

London LED Pedestrian Pathway Pilots and British Standards for Street Lighting

Low Carbon Outdoor Lighting Conference, Toronto, 7th
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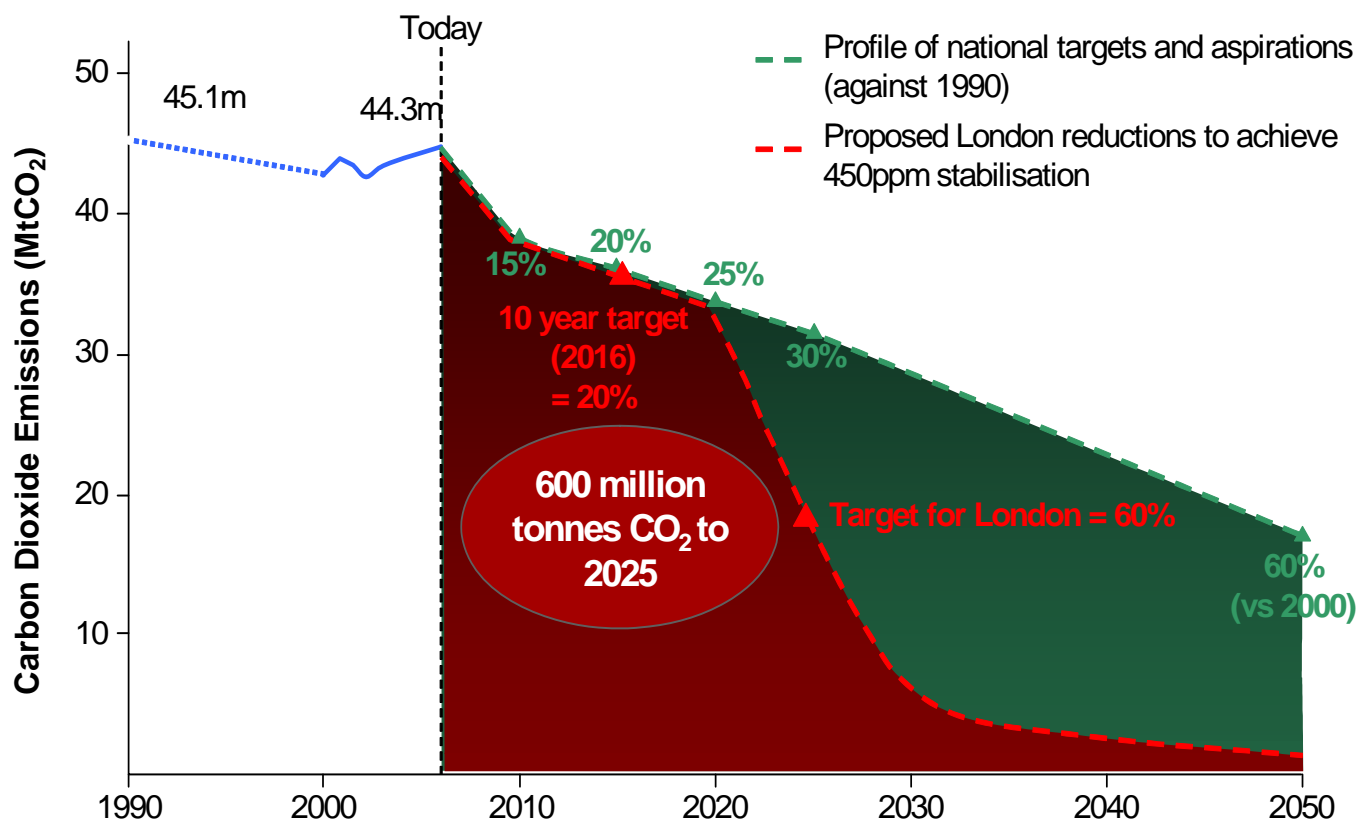
Introduction

- ❑ CO₂ reduction targets for London
- ❑ London Climate Change Agency
- ❑ CO₂ reduction potential of LED street Lighting
- ❑ London Pathway Lighting Projects
- ❑ British Standards and LED lighting

