

# STREET LIGHTING STRATEGY

2017

STREET LIGHTING  
STRATEGY  
2017



# CONTENTS

<b>FOREWORD .....</b>	<b>4</b>
<b>VISION.....</b>	<b>5</b>
<b>INTRODUCTION .....</b>	<b>6</b>
<b>BACKGROUND.....</b>	<b>7</b>
PFI contract / Legislative powers.....	7
Design standards.....	8
Natural environment / Light pollution.....	9
Energy consumption and carbon emissions.....	9
New technology / Attachments to power supply from lamp columns.....	11
<b>DRIVERS FOR CHANGE.....</b>	<b>12</b>
Energy and carbon emissions / Financial savings / New technology.....	12
<b>WHAT ARE WE GOING TO DO .....</b>	<b>13</b>
<b>STRATEGIC OBJECTIVES.....</b>	<b>14</b>
<b>WHAT ARE WE GOING TO DO .....</b>	<b>15</b>
<b>HOW ARE WE GOING TO DO IT? .....</b>	<b>16</b>
LED upgrade / CMS.....	16
Summary.....	17
Action plan.....	18
<b>LOOKING TO THE FUTURE .....</b>	<b>19</b>

DRAFT

# VISION

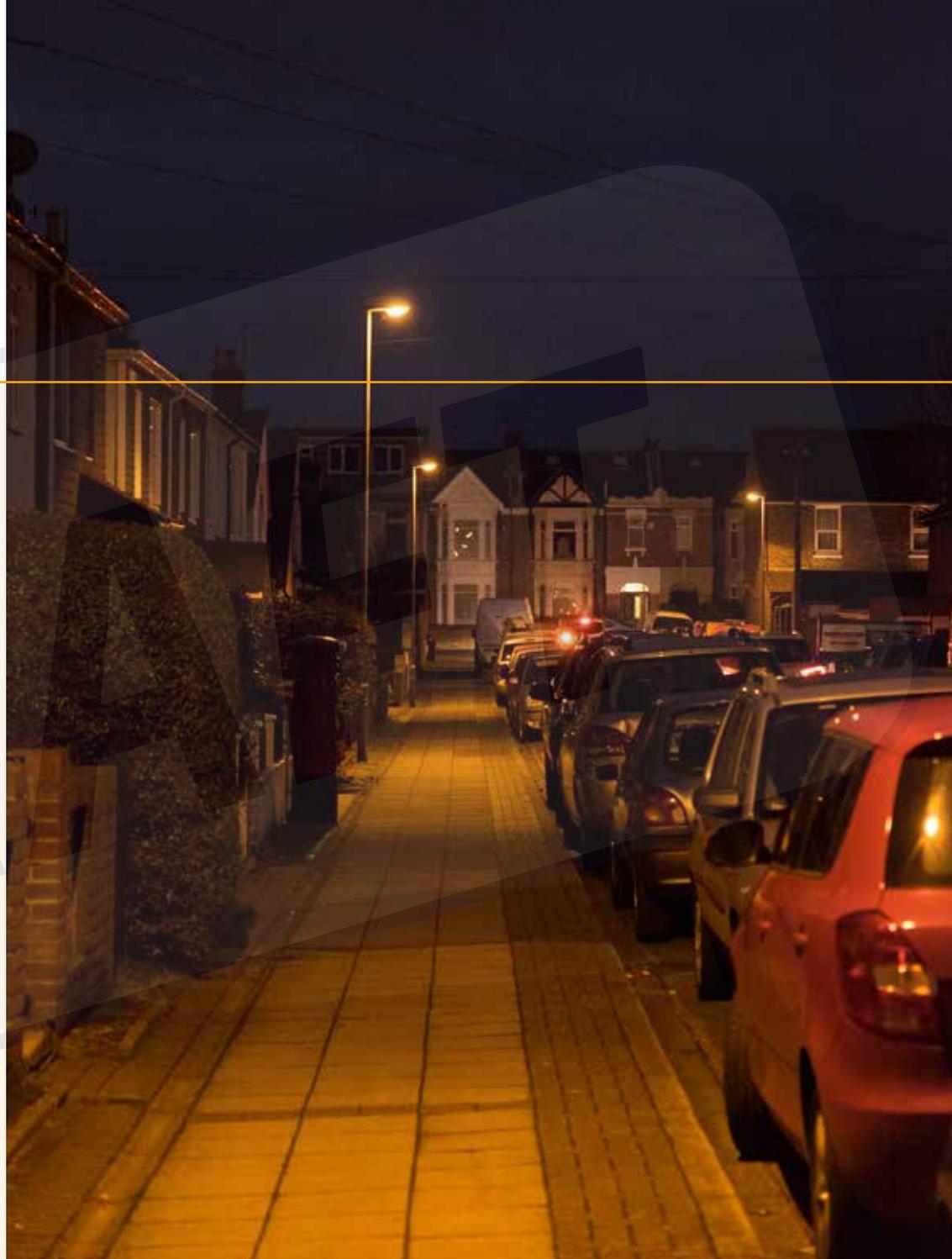
A MODERN NETWORK OF EFFICIENT AND EFFECTIVE STREET LIGHTING WHICH ENABLES SAFE TRAVEL FOR RESIDENTS, COMMUTERS AND VISITORS WHILST ENSURING MINIMAL ENVIRONMENTAL IMPACT, THAT PROVIDES VALUE FOR MONEY AND AN ENHANCED STREET ENVIRONMENT; THAT CONTRIBUTES TO THE COUNCIL'S AMBITIONS AND REINFORCES THE 'GREAT WATERFRONT CITY' MESSAGE.

