

# Glasgow City Council

Glasgow, Scotland

## City of Glasgow deploys cycle priority and safety solution to protect vulnerable road users

Using sustainable power, Q-Free's established and highly-accurate cycle monitoring solution integrated with a warning sign to protect cyclists at an accident hotspot and provide invaluable usage data along a main commuter corridor.

### SOLUTION

▷ HI-TRAC® CMU

TYPE: CYCLE DETECTION

SIGNALIZED JUNCTIONS: 40

### About Glasgow City Council

Glasgow City Council is the local government body for the most populous city in Scotland.

- Established in 1996
- Serves a population of 633,000+

### Cycle Detection Challenge

Protect vulnerable cyclists from vehicular traffic.

Increase the accuracy of cycle detection around the city.

Communicate the presence of other road users to drivers.

### The Solution

Q-Free's HI-TRAC CMU cycle monitoring solution was selected to provide reliable, highly-accurate cycle count and detection information. Detection equipment was easily integrated with controller phasings on the authority's existing UTC system.

Integration with a third-party flashing warning sign was established to alert motorists of oncoming cyclists while the web reporting system provided real-time access to system data from all commissioned sites.

Following the success of the initial phase of the project, the city approved and installed two additional bus priority and bus and cycle priority sites utilizing Q-Free's HI-TRAC® UTC-L (BP) and HI-TRAC® EMU3 technology.

### Results

Glasgow created a safer environment for cyclists and road users through the simple installation and integration of the HI-TRAC CMU cycle monitoring solution at 40 signalized junctions throughout Glasgow. The safety sign has:

- Decreased vehicle/road user accidents 17% to 8%\*
- Reduced vehicles that do not yield to cyclists 35% to 22%\*
- Increased network efficiency

After the success of the initial phase, an additional 16 sites are scheduled for installation at various strategic locations across the city.

*\*unweighted average*

**"Exhaustive testing of the piezo-electric sensors proved that the developed system was highly accurate and was able to overcome the issues identified with other technologies.**

**The net benefit is that it leads to increased efficiency at signalized junctions."**

— Signals Team, Glasgow City Council  
(ITS Strasbourg, 2017)

## Background

Since 2016, Q-Free has worked with the Glasgow City Council to improve safety and service for cyclists at signalized junctions. The ongoing partnership expanded to include a network of monitoring sites in the inner cordon covering all routes into the city center.

Concerned about the number of incidents/collisions caused by vehicles encroaching into cycle lanes, the council wanted a solution to warn drivers of oncoming cyclists to improve the safety for these vulnerable road users and road safety overall.

Though the city already had an alternative technology in use, it failed to deliver the results the local authority required due to poor detection accuracy, which caused complaints from road users and cyclists alike. Q-Free was selected for its ability to provide more reliable, highly-accurate cycle detection and priority.

## Protecting Cyclists with Highly Accurate Detection Technology

### INSTALLATION & OPERATION

Working in partnership with Glasgow City Council's traffic signals contractor, HI-TRAC CMU detection equipment was installed on the authority's existing UTC system inside the traffic controller cabinet and easily integrated into controller phasings. The in-road piezo-electric sensors were installed approximately 25 m (75 ft) upstream from the signalized junction and solar powered.

As cyclists approach the signalized junction, detection at the in-road sensors trigger an output that generates a "call" that provides a phase for cyclists to pass safely through the junction, removing the risk of vehicle / cycle conflict. The trigger for the "call" can be configured on direction. This is a necessity for locations using a bi-directional basis thus avoiding false triggering when cyclists are heading away from the intersection and removing the need to involve traffic signal programming, simplifying installation and integration.



### REPORTING

Data is delivered via GPRS and hosted by Q-Free. At the onset, monthly reports and data summaries from each site were sent to Glasgow City Council for internal dissemination. However, the authority later took advantage of Q-Free's InfoQus web reporting system, which provides real-time access to the data and reporting facility for all commissioned sites.

## Communicating Oncoming Cyclists with Motorists

Working in partnership with Solagen, a UK supplier of safety warning signs, Q-Free integrated the HI-TRAC CMU with a solar-powered flashing sign on one of the main commuter corridors. Upon detection of a cyclist, a signal is sent to the sign, which flashes a warning to oncoming motorists until the cyclist is safely through the junction.



### Other Deployments

After the successful implementation of the initial phase of the cycle detection sites, an additional 16 sites are scheduled for installation at various strategic locations across the city. In addition, Glasgow City Council installed two new bus priority sites at signalized junctions.

Operating on the same principal as the HI-TRAC CMU, one site utilized the HI-TRAC UTC-L (BP) that provided triggered outputs based on the classification of vehicular traffic to detect buses in mixed traffic using inductive loops and provide priority.

At a further location, the HI-TRAC EMU3 was commissioned and integrated with both inductive loops and piezo-electric sensors to trigger events based on the presence of buses and cycles.