

Bristol lays foundation for tomorrow's smart infrastructure with TALQ



Tender scope

In March 2023, Bristol City Council launched an ambitious three-year programme to replace 29,000 of their old streetlights with LED technology and implement a Central Management System (CMS), targeting annual savings of £2 million in energy and maintenance costs. With a population of 479,000, Bristol is the eighth-largest city in England and Wales outside London and the second fastest-growing Core City.

The tender focused on multiple objectives: immediate energy and carbon savings, fast deployment with a short mobilisation period, low-latency lighting control for adaptive and dynamic applications, and stringent cybersecurity requirements.

The city required the CMS to be deployed simultaneously with the existing lanterns to enable energy trading and realise savings as soon as possible. Critically, Bristol specified open and interoperable solutions with TALQ compliance to support future smart city services and enable integration with third-party hardware and software, avoiding vendor lock-in while ensuring scalability.



35,500+
light points



£ 1.4M
Annual savings
(FY 2024-25)



58%
reduced energy
consumption



0.1%
Failure rate



2+
Vendors

Why did Bristol City Council choose the TALQ Standard?

Bristol's decision to mandate TALQ Certification came from difficult experiences with previous CMS providers, where deployed systems failed to sustain engagement after implementation. TALQ marked a strategic shift toward interoperability and future-readiness, enabling Bristol to integrate Schröder EXEDRA CMS with Flashnet cabinet controllers and Schröder luminaire control nodes into one unified management system despite diverse hardware.

This aligns with Bristol's people-centred smart city vision in its 2050 One City Plan, which emphasises transparency, open data, and collaborative partnerships. TALQ also gives Bristol foundational infrastructure that can expand beyond lighting to support future applications such as air quality monitoring, parking management, and other municipal services across departments. By avoiding a single-vendor approach, the Smart City Protocol lets Bristol choose best-in-class solutions while maintaining control over its technology choices.

Implementation and Learning

The project ultimately deployed over 35,500 connected light points, exceeding the original 29,000-unit scope. Most installations used luminaires equipped with wireless control nodes, and the system successfully integrated lanterns from multiple manufacturers through TALQ-certified connectivity.

Cabinet controllers were deployed for specific applications, particularly at park-and-ride facilities where physical connections to individual luminaires weren't feasible, enabling centralised switching control through TALQ integration. The project utilised NB-IoT and 4G connectivity with mesh networking capabilities, maintaining real-time responsiveness throughout the system.

Like any large-scale infrastructure project, the deployment encountered some technical and logistical challenges. However, the collaborative relationship with the solution providers, enabled by comprehensive system data visibility, allowed rapid problem-solving.

A significant technical achievement involved connecting previously orphaned control nodes that were installed years earlier but never functional under the previous system. Through TALQ interoperability, these legacy devices were successfully integrated and began reporting independently, a capability that hadn't been possible before, demonstrating the protocol's backward compatibility benefits.



Outcomes

The Bristol deployment achieved exceptional results across all key metrics. By March 2025, energy savings reached 58% compared to the reference year, with energy and carbon reductions realised from the first installations.

Notably, 60% of Bristol's lights were already LED before the project began, making these savings even more impressive. In financial year 2024-25, the project delivered a £1.4 million benefit, effectively paying for itself while generating ongoing savings for taxpayers. The system also maintains a 0.1% failure rate across 34,000 assets, demonstrating the reliability and quality of the TALQ-enabled infrastructure.

Operationally, Bristol now manages street lighting proactively, identifying and addressing faults before residents report them, improving citizen satisfaction. The CMS also removed the need for manual cabinet visits for schedule changes at facilities such as park & ride sites, where staff previously had to visit cabinets whenever operational hours changed.

Beyond lighting, phase one established the foundation for Bristol's broader smart city evolution. The city is now moving into phase two, focused on services and data-driven applications across multiple urban domains.

The project validates Bristol's vision that connected lighting can serve as the gateway to comprehensive smart city transformation, with TALQ providing the interoperability framework needed for continuous innovation, expansion, and future flexibility without technology lock-in.

"TALQ has helped Bristol connect different systems and suppliers more easily, giving us the control we need to grow our smart infrastructure.

It allows us to integrate multiple vendors seamlessly, while delivering strong energy savings and long-term flexibility for our smart city ambitions."

Shaun Taylor
Head of Highways
at Bristol City Council