is switching off streetlights, either for the entire period of darkness or during specific periods (i.e. midnight until 5am). It should be noted that, based on the design standards, a robust risk assessment would be required to justify switching streetlights off on sections of the highway.
- 1.7 The basic premise of the approach set out in this report is that the degree of dimming and trimming should be determined by the requirements of the area in which the street light is situated. This is to mitigate against any adverse impacts while retaining the opportunity to reduce energy consumption. The pros and cons of each option are summarised in section 4 and **Appendix 1** to this report.

2. CURRENT LIGHTING PROVISION

- 2.1 The need for street lighting varies by location. It is generally accepted that urban and residential areas should be provided with street lighting. However, the level and standard of lighting provided will be dependent upon a number of factors.
- 2.2 For example, city and large urban areas may have relatively higher crime rates and may benefit from the provision of a high level of street lighting whereas environmental factors in rural areas may constrain the level and type of lighting considered necessary.

2.3 Councils do not legally have to provide street lighting, however, once provided, the local authority does have a duty to maintain the system in a safe condition. The standards for street lighting are laid down in British Standard: BS 5489 and European Standard BS EN 13201; lighting to these standards is considered best practice, and reasonable justification should be provided if not achieved. Any decisions to implement dimming, trimming or switching off of Street Lighting need to consider whether standards are being met, and any deviation from these standards will need to be justified.

Benefits and Costs of Street Lighting

2.4 The benefits of street lighting are:

- Reduce road traffic accidents;
- Reduce the severity of road traffic accidents;
- Reduce the fear of crime; and
- Promote the night-time economy.

2.5 The costs of street lighting are:

- Financial: Capital, maintenance and energy costs;
- Environmental: Carbon emissions and light pollution; and
- Amenity: Visual and aesthetic impact

3. CURRENT ENERGY COSTS

3.1 Energy costs have significantly increased in the past 18 months due to a volatile electricity supply market. It is imperative that the council reduces its electricity consumption in order to reduce costs. The impact of trimming and dimming will reduce the amount of energy used to light the highway. In financial year 21/22 the council spent £1.113m (8.04300p/kWh) to provide energy to our general street lighting network. The unprecedented energy cost rise has caused significant pressure to the council’s energy budget, in 22/23 the energy cost rose to £1.592m (22.40996p/kWh). An increase of £0.480m compared to the previous year, this equates to a 30.15% increase on 21/22 on energy used only). Further increases in the electricity tariff are expected in the 2023/24 (31.5590p/kWh) financial year this will increase the energy by another 29.02% to £2.243m (estimated).

3.2 Overall in summary the energy consumption increase from 21/22 to 23/24 has increased by £1.13m (50.38%), had we not reduced our energy consumption considerably from 15/16 this figure would have been £5.33m this financial year (14364107.1kW x 31.5590 pence x 17.5% (associated tariffs)

4. OPTIONS FOR REDUCING STREET LIGHTING ENERGY UTILISATION

4.1 As set out in section 1, there are three main options for reducing the energy consumption of street lighting: Dimming, Trimming and Switching Off.

Dimming

4.2 Dimming is turning the light levels down (reducing the brightness), hence using less energy. The light level reduction is not always noticeable as it is a slight reduction in the lighting but does have an impact on the electricity usage of each street lamp.

4.3

Pros	Cons
<ul style="list-style-type: none"> • Reduces energy consumption whilst still providing lighting. 	<ul style="list-style-type: none"> • The side road lanterns would be problematic to dim, given they

<ul style="list-style-type: none"> • Dimming to appropriate levels can be justified within the design standards. • Dimming would still provide residents a level of vision, comfort and security. • There are lots of dimming options available, for example 22:00-05:00 or 00:00-06:00. 	<p>have been designed already to the minimum levels.</p>
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Trimming

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

Pros	Cons
<ul style="list-style-type: none"> • Will provide minimum impact to the public, it will be darker when the lights come on and go off. • The Council will remain within the guidelines of the design standards. 	<ul style="list-style-type: none"> • Minimum savings are achieved and the option is not cost effective unless combined with an additional option.

Switching Off

4.5 Switching Off Street Lighting columns can be considered either as a permanent switch off or to switch off lights between a certain period such as Midnight to 5am.

Pros	Cons
<ul style="list-style-type: none"> • Switching off of street lights will maximise the energy and cost savings to the Council. • Provides the maximum opportunity to reduce the carbon footprint of street lighting. • Switching off lighting columns may reduce light pollution and can have benefits for wildlife and biodiversity. 	<ul style="list-style-type: none"> • Switching off of street lights requires a robust independent risk assessment for each lighting column. This risk assessment process will incur significant revenue costs. • Switching off lighting columns would deviate from the design standards and would need to be justified. • There are potential implications for community safety and traffic safety which would be considered as part of the risk assessment. • Switching off is more noticeable and visible for residents, which may lead to fears for safety.

