

The logo features a cluster of blue squares of varying sizes on the left, followed by the text "TMG Dronity" in a bold, sans-serif font. "TMG" is blue and "Dronity" is grey. The background consists of a grid of light grey squares of various sizes.

# TMG Dronity



- Hydroanalysis - **dangerous area inspection**

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- Land register - **illegal buildings, illegal dumps, building changes**

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- Thermal inspections – **overheating zones in cities**
- **Environmental threats**



# **The Hydroanalysis**

Can the dam resist a  
flood?



## What we had to do:

Find out the critical places in the river bank, confluence of rivers and dams

## Used method:

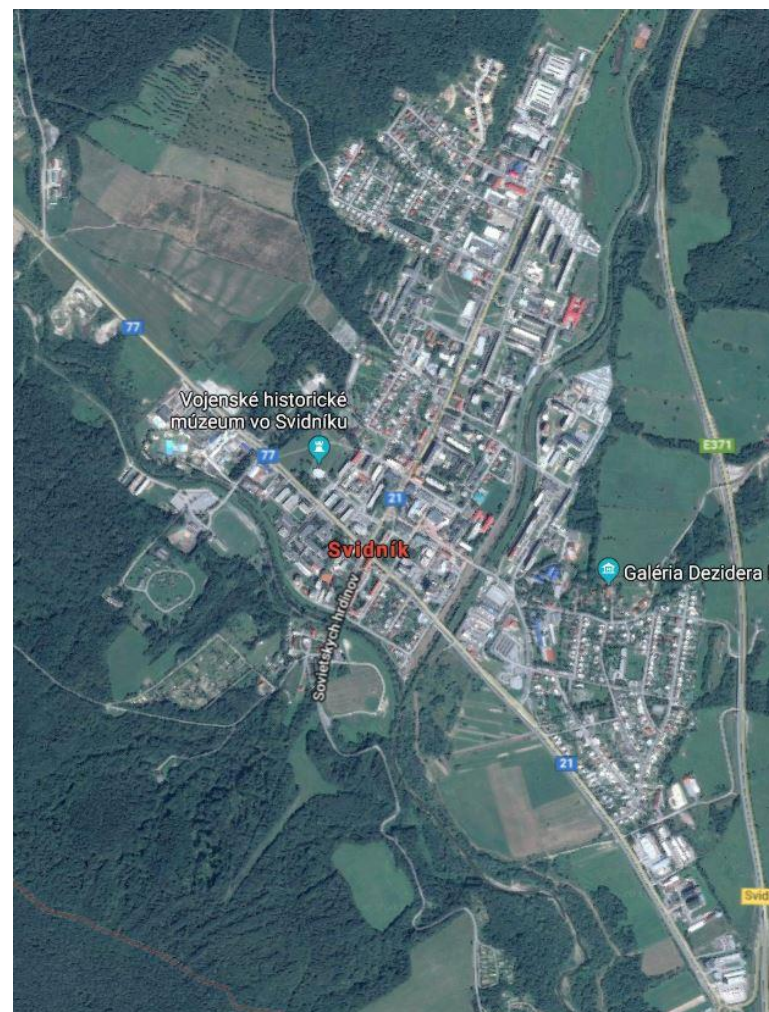
Drone photography, scanning using terrestrial laser scanner

## Outputs:

River simulation, documentations of bridges and dams, georeferenced pointcloud, orthoimages

