

Case study title: Thameslink – LED Lighting Performance Measurement
Month/year: February 2015

Business unit: Construction Services/Rail
Project: Thameslink – Brighton Sidings
In partnership with: Network Rail (Client), BCS (Designer) and Emico Ltd (M&E Contractor)
Key contact: Shane McEntee (Environment Manager) – shane.mcentee@carillionplc.com
TLP Sustainability Strategy Objectives

- ✓ Reduce the cost of delivery (Objective 11)
- ✓ Understand whole life cost implications (13)
- ✓ Minimise whole life carbon impacts (15)

Background:

As part of the Thameslink Programme to increase rail capacity through central London, Carillion was responsible for detailed design and construction of a new train stabling facility at Brighton. Our designers completed a Whole Life Costing assessment for LED lighting, in line with Carillion’s Sustainability Delivery Statement (Action Plan). The assessment identified significant monetary and carbon savings for installing LED lighting instead of traditional luminaires.

Luminaires identified during design were a combination of bulkhead fittings (LED Thorlux Passlight 40W) and column lights (LED Urbis Axia 40W).

This case study summarises the enhanced performance between outline design, prior to Carillion’s involvement on the project, compared to detailed design and the operational phase of the new sidings. Energy consumption was monitored by Emico Ltd by fitting a three phase data logger recording a typical seven day operation.

Key Findings & Observations:

- Lighting is configured to turn on/off corresponding to sunset/sunrise
- 349No luminaires were installed which was 17% greater than outline design due to increased scope and to balance uniformity of light on train driver’s walkways
- It has been possible to reduce the wattage of the bulkhead fittings from 40W to 24W while meeting design standards
- Despite an increase in the overall number of luminaires, an annual saving of £5,475 in energy costs are expected, compared with traditional luminaires
- LED lighting is expected to save £137,000 over a 25 year period
- Annual CO₂ emissions saved increased to from 17.75 to 25.0 tonnes, leading to 25 year saving of 625 tonnes
- This was a 40% improvement on the saving anticipated in the original Whole Life Costing assessment

Savings Compared to Outline Design	Detailed Design	Operational Phase	25 Year Period
Annual Savings (£)	£3,916	£5,475	£137,000
Annual Savings (CO ₂ tonnes)	17.75	25.00	625.00

- In addition to the reduced energy consumption, the increased life expectancy of LEDs and LED drivers is expected to reduce ongoing inspection, maintenance and replacement costs
- This assessment of the gap between design and actual performance for lighting is thought to be the first on the railway and is a compelling reason to use LED lighting on railway infrastructure, particularly in locations with restricted site access.



Photo 1 – Brighton Lighting Scheme



Photo 2 – Data Logger in position at Brighton sidings

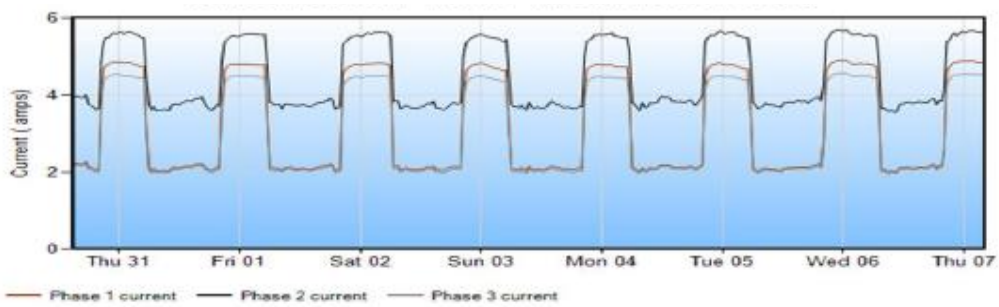


Figure 1 – Output graph from load monitoring showing daily on/off times