London's CO₂ Action Plan

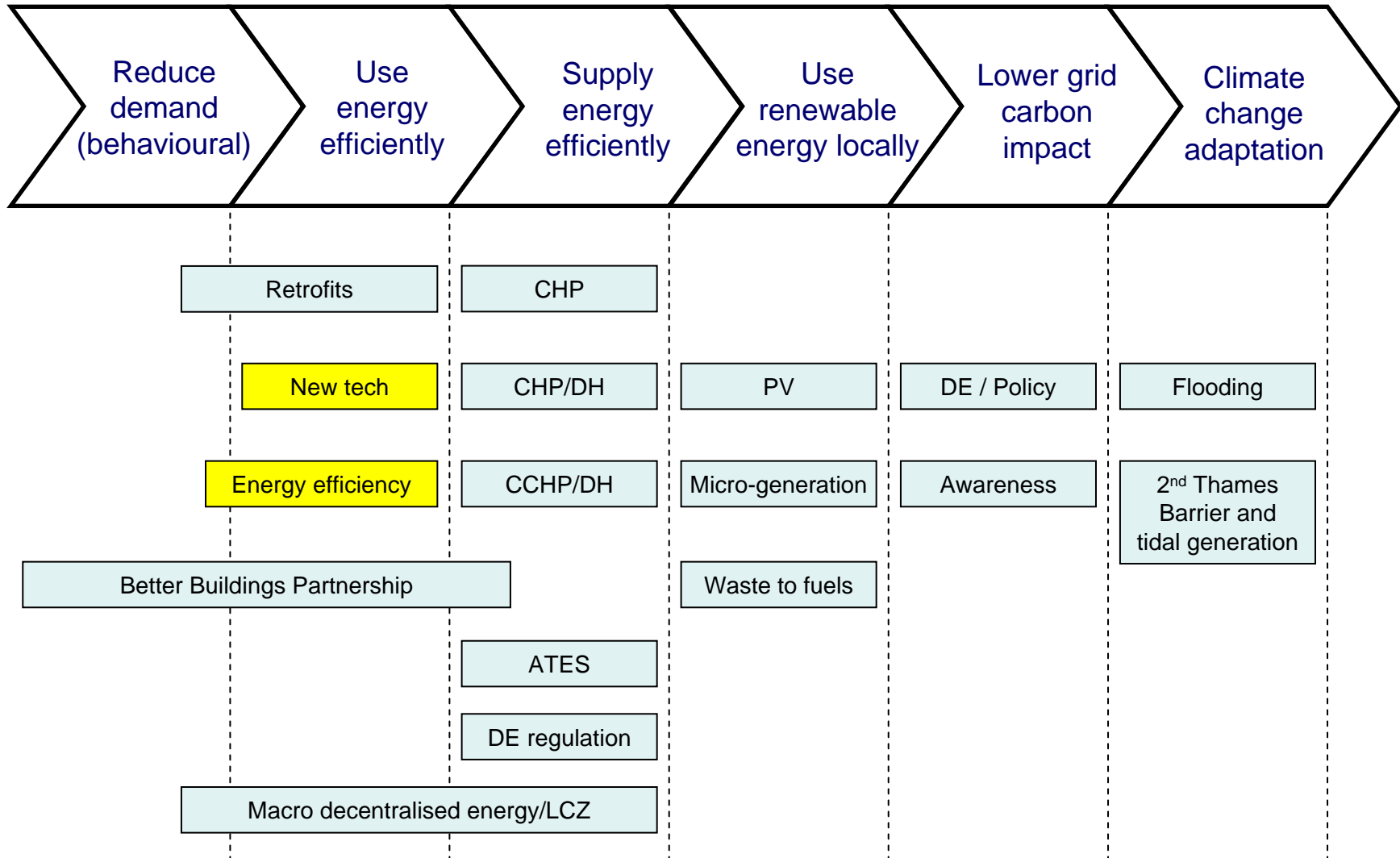


Required CO₂ reductions



- Practical delivery agency implementing climate change projects in:
 - Energy
 - Water
 - Waste
 - Transport