## Conditions:

Long area, full operation, cold conditions, short time, inside of city

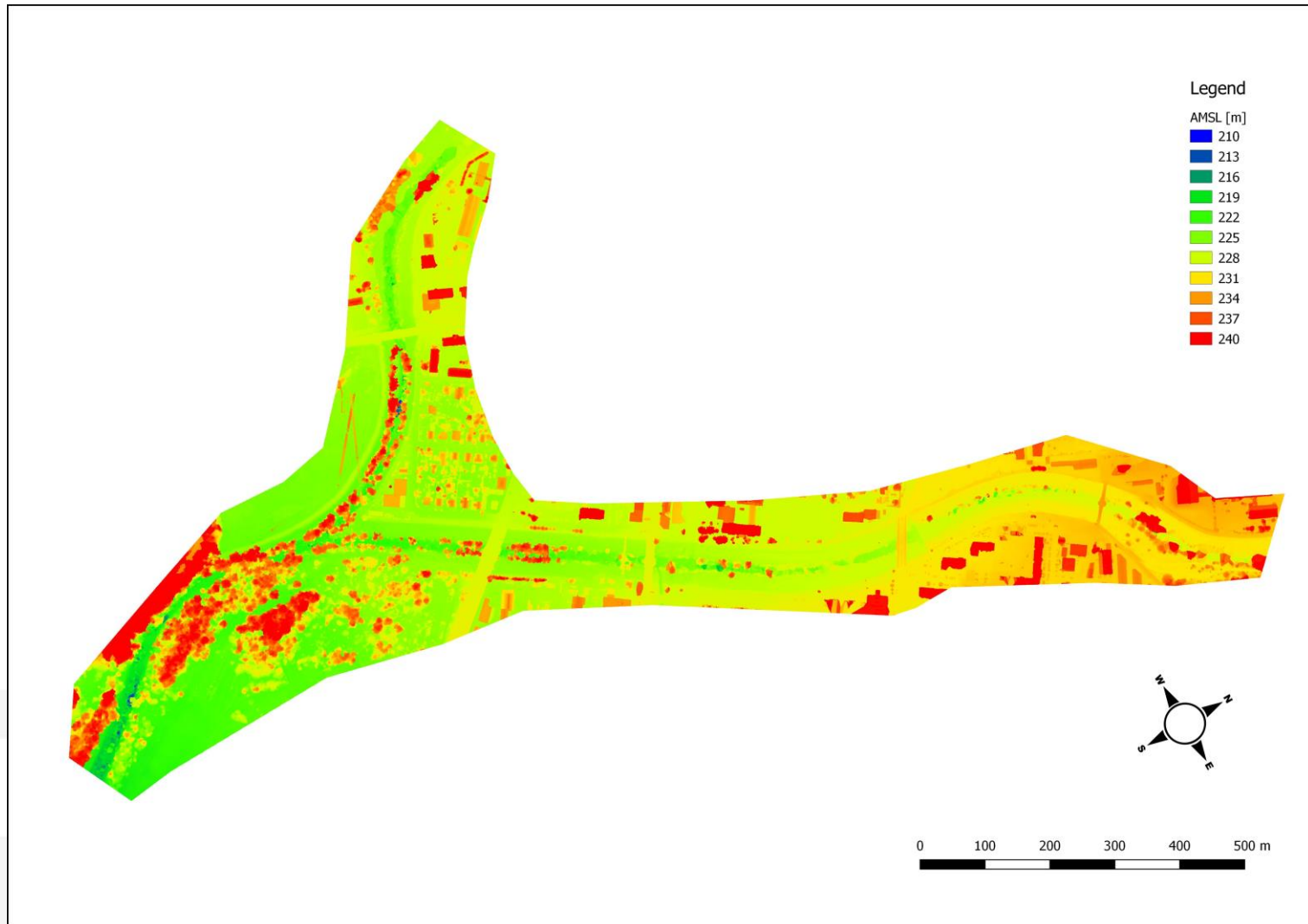


# Why do we need drones?

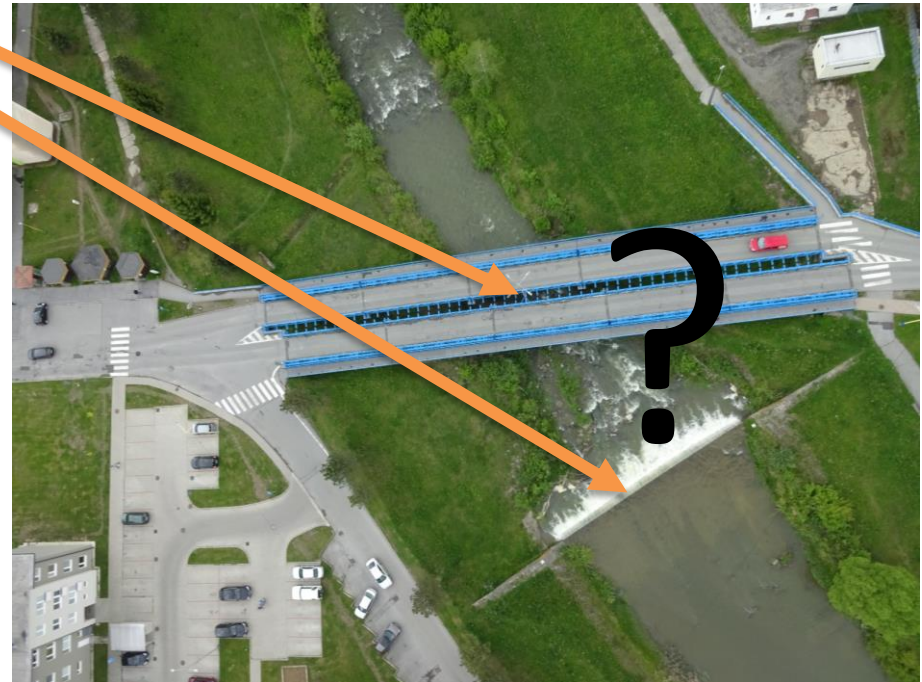
High resolution - up to 1 cm/px



High resolution - up to 1 cm/px



Critical places in the river bank (confluence of rivers, dam)



