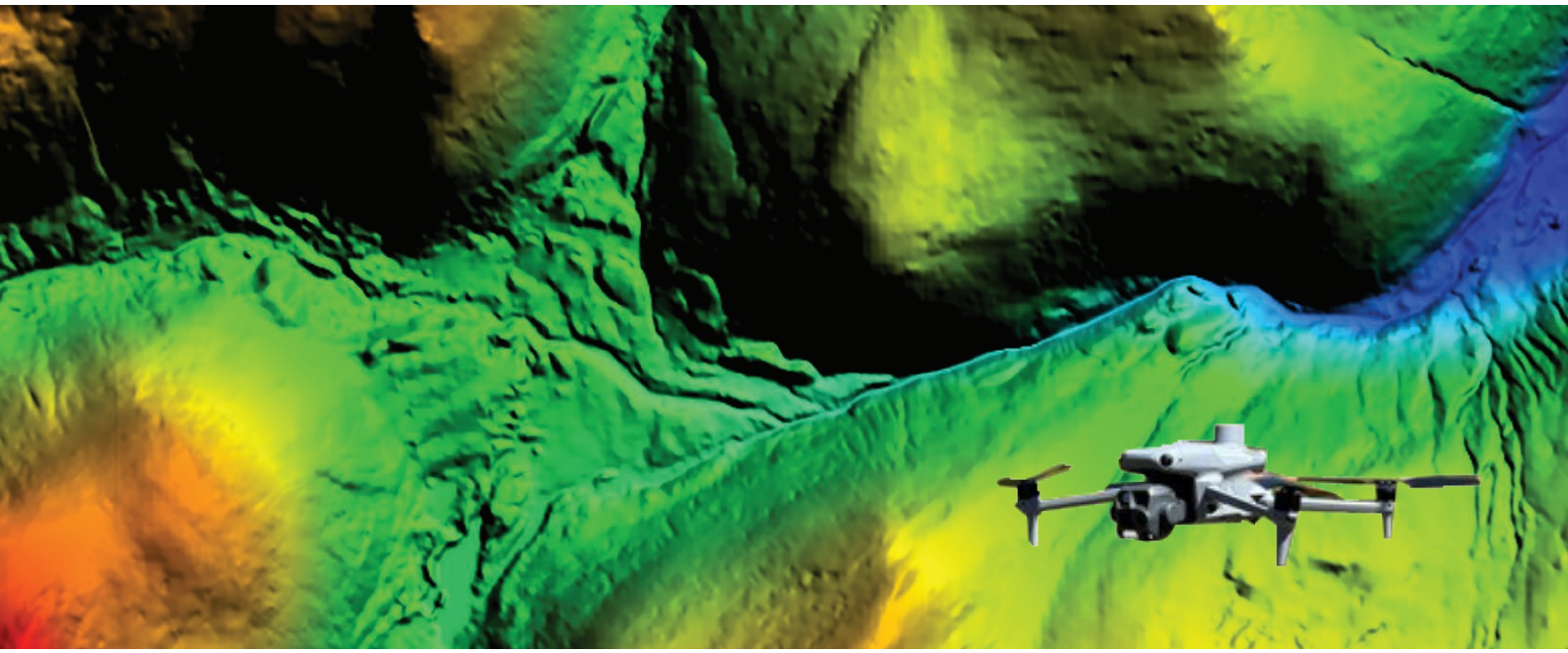
Case Study

Search and Rescue Aerial Association - Scotland (SARAA)



Client:

Search and Rescue Aerial Association - Scotland (SARAA) is a specialist drone unit, individual charity and operates nationally within the wider Scottish Mountain Rescue community. They provide dedicated drone support to 22 mountain rescue teams, plus Police Scotland and Scottish Fire & Rescue Service during search and community support operations across Scotland.

Industry:

Mountain Rescue

Product:

Aerial Photogrphy &
Digital Terrain Model (DTM)

> *"In a previous career, I used to fly RAF Tornado GR4 aircraft at low level with a terrain elevation database to assist so I have always known that data in some form has been there, just not embedded into drones. Now having the access to detailed 2m DTM data through APGB has made a ground-breaking difference to conducting our drone operations. The ability to assure the mountain rescue search manager or Police Search Advisor (PolSA) that the tasked terrain has been accurately searched is key. With the ability now to pre-plan a flight, even in the field, with high-fidelity terrain data means that missions can be flown with far more accuracy than even the most competent of pilots can achieve over the significantly varied terrain of Scotland. This captured data is then analysed in a layered approach with humans scanning the video data through goggles or a screen 'live', on-controller machine learning / artificial intelligence to identify colour or movement and post-flight image / video analysis using varying algorithms to spot anomalies. What this means is we have significantly enhanced our ability to fly and detect humans in peril, whilst also reducing the workload on the pilot and the chance of Controlled Flight Into Terrain (CFIT); meaning more lives saved and a safer aviation operation."*
>
> Tom Nash, former Team Leader, SARAA Scotland