Focus Areas of LCCA

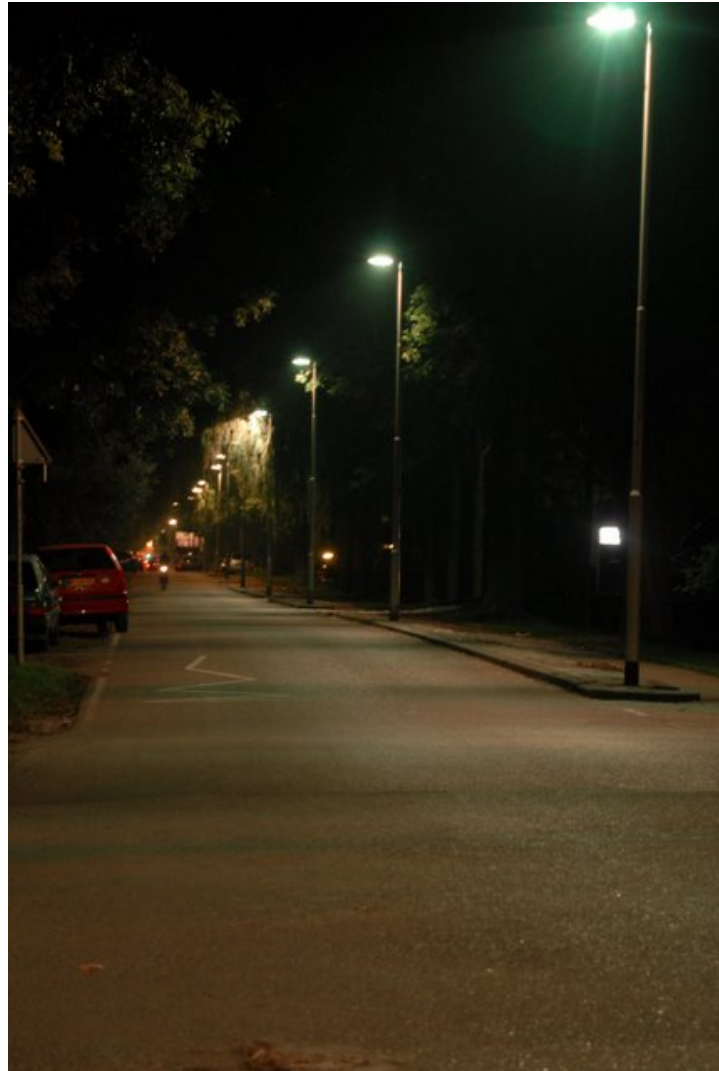


Emissions from Road Lighting



- ❑ Estimated that UK has over 5 million road lighting points
- ❑ CO₂ Emissions for UK 2 million tonnes
- ❑ London estimated to account for 12%
- ❑ LED street lighting in London could save over 150,000 tonnes CO₂ p.a.
 - Over 1.5 million tonnes by 2025