## Pointcloud of the bridge over the river



### Pointcloud of the bridge over the river

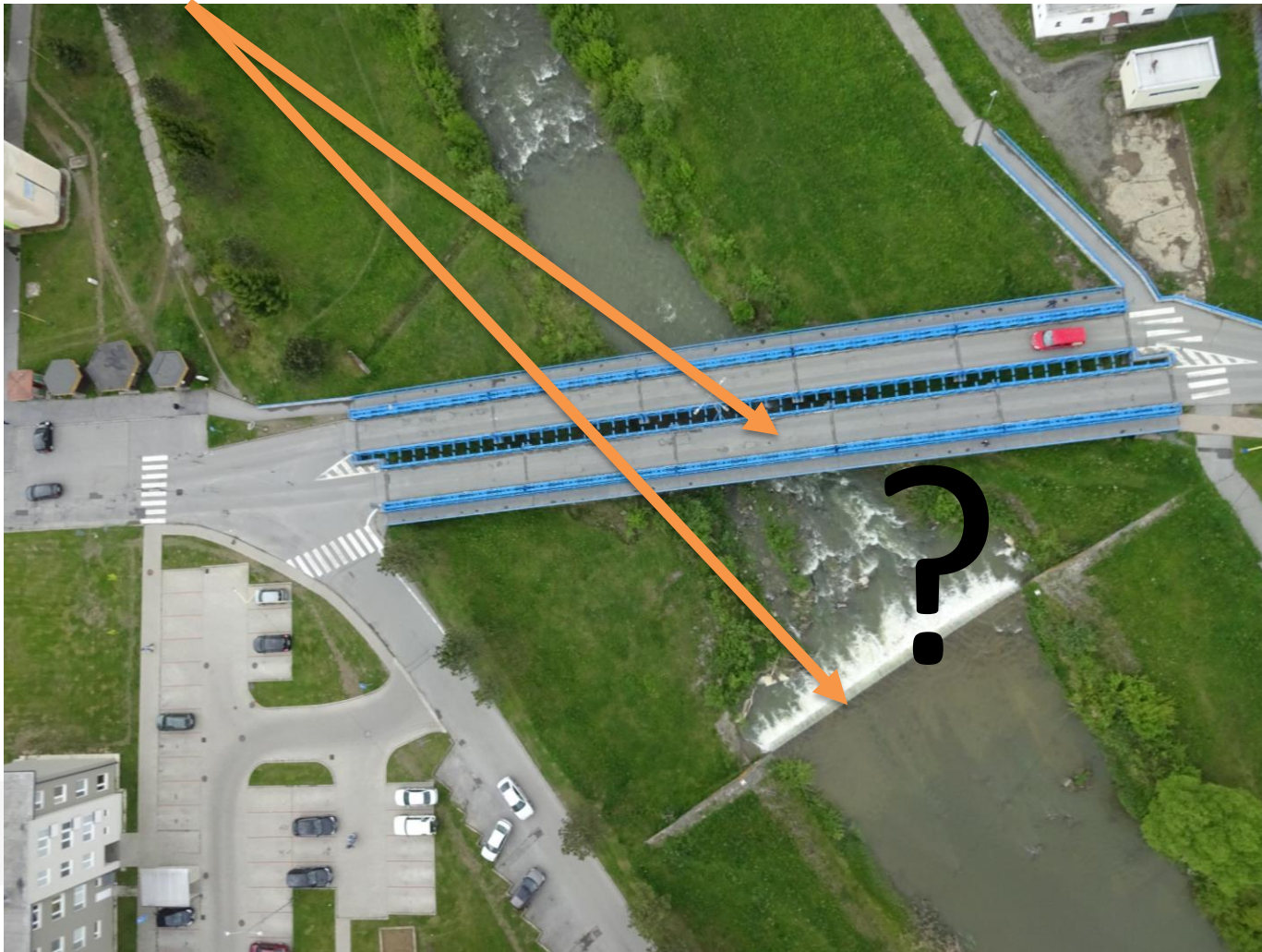






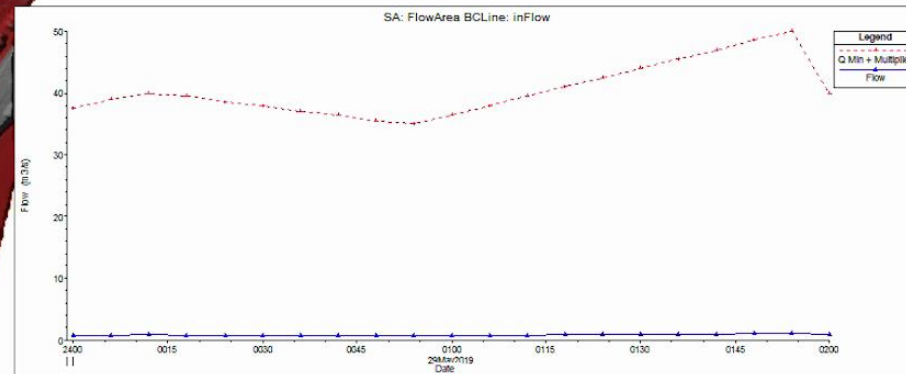
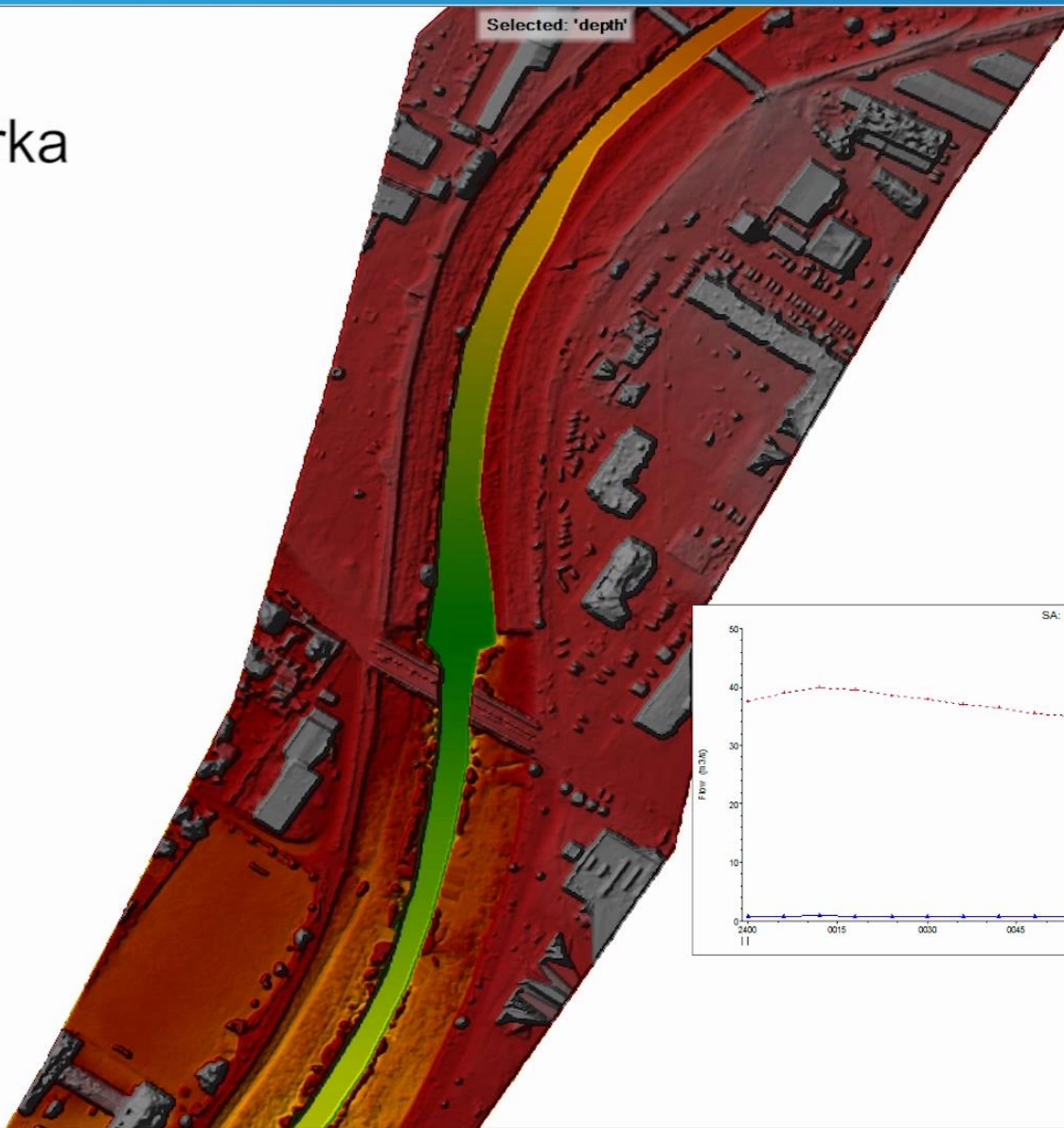
What does a river  
