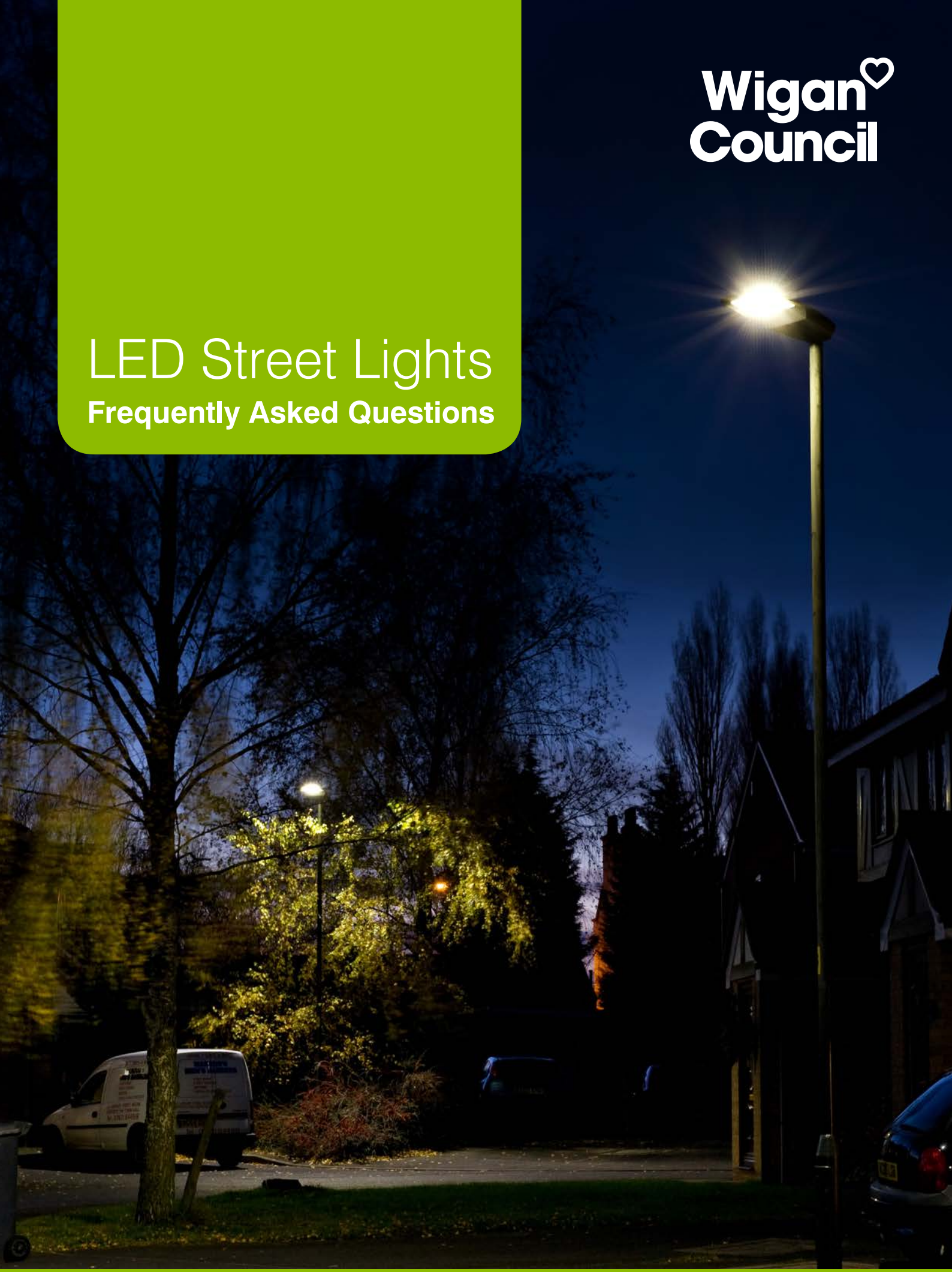
Wigan Council

LED Street Lights

Frequently Asked Questions



Technical

What is an LED?

LED is the common abbreviation for a Light-Emitting Diode. As indicated by its name, the LED is a diode that emits light. Because LEDs are illuminated by the movement of electrons in semiconductor material, they last for an amazing amount of time, give off virtually no heat and don't contain any hazardous substances. Highly efficient and environmentally friendly, LEDs are widely used to light homes, offices, shops, hospitals and hotels as well as outdoor spaces.

What are the benefits of LED solutions?

- Big energy savings – over 60% in comparison to traditional street lighting
- Good colour rendering, making colours more natural
- Long life – up to 100,000 hours, resulting in less maintenance
- Uniform, high quality white light. LED lighting provides better facial recognition for security and CCTV cameras and therefore helps to make areas safer.
- LEDs can be dimmed when light is not needed, resulting in additional energy savings. LEDs can also be connected to sensors and controls and networked so that they can be controlled remotely.

