Case Study

The Water Resilient Dundee Partnership

Client:

The School of Geography and Sustainable Development, University of St Andrews, as an educational partner of the Water Resilient Dundee (WRD) partnership led by Scottish Water and Dundee City Council (DCC).

Industry:

Higher Education

Product:

Aerial Photography

> *"The ability to use ultra-high resolution, multispectral photography at sub-metre resolution enables us to map green and grey spaces at unprecedented detail needed to improve our understanding of where and when flooding presents a risk to Dundee's communities. Our students are grateful for the opportunity to access high-quality imagery in comprehending its purpose in effective data-driven decision making."*
>
> T.J. Young, Lecturer in Physical Geography & Remote Sensing, University of St Andrews

Summary:

The Water Resilient Dundee Partnership is developing innovative and inclusive methods for managing flooding to create future-proofed, flood-resilient communities. The delivery of its strategy focuses on holistic solutions that involve meaningful collaboration with regional partners in the public, enterprise, and education sectors, and local community groups and stakeholders.

Challenge:

The gradual loss of private gardens, public parks, and other green spaces (which can soak up rainwater) to impermeable paved surfaces is known as 'urban creep' and it is a concerning international trend and a primary driver of increased flood risk in affected areas. High-resolution mapping of urban creep over time not only greatly increases the accuracy of mapping flooding extents and magnitudes but also enables insights into trends in the water resilience from neighbourhood to municipal scales.

Because urban creep is highly dynamic, a robust method to efficiently map the distribution of these green and grey belt areas to capture changes over a period of time is needed to identify areas at risk of flooding, as well as to increase confidence in future projections of potential flood risk.

Solution:

At the University of St Andrews, Honours-level Geography students studying Remote Sensing work closely with the Water Resilient Dundee Partnership. They are applying Bluesky's 4-band aerial imagery to produce maps on an annual basis detailing urban creep that leverages a simple yet efficient automated workflow. Through quantifying the extent to which areas are green or grey belt at the building plot scale, the application of geospatial techniques to such high-resolution imagery engages students to meaningfully contribute results that are then directly fed into flood risk models for Dundee City.

Results:

Leveraging Bluesky's data has enabled the ability to beautifully merge data-driven decision-making, effective science communication, and practice-based education. Students are not only exposed to the potential of ultra-high resolution imagery in remote sensing applications, but also able to directly participate in tracking Dundee's journey to becoming a future-proofed, flood-resilient city.

Through analysis of Bluesky's imagery, the resulting maps of urban creep are then fed into Scottish Water's datasets as key model inputs that improve the accuracy of flood projections and predictions.

	Imagery Specification	
Resolution	**12.5cm**	**25cm**
Coverage	Great Britain	Great Britain
Accuracy XY	± 30cm rmse	± 60cm rmse
Formats	Include: JPG, TIFF, ECW	Include: JPG, TIFF, ECW
Standard Projection	British National Grid	British National Grid
Tile Size	1km x 1km (8,000 x 8,000 pixels)	1km x 1km (4,000 x 4,000 pixels)
Metadata	Gemini 2.3	Gemini 2.3

Get in touch today at **support@apgb.co.uk**