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Case Study

Creating a Network of Clean Air Urban Walking Routes Starts with Real-Time Air Monitoring

A prominent UK non-profit and a leading environmental data analytics company used handheld air quality monitoring systems to design a series of environmentally friendly walking and cycling routes across Greater London.

Project
Clean Air Routes

Location
London, UK

Date
2020

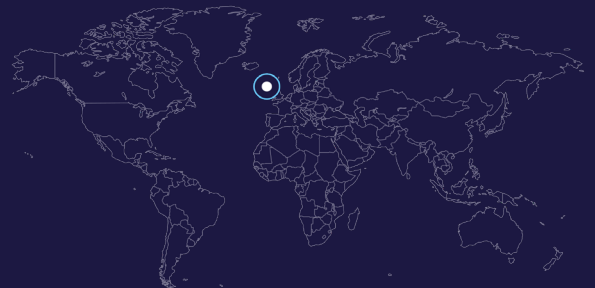**Services**
Aeroqual Series 500

Measurements
PM_{10}, $PM_{2.5}$, NO_2

Sector
Outdoor

Creating a Network of Clean Air Urban Walking Routes Starts with Real-Time Air Monitoring

A prominent UK non-profit and a leading environmental data analytics company used handheld air quality monitoring systems to design a series of environmentally friendly walking and cycling routes across Greater London. The project aimed to promote healthier lifestyles, quantifying the health benefits of Clean Air Routes and encouraging more citizens to take up walking or cycling as part of their daily commute. The results showed that people taking these new routes were exposed to significantly lower levels of NO_2. These low-pollution alternatives have since been made available as an interactive journey planner.

Designing a Healthier Future for All Londoners

The Cross River Partnership (CRP) is a public-private partnership committed to delivering innovative projects that create positive change and contribute to London's social, environmental, and economic health. Together with Tranquil City, an environmental data analytics company, CRP sought to establish a series of 15 Clean Air Routes across London's 11 boroughs (as part of the Defra Air Quality Grant-funded Clean Air Villages 3 project). Clean Air Routes are defined as "alternative walking or cycling routes that allow individuals to avoid busy, polluted and often popular commuter routes."

CRP selected initial routes in collaboration with Local Authority and Business Improvement District partners and informed by Environmental and Healthy Streets Index data maps, provided by Tranquil City. CRP and Tranquil City identified low pollution alternatives and followed up with site visits to identify any accessibility or safety concerns along each of the routes.

Quantifying the Health Benefits of Low-Pollution Alternatives

To quantify the difference in pollution between the standard and Clean Air Routes, Tranquil City chose the Aeroqual Series 500 portable air quality monitoring system. This system was used to measure real-time levels of nitrogen dioxide (NO_2) and particulate matter ($PM_{2.5}$ and PM_{10}) during peak hours. Motor vehicles are a principal driver of London's pollution problem, with levels appearing highest next to busy roads. Excess exposure to NO_2 can pose a significant threat to public health, causing a range of respiratory illnesses and aggravating existing conditions, such as asthma.

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>
> **Stav Friedman**
> CRP Project Officer

To ensure accurate results, each route pair (i.e., the standard route and the Clean Air Route) was monitored simultaneously and repeated as needed. "The ease of mobility and use of the handheld devices allowed our team to monitor the walking routes with speed and accuracy. They also provided us with complete control and flexibility over the routes, which sometimes needed to be altered depending on accessibility and safety", remarked Stav Friedman, Project Officer for the Cross River Partnership, on the Aeroqual Series 500.

MRK-D-0094

Interactive Journey Planner Promotes Positive Lifestyle Changes

Air quality monitoring performed by Tranquil City demonstrated that people opting for one of the Clean Air Routes could significantly reduce their NO_2 exposure. Exposure levels were reduced by an average of 16% across the Clean Air Routes – in some cases by up to 40%. While the difference in $PM_{2.5}$ and PM_{10} measurements recorded was less extreme, it is reasonable to expect that concentrations are likely to be consistently lower on the Clean Air Routes based on a robust understanding of the typical sources of particulate matter.

Clean Air Routes also provided additional benefits for commuters through increased exposure to nature (quantified at an average of 28% more greenery across the routes) and reduced noise levels. Positive externalities such as these (as opposed to pollution level measurements that are harder to recognize by the average citizen) help contribute to the behavioral changes the project set out to create. Quieter, less dangerous routes will allow novice cyclists somewhere to gain confidence, and parents and children will be more inclined to walk to school with healthy, safe alternatives available.

The future of the project involves CRP continuing to work with public and private sector partners to promote the benefits of taking Clean Air Routes. All 15 of the routes are now available at Clean Air Route Finder, an interactive journey planner developed in partnership with King's College London and Imperial College London. To learn more about this case study, check out the Clean Air Routes monitoring report or visit Cross River Partnership online.

About

Cross River Partnership

Cross River Partnership is a non-profit and impartial partnership organization that has been delivering positive change for London's residents, businesses, and visitors for over 25 years through a series of innovative urban projects.

Aeroqual

Aeroqual develops integrated monitoring and software systems underpinned by industry-leading sensor technology to support environmental, health, and safety professionals in protecting people and the planet from the impact of air pollution. That's why governments, industry, researchers, and consultants trust Aeroqual to deliver actionable data for their air quality monitoring projects.

Tranquil City

Tranquil City is an environmental data analytics company interested in exploring urban calm. They believe that by understanding, promoting, and creating areas of tranquility in the city, everyone can improve their health and wellbeing as city dwellers.