simulation look like?

Critical places in the river bank (confluence of rivers, dam)



Svidník  
Ladomirka

29MAY2019 00:00:00



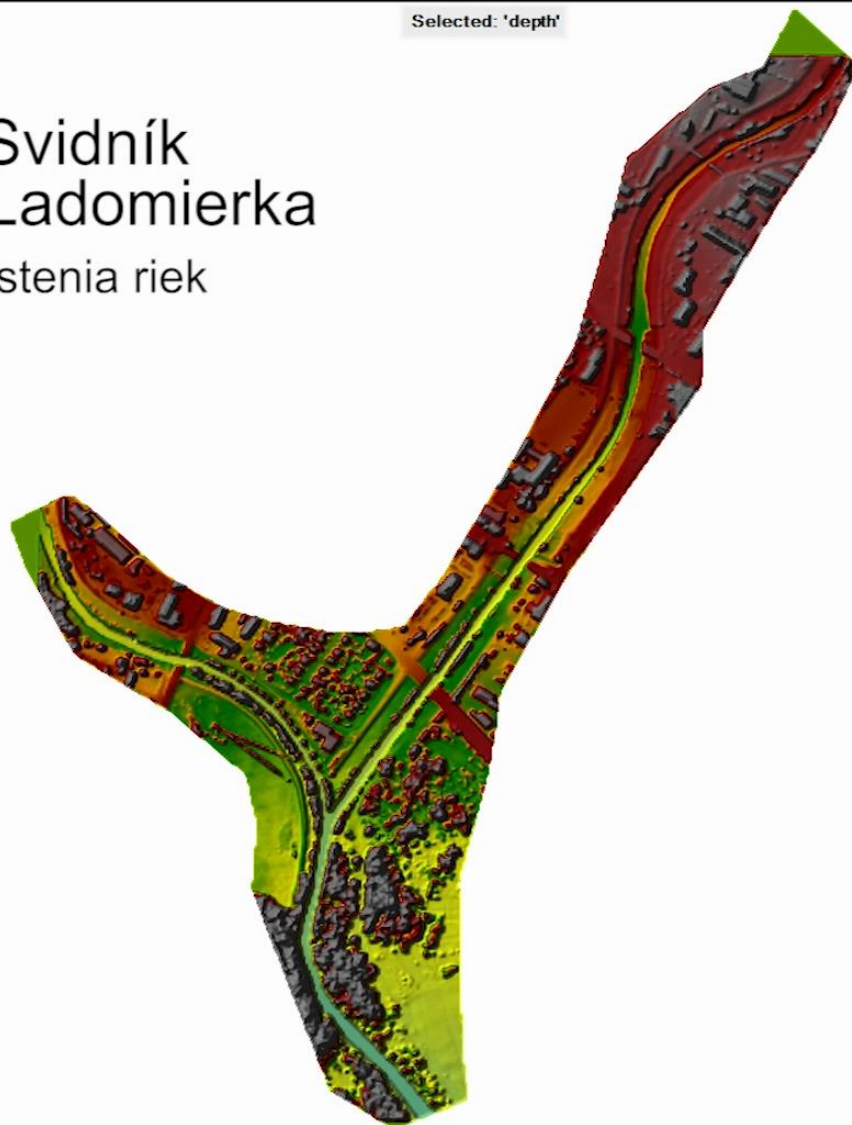
Critical places in the river bank (confluence of rivers, dam)