Rotterdam Pilots



Kralingseweg – 24W LED

Jacques Dutilhweg – 24W LED





London Pilots

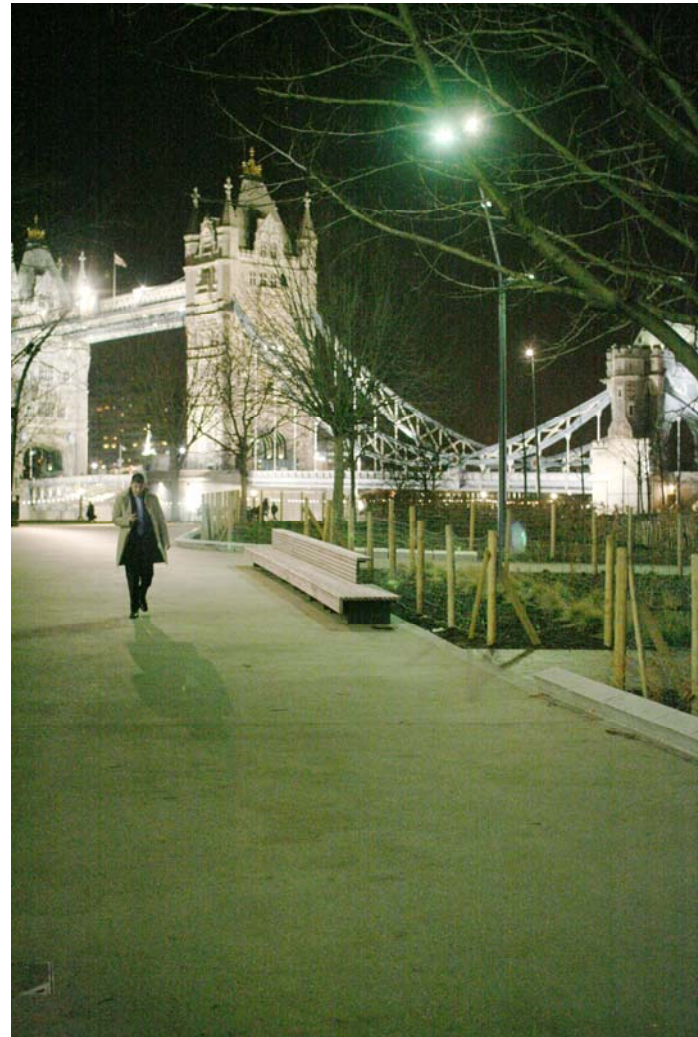


- LCCA funded:
 - Potters Fields Park (Tower of London)