## INTRODUCTION

**Street lighting illuminates all types of highway and public access, assisting road safety and ease of movement for all users in the hours of darkness. Improved visibility will reduce the likelihood of traffic collisions therefore improving road safety. Street lighting can also reduce crime and fear of crime and contribute towards enhanced street environment and good quality of place, encouraging walking, cycling and public transport use.**

Lighting equipment provided should be suitable for fulfilling the lighting needs in each specific area. The main consideration is the ability of the lighting to illuminate the area in the most effective manner.

Street lighting can have a detrimental impact on the environment through carbon emissions from energy usage and light pollution, however it is one of the aims of this strategy to minimise this impact.



# BACKGROUND

## PFI CONTRACT

Portsmouth City Council has a 25 year Highways Maintenance Private Finance Initiative Contract (PFI contract) from 2005 to 2030 for delivery of inspection, maintenance, life cycle replacement, enhancements and operational services. The PFI contract is with:

- ▶ Ensign Highways Ltd as the service company
- ▶ Colas Ltd as the subcontractor, delivering all the maintenance and operational functions.

The PFI contract covers the majority of assets on the city's highways network and includes the design, installation, operation and maintenance of all existing and new street lighting assets. Any risk of maintaining the assets within the PFI contract lies with the service company.

On behalf of the council, Ensign and Colas Ltd operate and manage approximately 15,950 street lights.

## LEGISLATIVE POWERS

The Highways Act empowers local authorities to light roads, but does not place a duty to do so.

The council has a duty of care to road users, and has an obligation to light obstructions on the highway.

The council has a statutory duty under the Highways Act, to ensure the safety of the highway, and this includes any lighting equipment placed on the highway.

The Electricity at Work Regulations imposes a duty on the owners and operators of electrical equipment to ensure its safety.

The Highways Act 1980, Section 97 states;

(1)...“every local highway authority may provide lighting for the purposes of any highway or proposed highway for which they are or will be the highway authority, and may for that purpose –

- (a) Contract with any persons for the supply of gas, electricity or other means of lighting; and
- (b) Construct and maintain such lamps, posts and other works as they consider necessary”



## DESIGN STANDARDS

Design standards used in the provision of new and replacement street lighting should be in accordance with the requirements of the latest versions of the documents listed below:

- European Standard (BS EN 13201).
- Institute of Lighting Professionals (ILP) Technical Reports.
- IEE Wiring Regulations.

It is the responsibility of the council and the service company to deliver a structured and clearly defined approach to the provision of new street lighting within the city. They will jointly assess, and make the decision on what the lighting design levels will be for new developments.

When considering any street lighting scheme the impact on the natural environment is taken into account to minimise light pollution.

## NATURAL ENVIRONMENT

The council is required to adhere to environmental considerations and specifies that the service company must work within the requirements of the Environmental Protection Act 1990, including Sections 102 to 103 of the Clean Neighbourhood and Environment Act 2004-5.

References to environmental considerations are contained within the PFI contract for planned maintenance requirements, and the 'Annual Service Report' contains information in relation to environmental considerations such as energy efficiency, obtrusive lighting, waste products and enhancements.

Protection of the natural environment and wildlife habitats is essential in street lighting design and commences with a full site survey on all new installations.

The main principles and design considerations confirm the following:

### Do not

- ✦ Provide excessive lighting. Use only the minimum necessary amount of light needed for the task.
- ✦ Directly illuminate bat roosts or important areas for nesting birds.

### Avoid

- ✦ Installing lighting in sensitive ecological areas such as: near ponds, lakes, rivers, area of high conservation value, sites support particularly light-sensitive species of conservation significance (e.g. glow worms, rare moths, slow-flying bats) and habitats used by protected species.

Where lighting has already been provided or where it is not possible to avoid being installed near to sensitive areas, then this needs to be managed. The possibility of variable levels of lighting to reduce its impact on the environment should be considered.

- ✦ Using reflective surfaces under light.