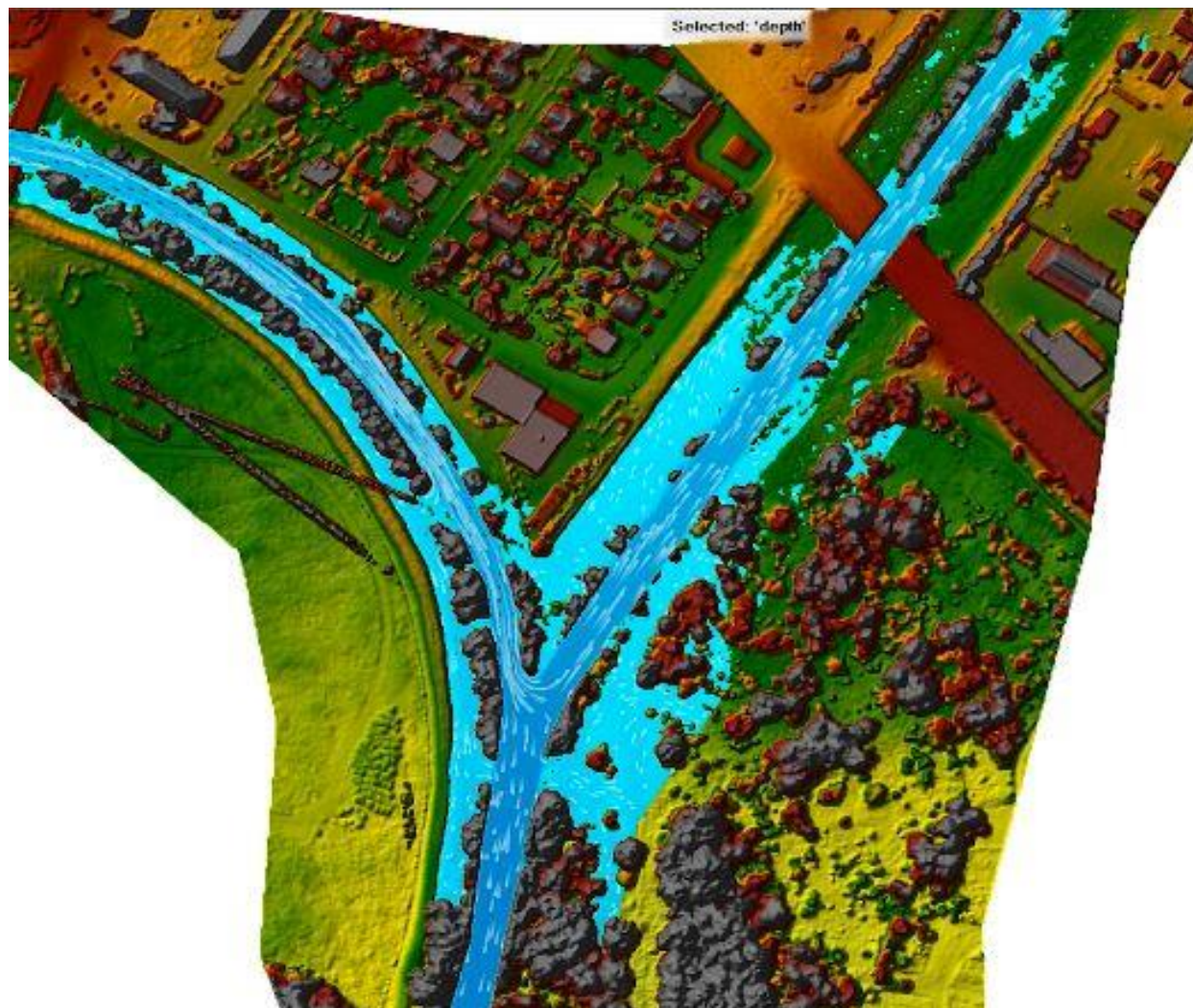


Selected: 'depth'

24MAY2019 02:00:00

Lokalita: Svidník  
Ondava, Ladomierka  
Upchatie vyústenia riek







# **Drone Inspections of Buildings and Its Structures**

What is on the roof?

## What we had to do:

Take a pictures of roofs and detect various damages.

## Used method:

Drone photographs

## Outputs:

Documentation of founded damages,  
georeferenced pointcloud, orthoimages



## Conditions:

Big area, inside of city, historical  
buildings



Revision of hardly accessible chimney



Aerial inspection of the roof



Drone detail on inaccessible part of building / roof



Drone detail on inaccessible part of building / roof



Detail of damage







# **Passportization of City Facilities**

Whole city in one  
application

## What we had to do:

Possible detection of **illegal, black buildings**, increments or decrements.  
Mapping a part of city and finding interesting objects.

## Used method:

Drone photographs, scanning using terrestrial scanner

## Outputs:

Documentations of parking place, advertisement, road signs, power lines, trolley/tram lines, georeferenced pointcloud, orthoimages

## Conditions:

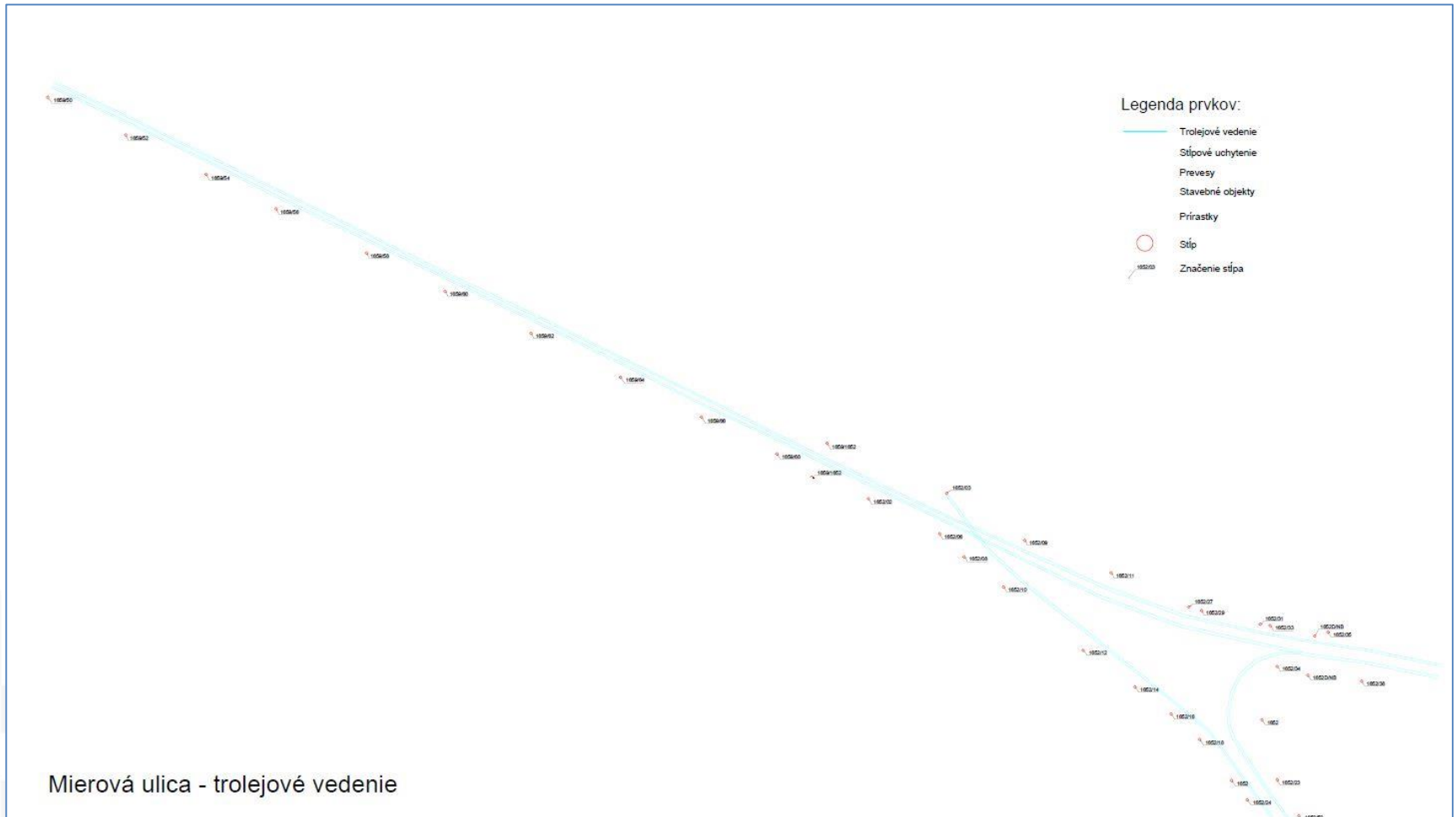
Big area, full operation, short time, inside of city