Summary:

SARAA introduced drones to help the mountain rescue teams operating within Scottish Mountain Rescue to help search large and challenging terrain more quickly, whilst also helping reduce risk exposure to team members. However. missions were limited by a drone's inability to recognise changing ground height, resulting in inconsistent altitudes and gaps in camera coverage. Access to Bluesky's 2m Digital Terrain Model (DTM) data and current aerial photography through the Government Digital Service's Aerial Photography for Great Britain (APGB) programme has transformed this. Integrated into MRMap, a search management mapping tool used widely within mountain rescue, the data enables drones operated by SARAA across Scotland to maintain a consistent height above ground, fly fully automated missions - even at night - and plan missions more accurately.

Challenge:

SARAA introduced drones as a vital tool to rapidly cover large and challenging areas of terrain. However, when they were first introduced into Scottish Mountain Rescue, drone deployments faced a frustrating limitation in that the aircraft only knew the height of the terrain at take off point. Therefore, when it was instructed to fly at a fixed altitude of 80 metres for example, the drone would maintain that height relative to its launch site rather than the changing terrain beneath it. In Scotland's varied and often steep terrain, this meant a rising slope could bring the aircraft too close to the ground, while descending landscapes would cause the drone to fly too high.

This significantly impacted the drone camera's field of view. As the landscape rose, the camera's view narrowed, creating blind spots where rescuers could miss significant evidence. As the ground dropped away, the view widened to where smaller details could be missed, such as clothing, tracks, or disturbed vegetation, impacting the efficiency and safety of drone rescue operations.

Solution:

Mountain rescue teams across Great Britain benefit from geospatial resources provided via the Government APGB programme, meaning SARAA could access free-at-point-of-use high accuracy 2m DTM data and current aerial photography. This data is integrated into MRMap, the mapping software used by mountain rescue teams across the UK and Ireland. Although MRMap includes a standard terrain dataset, drone operations require more precise elevation information to support safe navigation in complex or technical environments. By incorporating Bluesky's detailed DTM, SARAA gains accurate height information to support both mission planning and automated flight.

With this elevation data, the SARAA drone pilots working across the Scottish Mountain Rescue teams can now operate more efficiently and safely, helping them to maintain a consistent height above ground regardless of changes in the terrain. This ensures a stable field of view, improves operational safety, and enables fully automated missions, even at night or in low visibility conditions. Bluesky's aerial photography also provides a current visual representation of the terrain that standard maps cannot offer. Features that can often change quickly in the field such as hedgerows, tree lines, and newly deforested areas can be identified, allowing rescue teams to plan search routes more accurately and avoid misinterpreting ground conditions.

Results:

Access to Bluesky's data through the APGB resource has transformed how mountain rescue teams conduct search operations in Scotland. The ability to now closely follow the terrain has significantly improved flight safety, reduced operational risk, and ensured consistent ground coverage during drone searches. This consistency is especially critical during night missions, where drones equipped with visual and thermal cameras can now fly fully automated routes with confidence, resulting in quicker and safer searches.

The current aerial photography has also improved SARAA's ability to interpret ground conditions and plan search strategies as teams can more easily verify what the land looks like pre-flight. Search planning has achieved a better accuracy, and because the datasets can be accessed from desktop, SARAA can take the terrain data and imagery directly into the field. Across Scotland, drone pilots and rescue teams are benefiting daily from enhanced functionality powered by APGB data, enabling more advanced use of drone technology and ultimately more effective search and rescue missions.

	Aerial Photography	DTM
Resolution	**12.5cm**	**5m**
Coverage	Great Britain	
Accuracy XY	± 30cm rmse	± 1m rmse
Accuracy Z	-	± 1.5m rmse
Formats	Include: JPG, TIFF, ECW	Include: ASCII Grid, ASCII XYZ, DXF Point, Geotiff
Standard Projection	British National Grid	
Tile Size	1km x 1km (8,000 x 8,000 pixels)	1km x 1km (200 x 200 pixels)
Metadata	Gemini 2.3	

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