

Cotswolds Dark Skies

Commercial site lighting system upgrades in the
Cotswolds National Landscape

Location: multiple sites, near to the A417 Missing Link
project



Cotswolds National Landscape

Introduction

Dark skies are a special quality of the CNL but are under pressure from increasing light pollution from commercial and domestic security lighting, development, and street lighting. The area of darkest night skies within the CNL has diminished since 1993 by more than 40%.

The CNL has a significant and extensive area of naturally dark night skies and remains an area where the wonders of the night sky can be enjoyed as an integral part of its natural beauty. Dark night skies are important for landscape, heritage, wildlife, recreation and enjoyment and health and well-being.

It is clear that pressure of light pollution affecting the quality of dark skies is still increasing in the Cotswolds. Co-ordinated proactive measures are needed to conserve the dark skies of the CNL and to reduce the impact of artificial lighting.

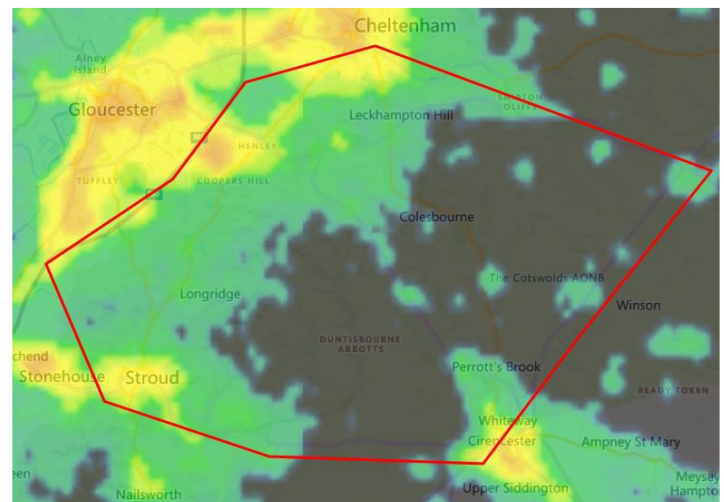
The Project

The project aims to build upon the good work of the A417 Missing Link scheme, which adopted an unlit design principle, seeking to reduce light pollution and promote dark skies through 'on the ground' improvements.

In 2024 a feasibility report was completed, which looked at light pollution levels in the area of the CNL surrounding the A417 corridor, and assessed the dominant lighting threats contributing to this.

The report made a number of recommendations, including developing lighting guidance for householders, businesses, developers and local authorities, and the roll-out of a retrofit fund aimed at funding lighting upgrade works at priority commercial sites.

This case study relates to the implementation of this retrofit fund.



Map showing light pollution levels in the CNL feasibility study

The Approach

The project started with a program of engagement with a priority list of commercial sites, focussing on those sites identified within the feasibility study.

The sites were approached to gauge interest in the fund and site surveys were undertaken to review the existing lighting provision.

The surveys focussed on the following aspects, in line with emerging dark skies design guidance:

- lighting need
- lantern orientation (extent of horizontal light spill)
- bulb wattage
- light colour temperature and
- controls arrangements

Improvement opportunities were identified and agreed by the CNL dark skies specialist.

The site owners were then invited to accept the proposals, before a contractor was then engaged to develop a solution design and to quote for completing the works.

Site 1 : The Highwayman Inn, Elkstone

The Highwayman Inn is a busy, popular pub and restaurant near the village of Elkstone, immediately adjacent to the A417 carriageway.

The original lighting comprised 7 x LED ground mounted floodlights pointing upwards to the building facade, and 5 x pole mounted LED floodlights to the car-park. The lights facing onto the building were “cool white” temperature (4000k) and were a source of complaints from customers inside the pub. The car-park lighting was also “cool white” (4000k) temperature and angled at horizontal to compensate for the limited number of lamps.

The solution was to replace the ground-mounted lamps illuminating the building exterior, with wall mounted downlighter units, at a warmer colour temperature (3000k), providing a similar aesthetic effect but eliminating upward light spill and the harsh blue light colour.