Trolley contact line mapping.  
Creation of technical maps in the GIS system (Geographic Information System).

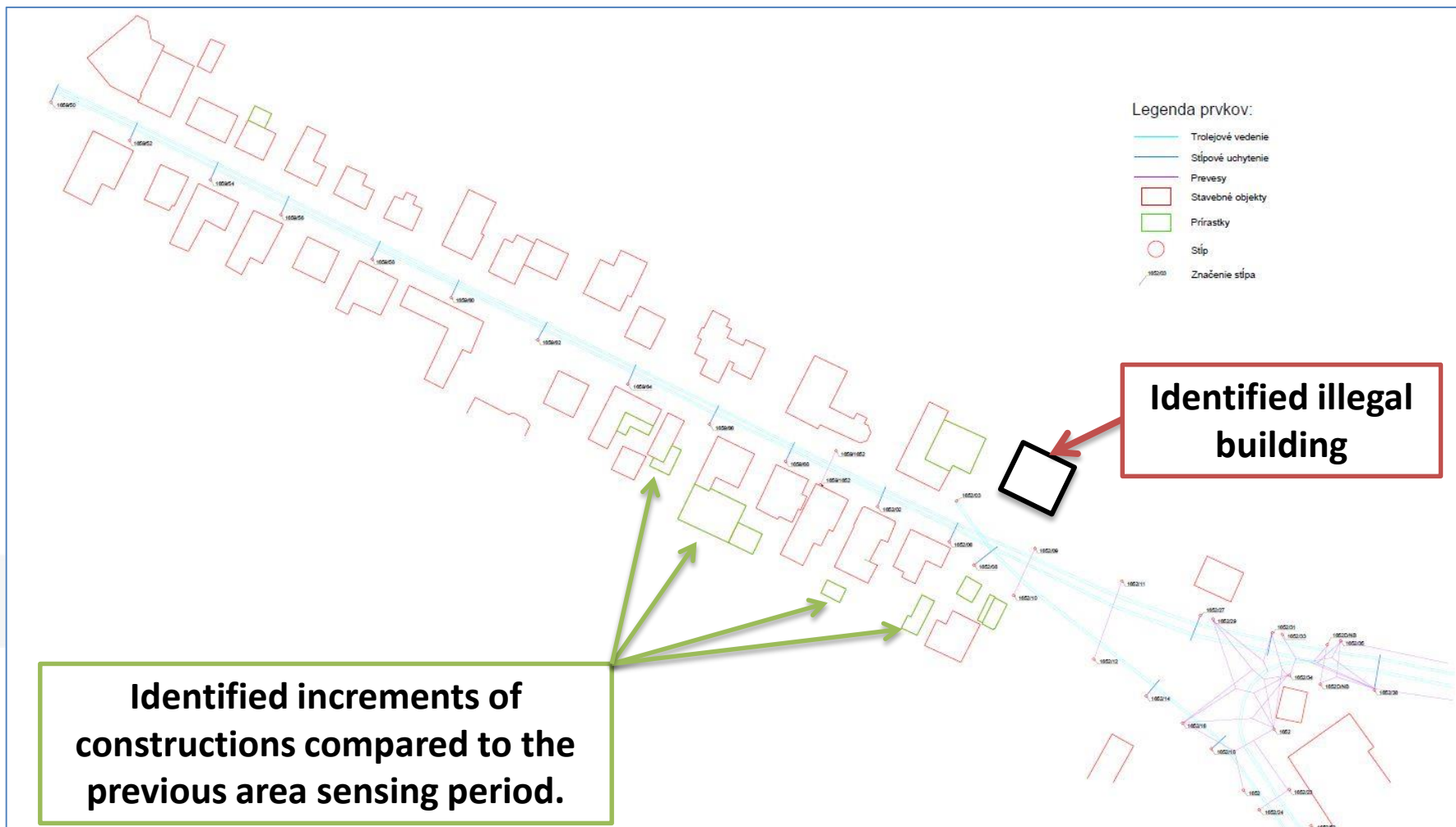


## Drawing of scanned objects into a technical map of the city (GIS system).

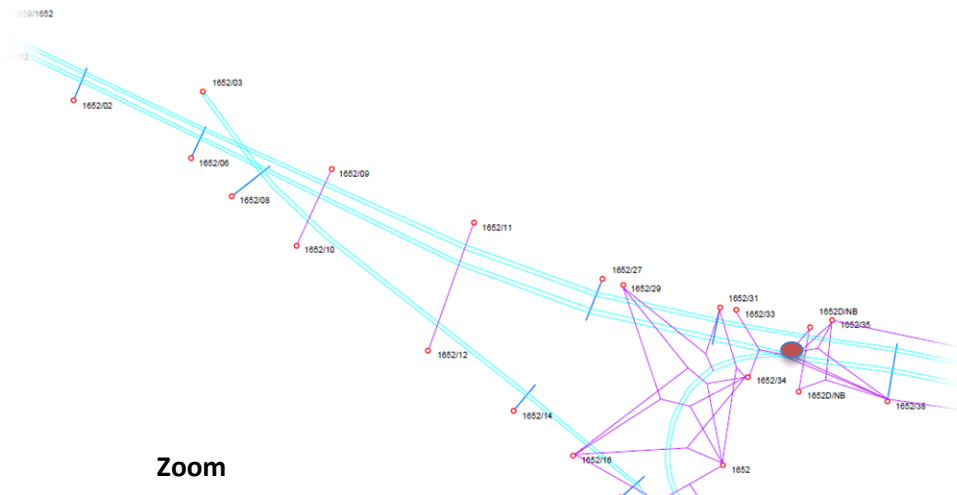
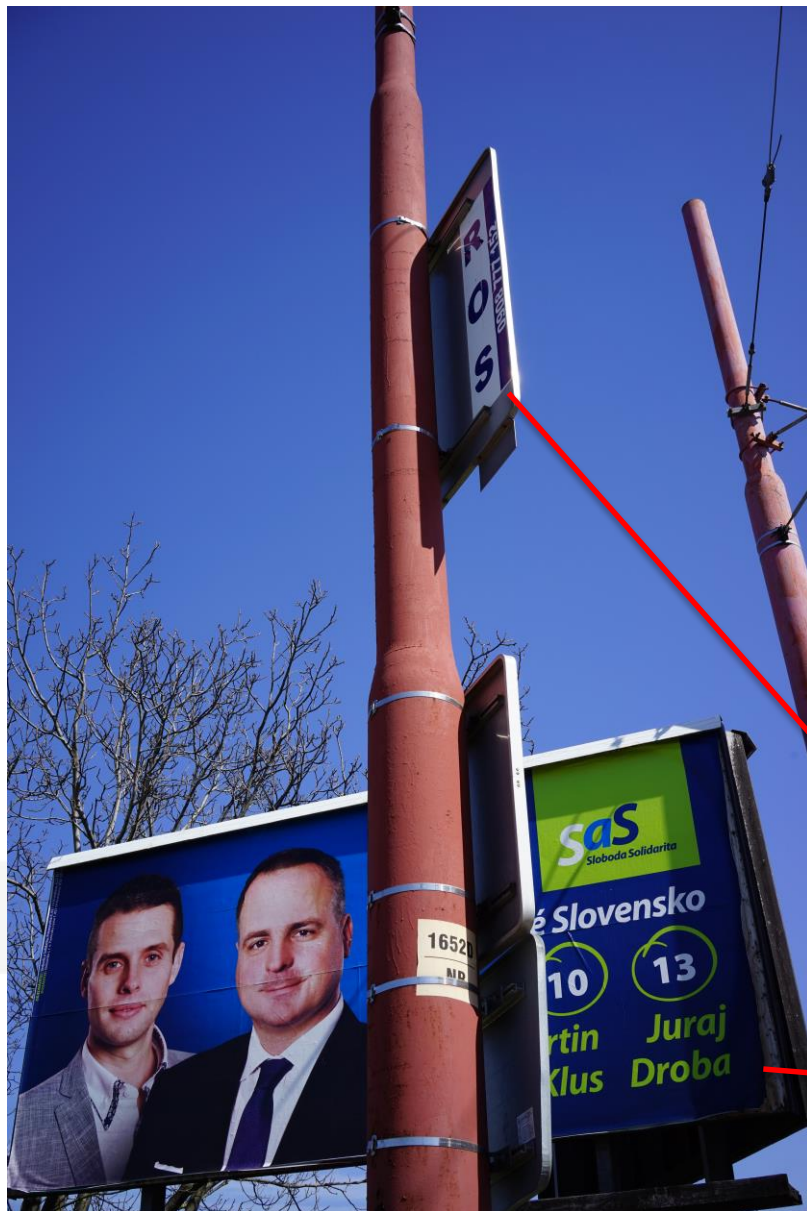




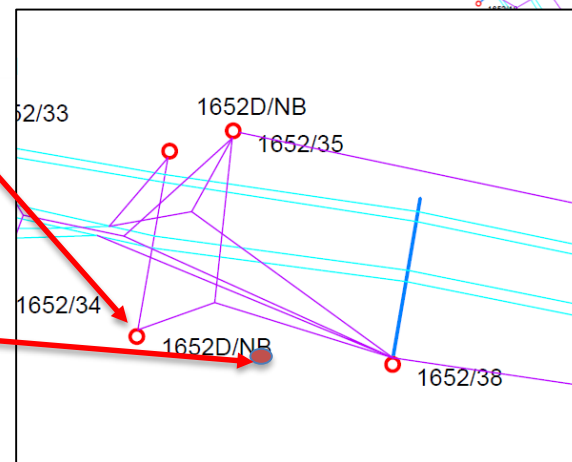
Drawing documentation from the orthophotomap can be used for various purposes.