## LIGHT POLLUTION

Councils must look into complaints about artificial light entering premises if the light could be classed as a 'statutory nuisance' (covered by the Environmental Protection Act 1990) However, statutory nuisance laws don't apply to artificial light from street lights.

Street lighting must still be well designed to ensure it is lighting the street area as intended and no excess and or undesirable light is emitted towards residential properties or polluting the night time sky.

## ENERGY CONSUMPTION AND CARBON EMISSIONS

Street lighting is a significant contributor to carbon emissions in Portsmouth. There is a requirement to work towards the reduction of carbon emissions in line with the objectives and provisions of the Climate Change Act 2008.



## NEW TECHNOLOGY

Portsmouth has the following light emitting diode (LED) lighting installations;

- ✦ M275 (section) leading into the city,
- ✦ Northern Road Bridge
- ✦ Drayton area (small number of residential roads)
- ✦ Market Way
- ✦ Hope Street
- ✦ High Street (Cosham)
- ✦ Wooton Street
- ✦ Vectis Way

These LED lighting installations have shown reduced energy use and reduced maintenance activities. The council and the service company have also been able to monitor and evaluate the reliability of the LED lighting product in terms of control and operations, and the colour appearance of the 'white' light source to inform future installations.

## ATTACHMENTS TO AND POWER SUPPLY FROM LAMP COLUMNS

Portsmouth City Council, as the highway lighting authority, requires where legislation exists, all third party attachments; temporary or permanent illuminated street furniture, to be controlled by licence or consent. This also requires prior consent being granted by the service company. The following sections of the Highways Act, defines various activities for which a licence or consent is applicable:

Highways Act 1980.

- ✦ Section 142 – Planting/cultivation on the highway (e.g. flower baskets).
- ✦ Section 178 – Banners/advertisement signs attached to columns or over the highway.
- ✦ Section 178 – Cables over the highway.
- ✦ Section 178 – Decorative/festive lights over the highway.

Requests for power supplies from lamp columns, for example: temporary traffic light signal controls, CCTV equipment, electric vehicle charging units, and festive lighting; should in the first instance be directed to the council, and the service company for consideration and prior approval.

All apparatus shall be erected in compliance with the following statutes, and regulations:

- ✦ Health and Safety at Work Act 1974.
- ✦ Electricity at Work Regulations 1989.
- ✦ BS 7671 Regulations for Electrical Installations.
- ✦ New Roads and Street Works Act 1990.
- ✦ Traffic Management Act 2000.
- ✦ Institute of Lighting Professionals, Technical Reports, and Guidance Notes, relating to the installation of Temporary and Permanent Power Supplies taken from Lighting Columns.

# DRIVERS FOR CHANGE

12

**There are a number of drivers for change of street lighting in Portsmouth:**

## ENERGY AND CARBON EMISSIONS

Some of the street lighting in Portsmouth is not as efficient as it could be, therefore needlessly increasing our carbon footprint.

Portsmouth City Council is committed to reducing its CO2 emissions, in line with national targets based on the UK's commitment under the Climate Change Act 2008 to an 80% emissions reduction by 2050.

The use of sustainable transport can reduce carbon emissions. Portsmouth's street lighting infrastructure supports access to both pedestrian and cycle routes for active travel and links to other means of sustainable travel that are accessible, safe and easy for communities, local businesses, and

visitors to use, for example the city's park and ride scheme.

## FINANCIAL SAVINGS

Street lighting constitutes a significant proportion of the council's electricity expenditure. Energy costs have increased significantly in recent years and are predicted to rise by six percent per annum. As further development takes place in the city there will be a corresponding increase in the amount of energy consumed by street lighting on the local authority maintained network.

The council needs to develop more efficient ways of working in response to economic pressures; the energy costs associated with the operation of street lighting are significant and have been increasing in recent years.

Unmetered energy costs have increased by more than 60% between 2007 and 2016. Reduced energy consumption also

means reduced energy bills which will save the council money for the lifetime of the installed street lighting infrastructure.

## NEW TECHNOLOGY

Technology, such as LED street lights, and central management system (CMS) for the operational control of street lighting, can contribute to reduced energy consumption and improved efficiency and value for money, whilst improving lighting output and colour rendering.

# WHAT ARE WE GOING TO DO

This strategy outlines Portsmouth's commitment to maintenance and improvement of the city's street lighting network.

## AIMS

The aims of this strategy are to ensure the council provides:



**AN EFFECTIVE AND ENERGY EFFICIENT STREET LIGHTING NETWORK**



**A COST EFFECTIVE STREET LIGHTING NETWORK THAT REPRESENTS BEST VALUE**



**A WELL MAINTAINED STREET LIGHTING NETWORK**

# STRATEGIC OBJECTIVES

14

We will seek to achieve the following strategic objectives (SO):



1

Promote and maintain the safety for all highway users, particularly the more vulnerable modes of walking and cycling.