The car-park lighting was replaced by a greater number of new streetlight columns, each with a lower wattage, lower colour temperature (3000k) lantern. The increased coverage meant that lanterns could be angled downwards and have shielding installed to reduce horizontal spill, whilst actually improving the lighting coverage and safety of car park users.



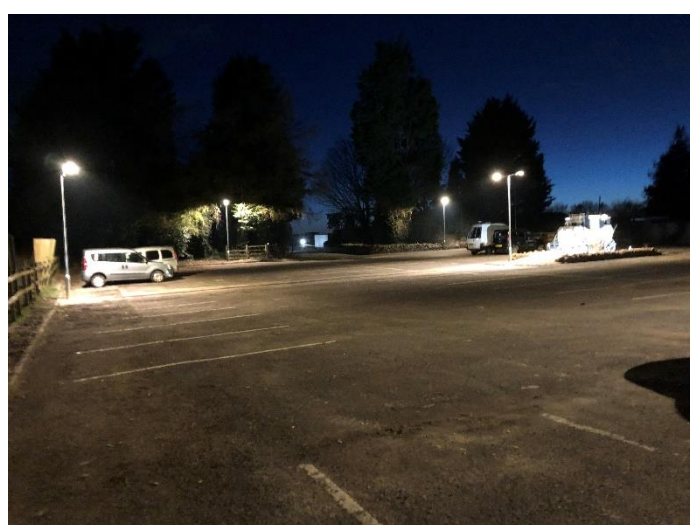
The Highwayman Inn: original car-park and building lighting



The Highwayman Inn: new, lower colour temperature car-park lighting, and building mounted down-lighter units



The Highwayman Inn: original car park lighting



The Highwayman Inn: new, lower colour temperature car-park lighting

Site 2 : Compton Business and Craft Centre

The Compton Business and Craft Centre comprises two large, converted farm buildings split into four commercial units used by local business tenants. The site is part of the Stowell Park Estate; a private agricultural and sporting estate and is managed by the estate management team.

The original lighting comprised 4 x wall mounted LED bulkhead lights. The lights were “cool white” colour temperature (4000k) and of a design that allowed abundant horizontal light spill. The lights were controlled by a photocell sensor only, meaning that they were lit from dusk through the night until dawn the following day. This was recognised as being unnecessary by the estate management team, as tenants would typically vacate the premises by 18:00 each day.

The solution was to replace the lights with warmer colour temperature (3000k) LED units, with a downlight design to eliminate horizontal light spill.

The lighting controls were also upgraded to replace the photocell sensor with a new timer control, so that lights came on at 18:30 and switched off at 22:00 daily. The timer controls can be adjusted by the estate management team to suit seasonal conditions. The controls were also complimented by a passive infra-red (PIR) sensor, that over-rides the timer controls to switch lights on when movement is detected. This sensor was targeted at the entrance gateway, meaning that lighting would come on at any time of the night in the event the gateway was accessed.



Compton Business and Craft Centre : original bulkhead LED



Compton Business and Craft Centre : new, warmer colour downlighters



Compton Business and Craft Centre : original bulkhead LED



Compton Business and Craft Centre : new, warmer colour downlighters

Site 3 : Fosse Cross Recycling Centre

Fosse Cross Household Waste Recycling Centre (HWRC) is a Gloucestershire County Council owned and operated municipal waste site, comprising site office, waste deposit containers for public use and a small yard for waste processing and plant operation.

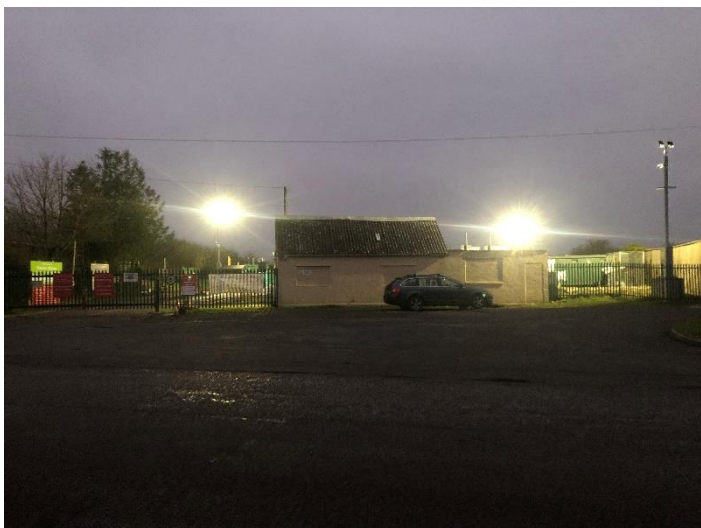
The original site lighting comprised 11 x 100W LED floodlights mounted on 4 column locations across the site. The lights were “cool white” temperature (4000k) and were angled at the horizontal, resulting in light spill from the site. The lights were controlled by timer settings that were not working correctly and switched lighting duty on throughout the night.

