



DRONESYSTEMS



HexCam
Professional Drone Services

Aerial Thermal Mapping, Analysis & Reporting of Large-Area Heat Networks

Scott Rallison - HexCam

A Little About Us. . .



- Denmark-based (Aarhus)
- Founded 2015
- Service > 150 District Heating companies
- Some of largest heat networks in Denmark
- 'Teraplan' reporting platform

Working
together
since



2018

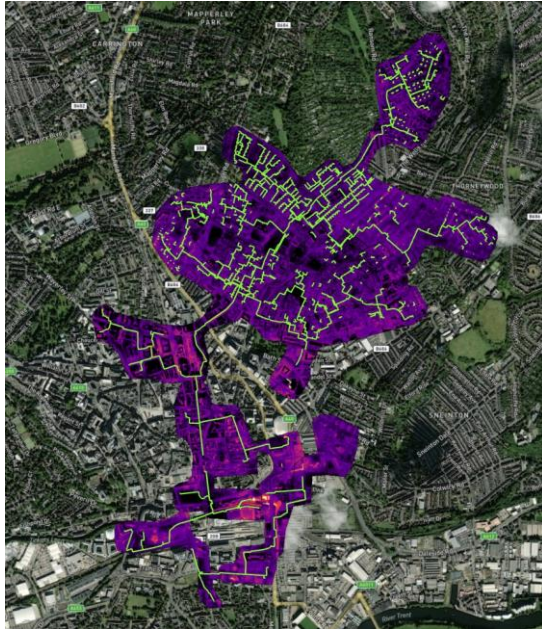


- UK-based (Norwich)
- Established 2012
- CAA Operational Authorisation
- Enhanced CAA Permissions (OSC)
- Survey, Mapping, Inspection
- Creative Video and Stills
- 3D Point Clouds & Modelling



Nottingham
City Council

Large Area Aerial Thermography

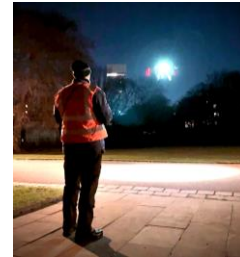


290 hectares
Nottingham
Jan 2019 & Jan 2024



347 hectares
City in South Yorkshire
Twice Yearly since Jan 2022

Planning & Capture



Car parks, Schools, City Parks, Bridges, Shopping Centre Roofs, Churchyards, City Squares. . .

Work with multiple stakeholders to identify safe **Take-Off and Landing Sites (TOLS)** - 10 flights over 2 nights for Nottingham. **Site recce in advance.**

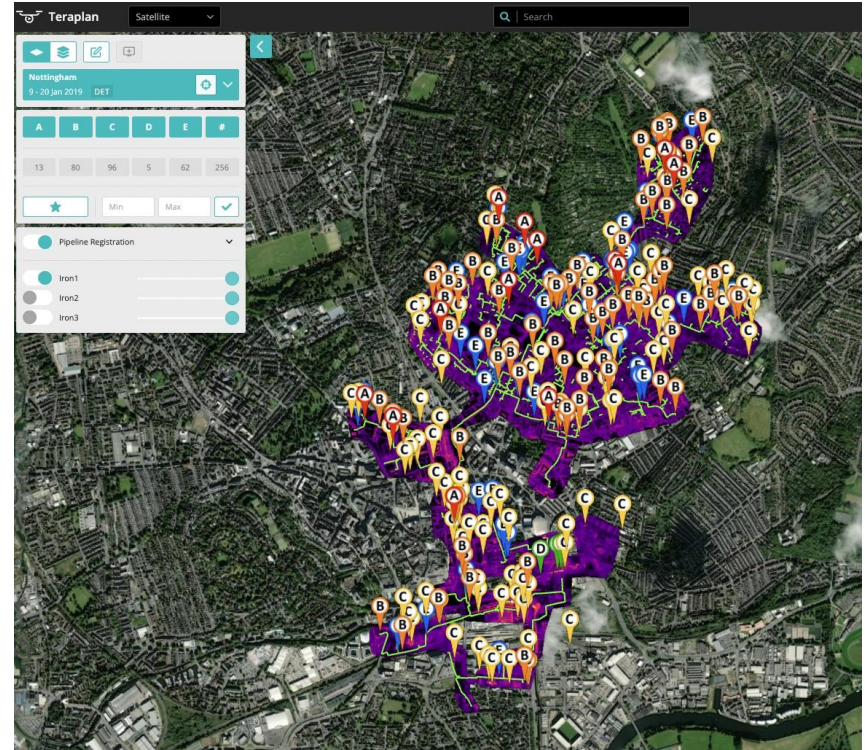
Correct weather conditions essential to detect more subtle heat signatures.

Ground Control Points (GCPs) surveyed in advance.