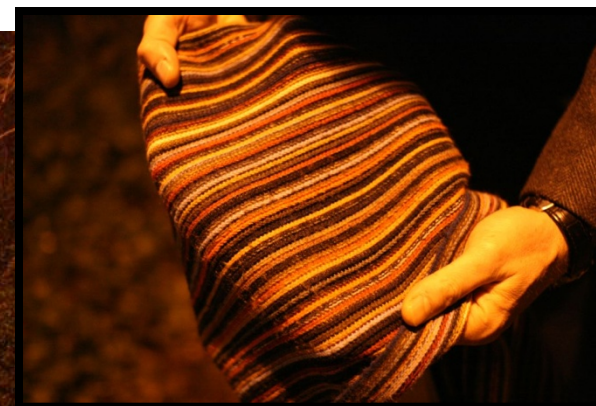
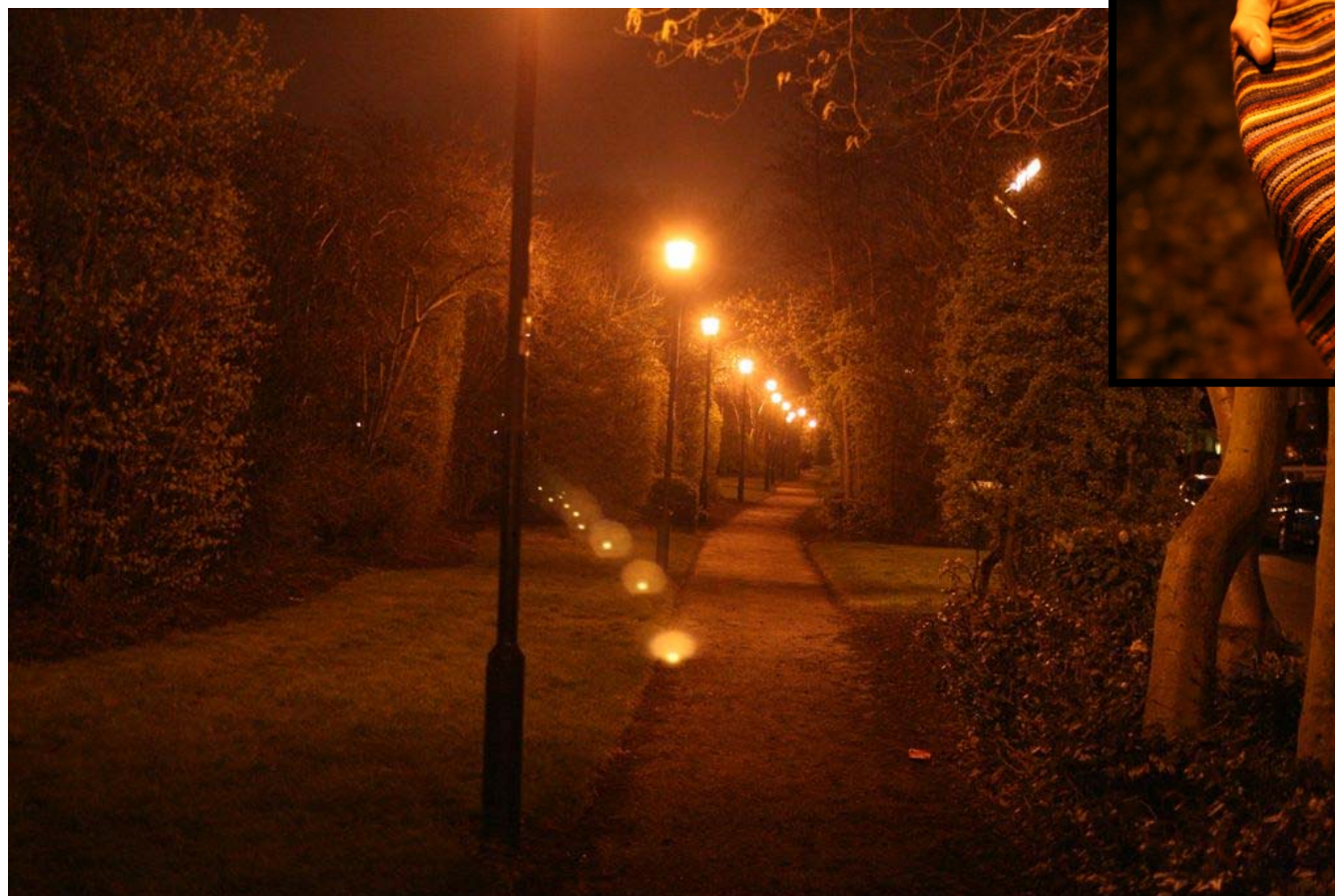
- Transport for London funded:
 - Glenlea Road Footpath
 - Kidbrooke Station Footpath
 - Moat Crescent Footpath