## Ground photo - column no. 1652D / NB and its location in the technical map.



### Zoom





# **Drones and Thermal Monitoring of City and Municipal Areas**

**What we had to do:**

Drone measurements of temperature in two corridors

**Used method:**

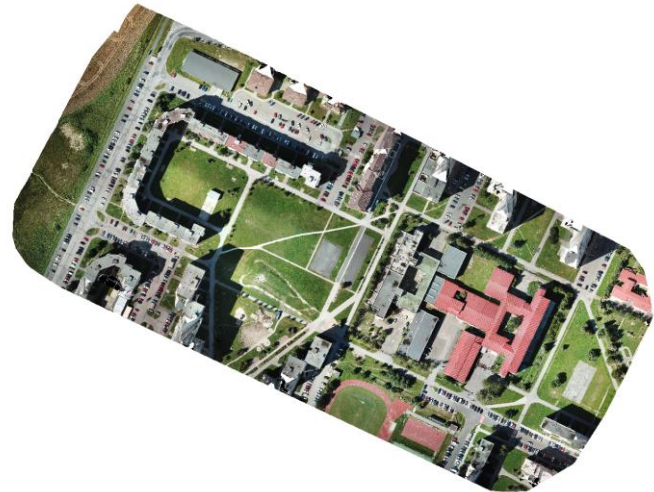
Drones thermal photos

**Outputs:**

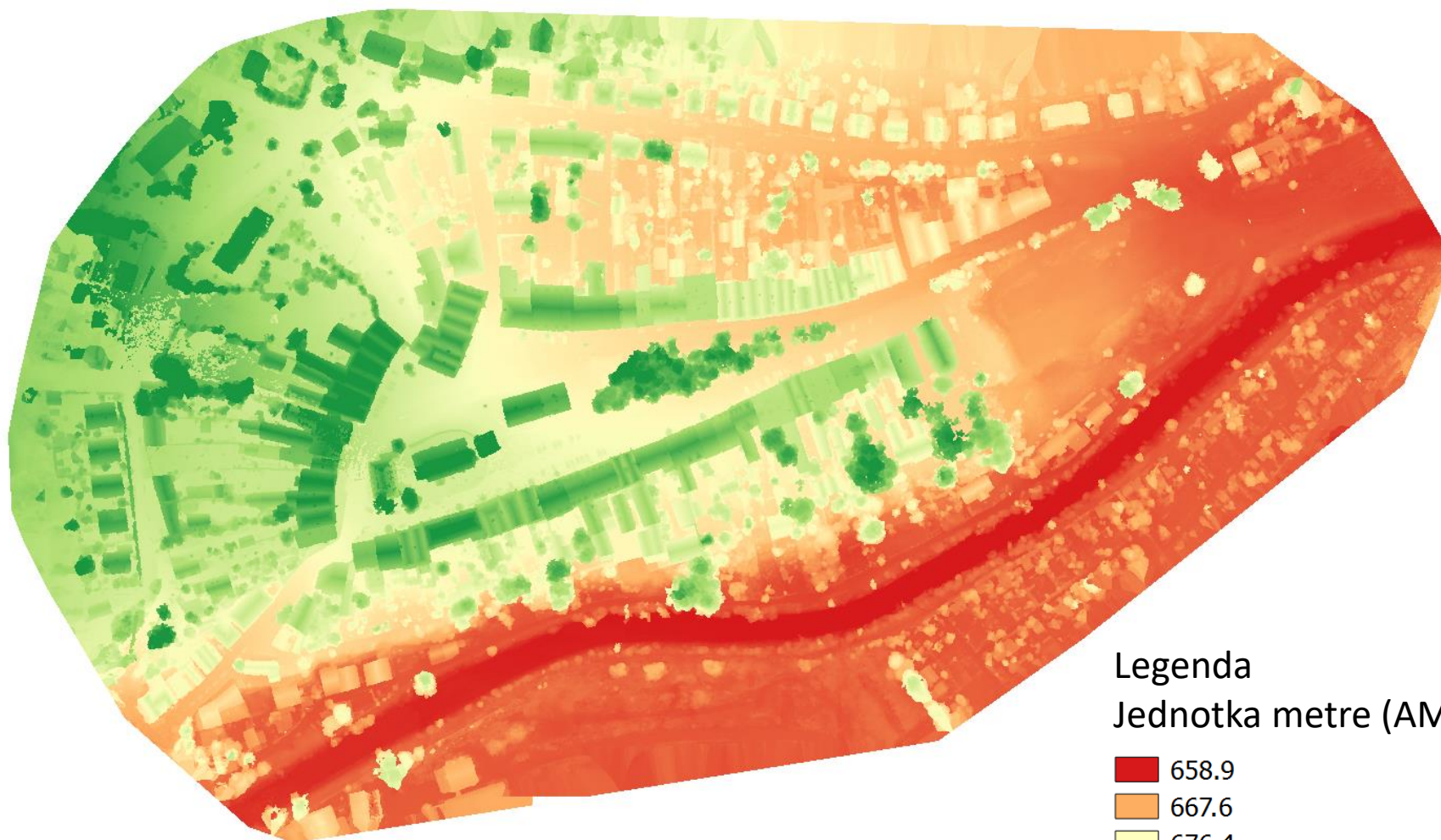
Heat maps of city parts

**Conditions:**

Big area, full operation, short time, inside of city, Captured all types of urban structures - compact development of houses, historic center, housing estate, greenery, park

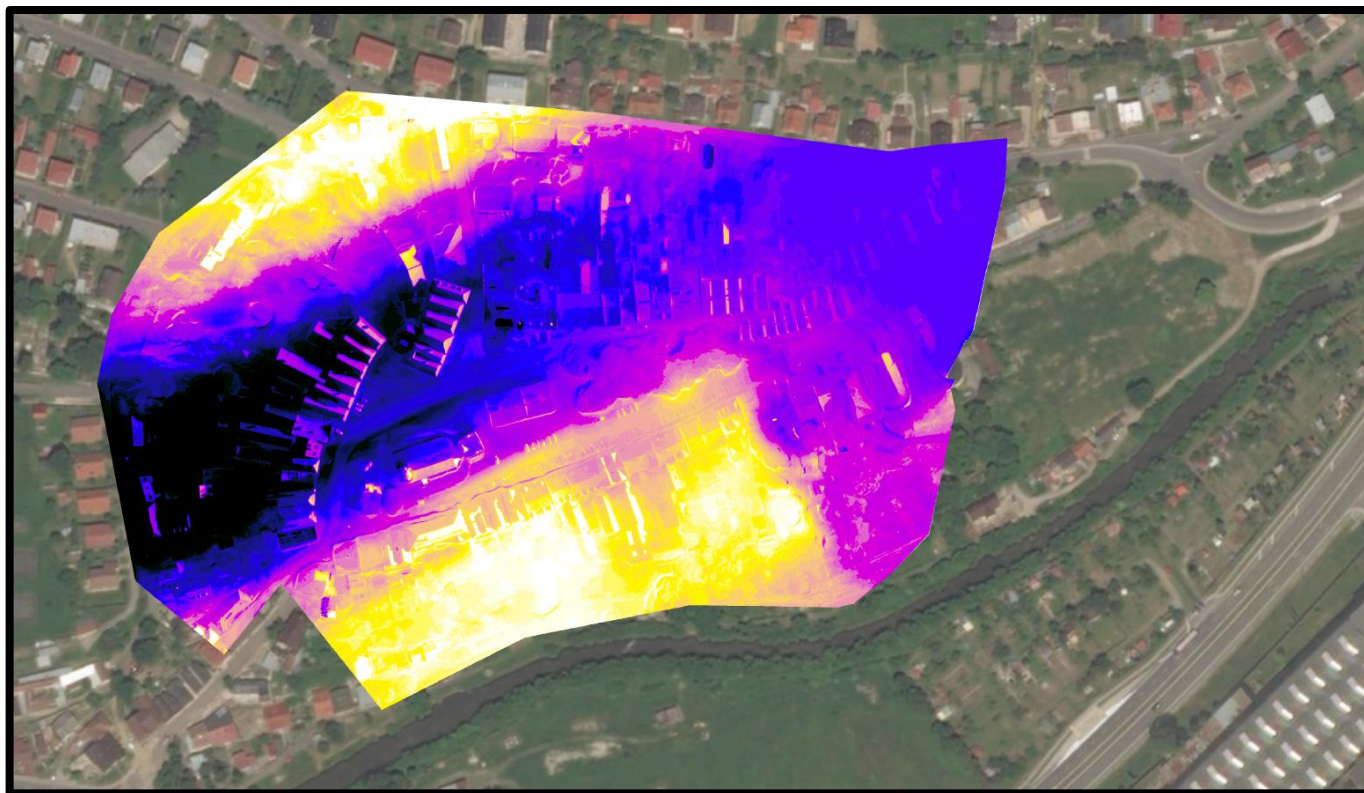




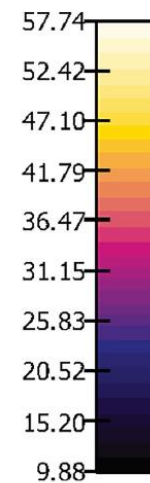


Legenda  
Jednotka metre (AMSL)

