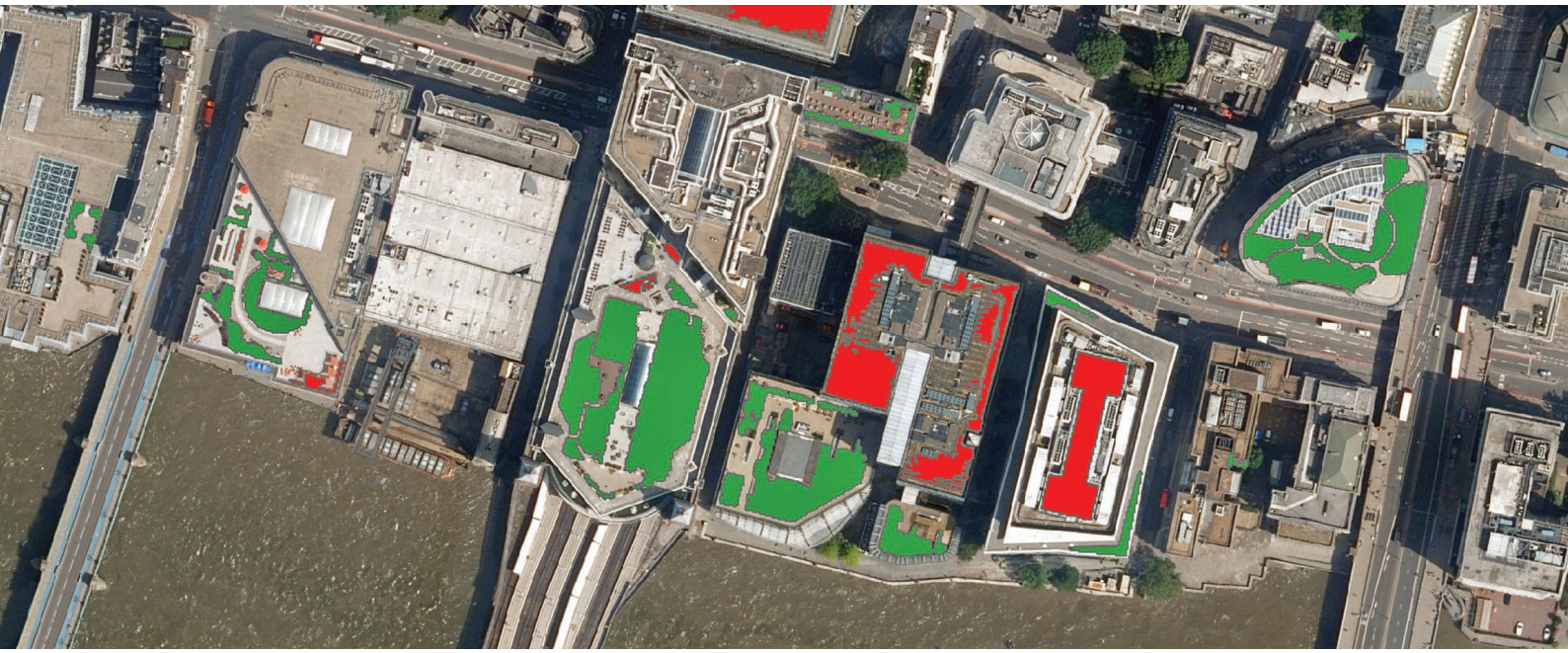
Case Study

Bluesky Aerial Photography Maps Green Roofs



Client:

Gentian was founded by a group of environmentally minded individuals who saw a niche for the use of satellite technology to solve issues in the built environment, with a focus on biodiversity. Gentian uses earth observation data and machine learning to identify habitats within a given site which it then splits into parcels which can each be assigned to a different category of habitat. Gentian also works to identify and categorise green roofs and identify retrofit opportunities.

Industry:

Research

Product:

Aerial Photography

> *"Green infrastructure is an essential tool in the war against climate change, reduced biodiversity and the health impacts of air pollution and rising temperatures in our cities."*
>
> Thomas Fenal, co-founder and Chief Technical Officer of Gentian

Summary:

Bluesky's high resolution aerial photography is supporting a new artificial intelligence platform created by technology start-up Gentian. This new platform has developed an advanced workflow based on machine learning algorithms that automatically identifies and records the number of green roofs (roofs with a layer of vegetation installed). The platform will also map green infrastructure to identify where biodiversity can be increased in UK cities to combat climate change and meet local and global net zero targets.

Challenge:

Developing solutions to support the UK Government's target to become net zero by 2050 has become a priority. Gentian recognised the benefits that green roofs and infrastructure could provide including building insulation, rainfall absorption and, if accessible or visible, boosting well-being and even property prices. However, unlike other green initiatives like the development of parks and open spaces, to date, the use of roof space has been ad-hoc and under utilised.

Solution:

Using 12.5cm resolution aerial imagery from Bluesky, Gentian can identify and record the number of buildings with green roofs which in turn means they can advise local authorities to enhance the value of existing properties in a bid to mitigate the loss of biodiversity and the negative impacts of climate change, reduce flooding and improve air quality.

Not only is the data able to benchmark where a city currently is, both in terms of extent and the quality of green roofs, it can be applied to identify potential properties for retrofit projects and explore the capacity of new developments, all of which will be beneficial to meeting net zero targets as green roofs will act to absorb carbon, reduce air pollution and insulate buildings.

Results:

Using the Bluesky 12.5cm multispectral imagery, which includes the familiar RGB (Red Green Blue) bands as well as Near Infrared band that provides a unique insight into the state and health of vegetation, Gentian has already completed a pilot project in London and a project for the Greater Manchester Combined Authority. The machine learning algorithms can distinguish between intensive and extensive green roof and Astroturf with a high level of accuracy. Bluesky maintains its aerial photography coverage of Great Britain on a rolling, three-year, 12.5cm resolution update programme which Gentian will be able use to monitor and measure the success of its future projects.

Specification		
Resolution	**12.5cm Imagery**	**25cm Imagery**
Coverage	England & extensive areas across Scotland & Wales	England, Wales, Scotland and the Republic of Ireland
Accuracy XY	± 30cm rmse	± 60cm rmse
Formats	Include: JPG, TIFF, ECW, SID, KMZ	Include: JPG, TIFF, ECW, SID, KMZ
Bands	RGB / RGBI	RGB / RGBI
Standard Projection	British National Grid	British National Grid / Irish Transverse Mercator (ITM95)
Tile Size	1km x 1km (8,000 x 8,000 pixels)	1km x 1km (4,000 x 4,000 pixels) / 2km x 2km (8,000 x 8,000 pixels)
Metadata	Gemini 2.3	Gemini 2.3 / OGC compliant XML

Get in touch today at **info@woolpert.com**