2

Assist in the reduction of crime and fear of crime when travelling by foot, cycle or public transport modes.



3

Deliver well-designed street lighting in keeping with the environment which helps to provide good quality of place, encouraging walking and cycling.



4

Develop and implement a cost effective street lighting solution.



5

Lead by example with a significant reduction in street lighting energy consumption minimising our carbon emissions.



6

Identify criteria for the duration and level of street lighting.



7

Maintain the street lighting network to a good standard.



8

Use of state of the art technology and innovation for street lighting in the city.

DRAFT

## HOW ARE WE GOING TO DO IT?

In order to achieve the aims of this strategy, we are replacing existing street (SOX or SON) lighting luminaires (sodium light sources) currently used in the majority of the city, with new LED 'white' lighting luminaries. We will implement a Central Management System (CMS) that allows varying lighting levels. This approach will deliver a reduction in carbon emissions through lower energy consumption.

### LED UPGRADE

LED lighting has a substantially lower wattage energy use (40-70%) and longer life span as compared to either SOX or SON light sources. Once the new LED 'white' lighting luminaries are installed it is anticipated that they will last significantly longer with a lifespan of over 20 years, to that of the SOX and SON light sources of only 4-5 years.

### CMS

Photoelectric cells are currently utilised as the means of controlling street lighting and their hours of operation. A photoelectric cell is calibrated to turn lights on once the natural lighting level drops below a certain level (i.e. sunset) and to switch off when light levels increase above a certain level (i.e. sunrise). Due to their relatively low cost and good reliability photoelectric cells have become a widely accepted means of controlling modern street lighting systems.

However, CMS now provides greater flexibility in terms of controlling, switching, trimming (the turn on and turn off times by minutes), energy management of street lighting operation times, and can also provide variable lighting levels on our roads as and when required.

It is important to light streets for the safety of highway users and for community safety, however, most streets are lit all

night irrespective of the need. Improved technology will allow a more flexible approach in the variation of lighting levels across all different class of road dependent upon its use at any given time.

As the usage is reduced then so can the lighting levels unless there are over-riding reasons not to do so (such as a high road traffic collisions or crime rate). By means of assessment, certain streets may be suitable to have their lighting levels varied for certain periods of the night, or trimmed (switching lights on and off in accordance with a preset regime). The council is actively looking into this process for the highway network, with a view towards bringing this into operation in the near future.

## SUMMARY

The introduction of LED lighting and CMS will lead to extended maintenance free periods resulting in savings in operational costs.



## ACTIONS

A number of actions have been identified to be delivered through this Street Lighting Strategy as shown in the table below:

18

Action	Links to strategic objectives
Review and remove where possible all non-essential street lighting.	4, 5
LED light source to be used as standard for all new street lighting works.	4, 5, 8
Use a central management system to control and adjust street lighting operational timings.	4, 5, 6, 8
Investigate the use of variable lighting levels for roads through the control of the CMS system. This will be looked at a later stage, and will be subject to lighting trials/demonstrations, and a risk management approach.	1, 4, 5, 6, 8
To ensure we purchase our street lighting electricity at a competitive price, we will continue to procure this through flexible purchasing by means of a Central Buying Consortium. Our existing energy contract runs until 2020	4, 5
Install luminaires designed to limit obtrusive lighting	3
Ensure street lighting schemes are designed and lit to suit the area	1, 2, 3
Reducing lighting level where appropriate using CMS	3, 4, 5, 6, 8
Suitable, agreed measures to enhance design in conservation areas	3
Existing High (SON) and Low (SOX) pressure light sources will be replaced using a White Light, LED source as standard.	4, 5, 8
Through the provision of the Central Management System, which may be supported through the use of Wi-Fi communication network, Smart City applications will be actively trialled and supported	8
Ensure street lighting levels are maintained to an appropriate and safe standard for the use of the road.	1, 2

# LOOKING TO THE FUTURE

Portsmouth City Council will continue to work to make Portsmouth a safe, efficient and attractive place to live in, work in and visit. The development of our street lighting strategy contributes to this through reduced carbon emissions, and improved quality of place.

Wherever possible we will link the upgrade of street lighting to LEDs with other work projects and future opportunities. These may include the provision of on-street residential electric vehicle charging points on lamp columns.

It may also be possible to utilise the CMS for 'Smart City' technology which is rapidly becoming available, and various 'Smart City' applications are currently being designed and developed, with the possibility and potential delivery of sensory applications.



DRAFT



You can get this information in large print, Braille, audio or in another language by calling 023 9283 4672

Produced by: [marketing@portsmouthcc.gov.uk](mailto:marketing@portsmouthcc.gov.uk) • Published: **APRIL 2017** • Ref: **74.105**