4.6 To implement dimming, trimming or switching off, each individual light will need to be upgraded with new components. Capital Investment will be needed to complete the work required.

5. PROPOSED OPTIONS

5.1 The Council has looked at a variety of options for reducing energy consumption, with the main road and side road assets separated to provide more flexibility to try and achieve affordable options within an acceptable "payback period".

5.2 **Appendix 1** provides further detail on the options that have been considered, which are summarised as follows:

- **Option A – Trimming** - Reducing the operating hours of street lighting so the lights go on and off when it is darker. Option A1 covers side roads, Option A2 covers main roads.
- **Option B – Dimming** – Reducing the brightness of street lighting to minimum standards (already in place for side roads). Option A1 covers side roads, Option A2 covers main roads.
- **Option C – Trimming and Dimming** – reducing brightness and reducing the operating hours so lights go on and off when it is darker. Option C1 covers side roads, Option C2 covers main roads
- **Option D – Trimming and Switching lights off between certain times.** Option D1 covers side roads, Option D2 covers main roads.

5.3 Options discounted

- **Option A** - Trimming only, on either the main roads or side roads is not a viable option because the payback period is too long
- **Option B** - Dimming only, on the side roads is not a viable option because there is no scope to dim these lights, as they have been designed to the minimum levels already
- **Option D** – would not be feasible for the majority of the network, if not the complete network, given that significant justification would be required to turn street lighting off. The savings calculated, in **Appendix 1**, assume that all lanterns could be switched off which is unlikely

5.4 Risk & Insurance advice regarding proposal to switch off street lighting

The risks in switching off street lighting include, but are not limited to:

- Increased pedestrian slip/trip personal injury claims
- Potential severity of claims due to a lack of lighting
- Crime rates could increase
- Accessibility issues for elderly or disabled residents
- Economical effect of residents not venturing out in the dark

5.5 Possible Insurance Implications:-

- Likelihood of an increased frequency and severity of Public Liability vehicle claims and or personal injury claims from residents
- The decision of turning off the street lights could reduce the chances of being able to successfully defend a claim
- The Council has an Excess of £500,000 per claim for public liability claims so most claims would have to be self-funded by ourselves and it would be highly likely that the Council would be advised to increase the Insurance reserve fund
- Any claim that exceeds the excess level is funded by Insurers and this increases the risk that the council could face additional premium costs at future renewal dates
- Turning off the lights or dimming them is a material fact that the Council would need to disclose to its insurers.

5.6 TMBC's appointed insurance broker has advised that GM authorities in the past have approached Insurers about turning off street lights and Insurers have not supported the decision

5.7 Whilst there are examples of Local Authorities who have tried switching off street lights, roll out has been limited:

- In Derbyshire County Council, a largely rural council, switching off technology has been fitted on approximately 6,500 columns out of a total of more than 89,000 (7% of all columns) and no new switch offs have been identified since 2012
- In Leeds City Council, a small trial was undertaken in a residential area, but feedback from residents and risk assessments concluded that no further roll outs would take place
- Wigan and Bury have fitted switch off controls to a small number of columns in car parks and areas of anti social behaviour but there has been no large scale roll out

5.8 Using dimming only or trimming only will not achieve the required energy savings and the payback period is too long, therefore not viable unless both dimming and trimming are combined as an option. Switching off is not considered to be viable due to the risk assessment process and expectation that only a small number of lanterns could be suitable for switching off in a busy urban area. Option C2 – dimming and trimming on the main roads – is the recommended option.

5.9 **RECOMMENDED OPTION C2 - Trimming and dimming on the main road lanterns only.**

Main Road Lanterns	Savings at 22/23 prices	Cost to implement	Payback at current rate
Trimming – slightly increased darkness switch on/off & dimming to 75% light output 00.00-06.00	£73,614 per annum	£284,200	£284,200 ÷ £73,614 = 3.9 years

Energy savings Main Road Lanterns	Current energy consumption per kWh	Energy savings per kWh	Energy savings per column
Number of columns- 8,120	2,454,805.63	328,454	40.45 kWh

5.10 The council could only feasibly complete this option on the main road lighting stock, as the side road lighting has very limited scope to dim, however savings would be achieved and the council would still be lighting to the required standards.

6. **CAPITAL INVESTMENT REQUIREMENTS.**

6.1 Capital investment is required to carry out improvements to the street lighting columns to facilitate dimming and trimming. Each street light will need a new component to dim the level of lighting and also to change the time that the light comes on and goes off. The investment required is £0.284m for the main road street lights with the payback period for this being 3.9 years but following the payback period the council will still generate £0.074m saving year on year (at the current tariff). It is important that the council reduces energy costs as they are currently in a volatile market with unprecedented high cost and to reduce the carbon footprint of the council.

6.2 It is anticipated that the scheme will take 12 months to complete. This allows for the procurement process to purchase the new components and the installation period.

7. **RECOMMENDATIONS**

7.1 As stated on the cover of this report.