Processing & Reporting



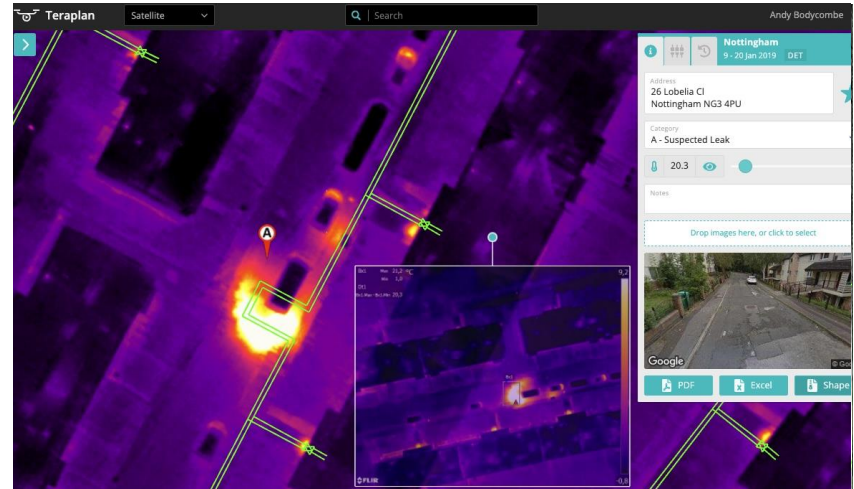
- Thousands of **radiometric** thermal images captured (circa 600GB)
- Processed to form a network-wide thermal orthomosaic (ironbow & monochrome palettes) tuned to highlight ‘delta-Ts’ from DHN network components.
- Geolocation checked and aligned.
- Anomalies identified and categorised.
- All reported via web-based ‘Teraplan’ – ‘Handover’



Teraplan – Complete & Systematic



- **Tagging and filtering** to categorise, prioritise and to monitor work status.
- **Pipe routes** can be compared to record drawings. 'GIS' layering.
- **Comparison of data** from year to year – emerging problems and trends and assessing results of maintenance.
- **Maintenance Scheduling** - critical and emerging future leaks.
- **Multiple Users** with specific access and editing rights.
- **Google Streetview** integrated



Teraplan – Complete & Systematic



The screenshot displays the Teraplan software interface. The main view is a thermal drone image of a street in Nottingham, showing a large, bright orange and yellow leak. A red pin labeled 'A' is placed on the leak. A central inset window shows a zoomed-in view of the leak with a temperature scale on the right, ranging from -0,8 to 9,2. The scale is labeled 'FLIR' at the bottom. The inset window also displays temperature data: Bk1 Max 21,2 °C, Min 1,0; Dt1; and Bk1.Max - Bk1.Min 20,3.


On the left side, there is a control panel with a map view, a location dropdown set to 'Nottingham', and a date '9 - 20 Jan 2019 DET'. Below this are buttons for 'A', 'B', 'C', 'D', 'E', and '#'. A status bar shows '1 0 0 0 0 1'. There are also buttons for 'Ubestemt', 'Undersøges', 'Færdig', 'Identified For Repair', 'Scheduled For Repair', 'Repair In Progress', and 'Repair Completed'. A star icon, 'Min', 'Max', and a checkmark are also present. A 'Tags' section contains 'Major Leak'. At the bottom left, there is a 'Pipeline Registration' section with three items: 'Iron1', 'Iron2', and 'Iron3', each with a green indicator.

On the right side, there is a detailed information panel for 'Nottingham' on '9 - 20 Jan 2019 DET'. It includes the address '26 Lobelia Cl, Nottingham NG3 4PU', a category 'A - Suspected Lea', and a status 'Scheduled For Re'. There is a 'Tags' section with 'Major Leak' and a '20.3' value with a slider. Below this is a 'Notes' section and a 'Drop images here, or click to select' area. A Google Street View image is shown below the notes. At the bottom right, there are buttons for 'PDF', 'Excel', and 'Shape'.

At the bottom center, there is a small Google Maps inset showing the location '5 Lobelia Cl, Nottingham, England' with a street view image and 'Set Home' and 'Go Home' buttons.

Key Benefits

- COST SAVINGS by reduced water and heat loss through early detection of all leaks - not just major ones.
- FUTURE LEAK identification.
- FAST data capture in areas 'inaccessible' to hand-held cameras.
- PLAN and PRIORITISE maintenance schedules and budgets.
- ACCURATE data = targeted street works.
- MULTIPLE USE DATA – e.g. maps can be 'tuned' to show rooftop heat loss.



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This week's Innovation Showcase: **Nottingham City Council** completes ground-breaking pilot with drone company **HexCam** estimated to save the city in excess of £100k a year by identifying leaks as small as 1 cubic metre per 24 hours in their district **#energy** network **Michael Wayne Bexton**

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INNOVATION GATEWAY
Innovation Showcase

HexCam
Specialist drone expert
(aerial thermographic inspection)

Live Teraplan Demos Available



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