Are LED's new?

No. LED's were first developed around 1962 and have since been used as a lighting source within many commonly used electronic devices, such as television screens, computer monitors and tablet pc's.

However, LED technology has been developed for use in many lighting applications over the last 10 years. It is now used in many highway lighting products such as traffic signals, traffic signs and bollards. Street Lighting is the latest area for this technology to be used.

How long do LED's typically last?

The life span of the selected LED is designed to operate for around 100,000 hours, which is significantly (around 6 times) longer than that of most incandescent, fluorescent or High Intensity Discharge (traditional street lighting) lamp sources.

Like all light sources, LED sources slowly fade over time. This reduction in light output over time is known as light output degradation, or lumen depreciation.

White light sources used for general illumination are commonly considered to be at the end of their useful life when their light output falls below 70% of initial output. In this case after 100,000 hours. After this period the light output would not provide the right levels of lighting to the area to be lit.

How long is 100,000 hours?

Street Lights switch on when the ambient light falls to a certain level, typically 35 lux and will operate for shorter hours in the summer months and longer during the winter months, to reflect the changes in the seasons.

Therefore, over a typical year a street lighting unit operating in these conditions will be switched-on for around 4,100 hours. Based on these annual hours of operation, the LED street lights are expected to operate between 20-25 years.

"LED is the common abbreviation for a Light-Emitting Diode."

Environmental

Do LED's contain hazardous chemicals?

No, the street lighting LED's contain no hazardous chemicals, unlike most fluorescent or High Intensity Discharge (traditional street lighting) lamp sources which contain mercury.

In addition, the LED luminaires are RoHS (Restriction of Hazardous Substances) compliant.

Why are LED's considered an environmentally friendly technology?

LED's are considered to be environmentally friendly in a number of ways.

Firstly, they are designed to have a long life span which can offer around 20 years of near maintenance-free service. Unlike conventional street lighting units, there is no lamp to change which means no waste.

Assuming a conventional street light is re-lamped every four years, that's five re-lamping cycles over a 20 year period. As such, there is

- reduced disposal of old lamps containing harmful mercury;
- reduced fuel used and the accompanying pollution to service those fixtures;
- reduced potential for congestion on the highway network through lane closures or road works;
- less natural resources and energy used to produce the replacement lamps;
- less fuel used to transport the lamps from the factory (most likely overseas), to the distributor, to the contractor, to the job site.

Additionally, LED's use significantly less energy and their light output can be controlled more efficiently than traditional street lights, which in turn reduces the amount of Carbon emissions from production of the electricity required to operate the lights.

As LED's emit light in a specific direction, which is aimed at providing uniform illumination of the area to be lit, it will reduce light trespass and light pollution.

The products that have been selected for this project are RoHS compliant, contain no lead or mercury and feature an aluminium enclosure so that the unit is 100% recyclable.

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Health

Do the LED's flicker?

All lighting operating on an alternating supply, as used in the UK for power distribution, shows flicker to varying degrees. The LED street lights will be no worse than the lighting that is being taken out and in most cases will be significantly better.

Do the LED's emit ultra violet or infrared light?

No, the LED's will provide light that is free from harmful ultra violet (UV) and infrared emissions. The lack of these emissions means that there is no discoloration of items under this light.

Is it true LED lights produce blue light that can disrupt sleep by suppressing the body's production of melatonin?

LEDs can be made in cool white and warm white light. Adding more red light creates a warmer white light, whereas the addition of blue light produces cool white.

When a white light solution replaces traditional discharge street lighting it does usually mean adding more blue. But it is a tiny fraction of the content in natural daylight, and does not have any detrimental effect on people.

Research actually shows that light exposure needs to be in excess of 30 lux continuously for an hour for any measurable shift to take place in melatonin, the hormone which governs our sleep patterns. Even then this shift is insufficient to disrupt sleep patterns.

Typical street lighting levels are 10 lux, less than light levels normally found in the home. The use of handheld phones, tablets and computers is likely to have a greater impact on melatonin levels.

Furthermore, the luminaires are risk group 1 which means no specific precautions need to be taken.

It has been reported that LED lights are dangerous to the eyes. Is this true?

The principal danger to the retina from viewing bright light sources is photoretinitis. Visible light of a short wavelength (blue light) can under some circumstances cause a photochemical injury to the retina, called photoretinitis or "blue-light hazard". A study examining the effect of LEDs and other sources to the retina concluded that they do not present any risk to the retina for short exposure times.

It is best to avoid looking at any light source, natural (the sun) or artificial, directly for any length of time.

For more information please contact:

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