The improvement works involved direct replacement of all floodlights to a lower colour temperature alternative (3000k) and improved angling of these floodlights downwards below the horizontal and away from site boundaries.

The controls were also upgraded, to remove the timer controls and replace with a manual switch control at each column. The site is rarely if ever open to the public during hours of darkness; site opening times change from summer to winter to reflect this and staff only occasionally need to work on the site before or after public opening hours.

The site has a small, lower wattage floodlight directed at the access gate, which is triggered by a passive infra-red (PIR) motion sensor, to light the gateway in the event the gate is approached (serving the security camera in this location).

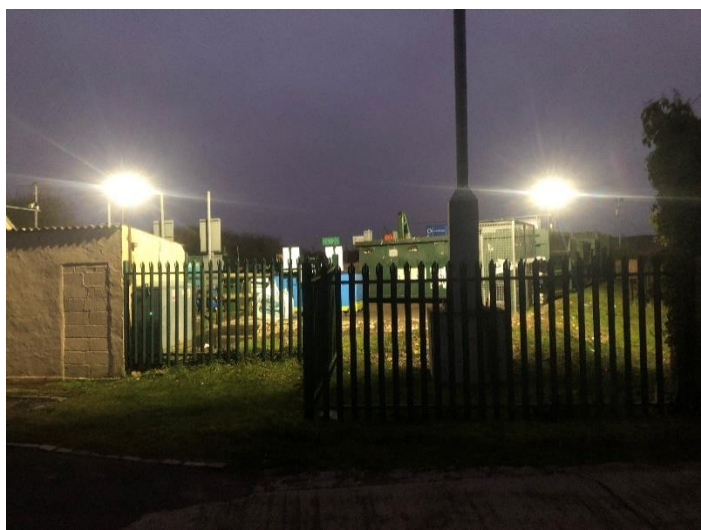
Otherwise, the site now remains in darkness from closing to opening time and has lower impact lighting for the occasions when this is needed.



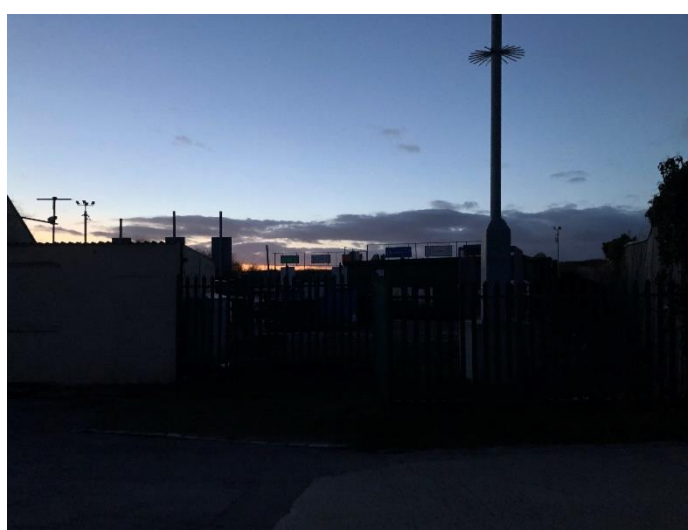
Fosse Cross HWRC : original cool-white LED floods, on duty from dusk until dawn



Fosse Cross HWRC : new floodlights on manual controls only



Fosse Cross HWRC : original cool-white LED floods, on duty from dusk until dawn



Fosse Cross HWRC : new floodlights on manual controls only