Potters Fields Park

8 - 36 Watt LEDs at 8 meter height



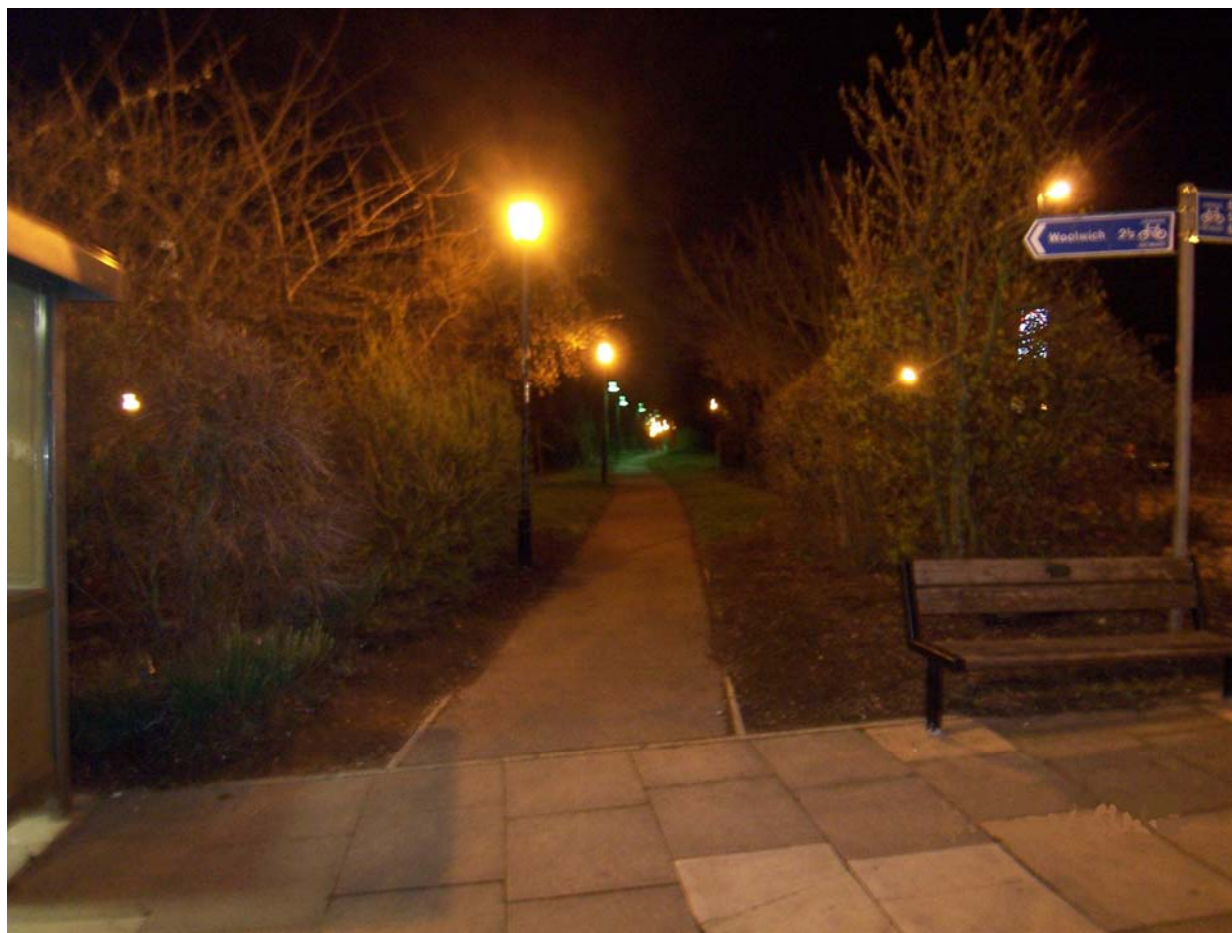
Glenlea Road Footpath



Glenlea Road Footpath



Kidbrooke Station Footpath



Moat Crescent Footpath



Lighting Standards



3 Lx @ 55W



9 Lx @ 100W

British Standards for Street Lighting

HPS →

LED →

Class	Horizontal illuminance	
	\bar{E} in lx ^a [minimum maintained]	E_{min} in lx [maintained]
S1	15	5
S2	10	3
S3	7,5	1,5
S4	5	1
S5	3	0,6
S6	2	0,6
S7	performance not determined	performance not determined

^a To provide for uniformity, the actual value of the maintained average illuminance may not exceed 1,5 times the minimum \bar{E} value indicated for the class.

British Standards Related to Crime Rates



Crime Rate	Ra value	Lighting Class					
		Low traffic flows		Normal traffic flows		High traffic flows	
		E1/E2	E3/E4	E1/E2	E3/E4	E1/E2	E3/E4
Low	Ra < 60	S5	S4	S4	S3	S3	S2
	Ra > 60	S6	S5	S5	S4	S4	S3
Moderate	Ra < 60	S4	S3	S3	S2		S1
	Ra > 60	S5	S4	S4	S3		S2
High	Ra < 60	S2	S2	S2	S1		S1
	Ra > 60	S3	S3	S3	S2		S2

Strict compliance with BS restricts application of LEDs for Street Lighting

REMOVE Project



- Reduced Emissions through Mesopic Optimisation of Visual Efficiency (REMOVE), a Collaboration between:
 - Applied Visual Research Centre – City University
 - Bartlett School of Architecture - UCL
 - Sheffield University
 - LCCA
 - Professional Institutions
 - Manufacturers
 - London Boroughs

REMOVE description

- ❑ Explore the Potential of Mesopic Vision to reduce overall illuminances
- ❑ Research the optimal spectral composition at different illuminances
- ❑ Investigate new approaches to geometry, directional performance, and control
- ❑ Optimise visual performance for important visual tasks
- ❑ Understand sociological responses to Mesopic illuminance
- ❑ Install real life demonstration projects
- ❑ Quantify the potential for emissions reductions

REMOVE Results

If all aspects of the research are optimised to maximise visual performance and the end results are perceived by residents, pedestrians and road users as sociologically acceptable then the potential reduction in energy consumption could be: -

80%

Thank you for Listing