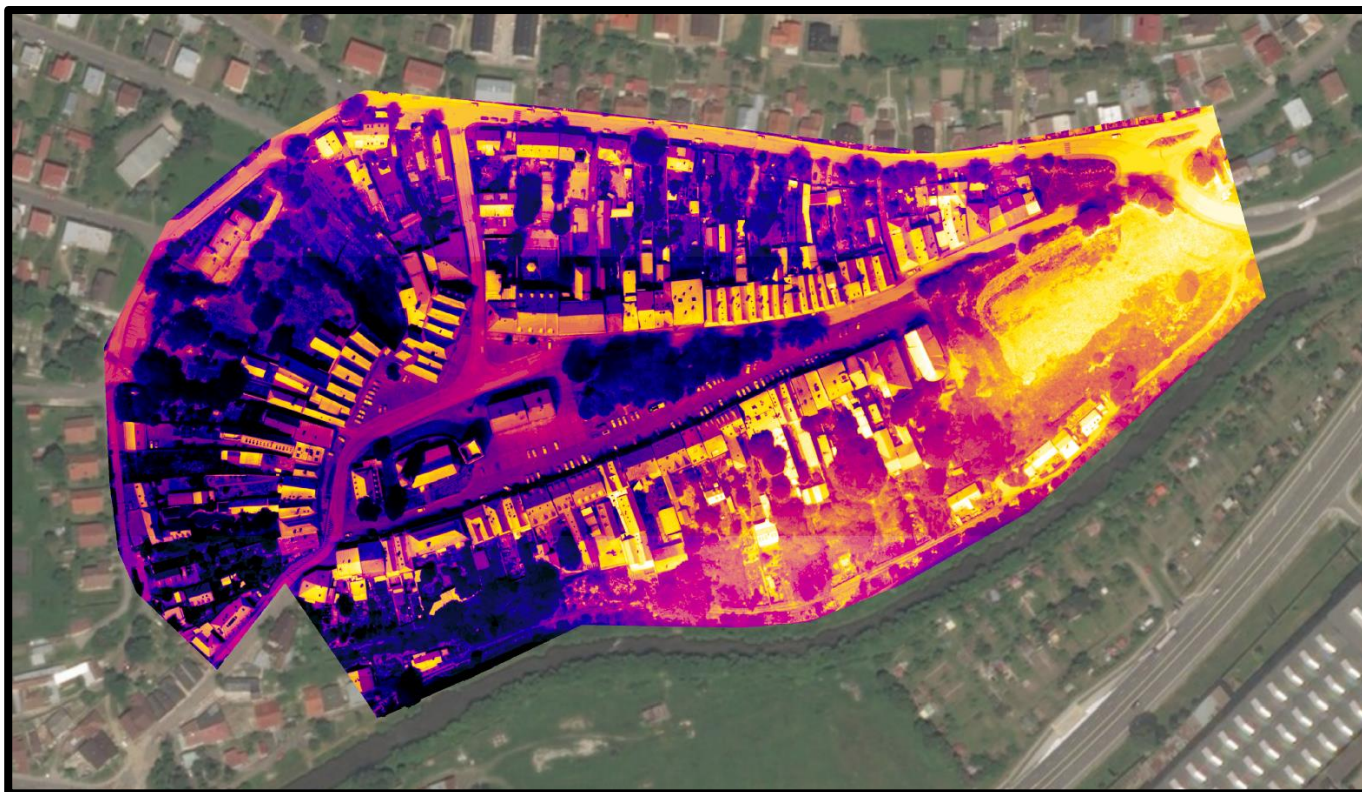
- 658.9
- 667.6
- 676.4
- 685.1
- 693.9



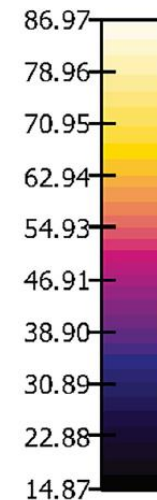
Legenda - jednotka °C



<b>ATMOSFÉRICKÁ TEPLOTA</b>
22 - 24 °C
<b>VLHKOSTĚ</b>
54 - 56 %
<b>DÁTUM</b>
3.8.2018
<b>ČAS</b>
6:20 - 7:40
<b>GSD</b>
13.65 cm/px

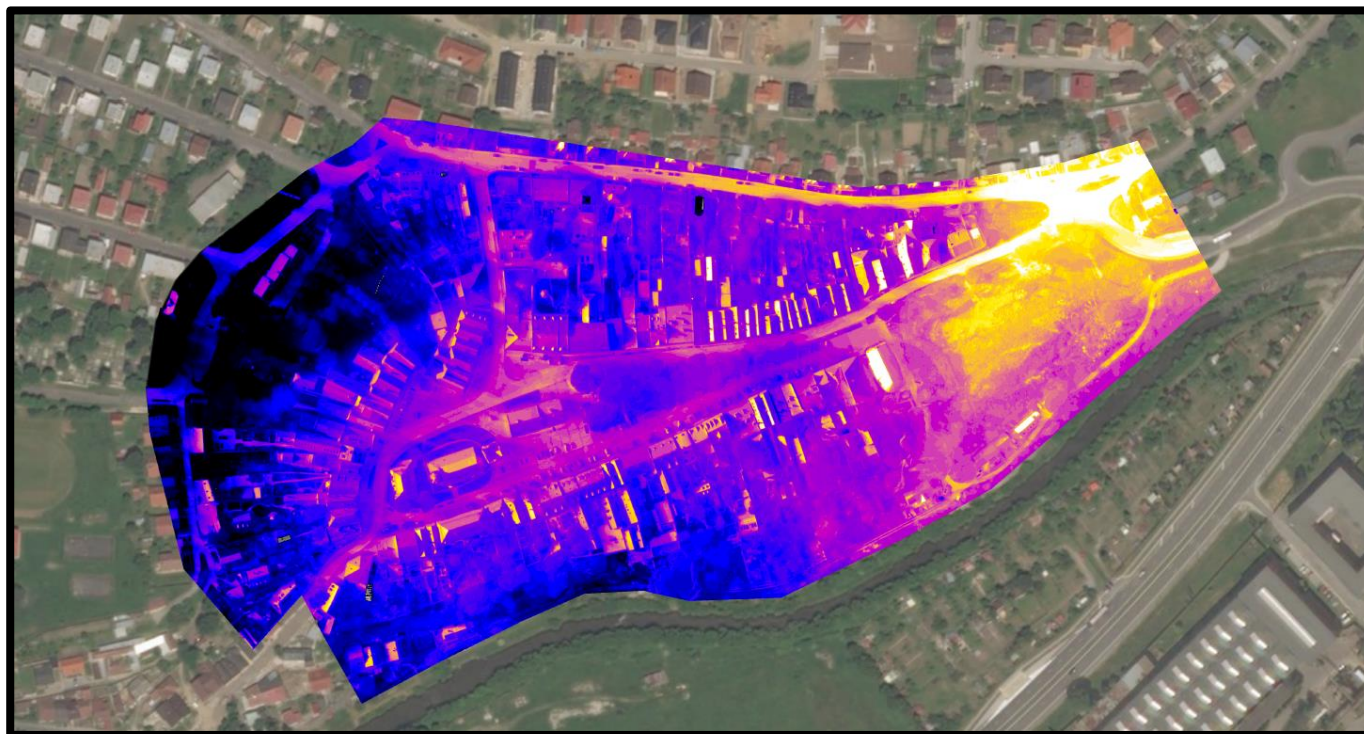


Legenda - jednotka °C

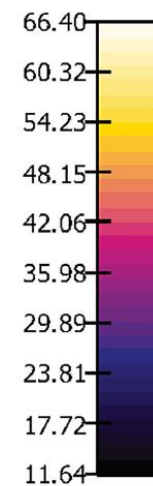


<b>ATMOSFÉRICKÁ TEPLOTA</b>
25 - 26 °C
<b>VLHKOSŤ</b>
43 - 45 %
<b>DÁTUM</b>
3.8.2018
<b>ČAS</b>
13:10 - 14:00
<b>GSD</b>
14.44 cm/px





Legenda - jednotka °C



## ATMOSFÉRICKÁ TEPLOTA

28 - 29 °C

## VLHKOST'

41%

## DÁTUM

3.8.2018

## ČAS

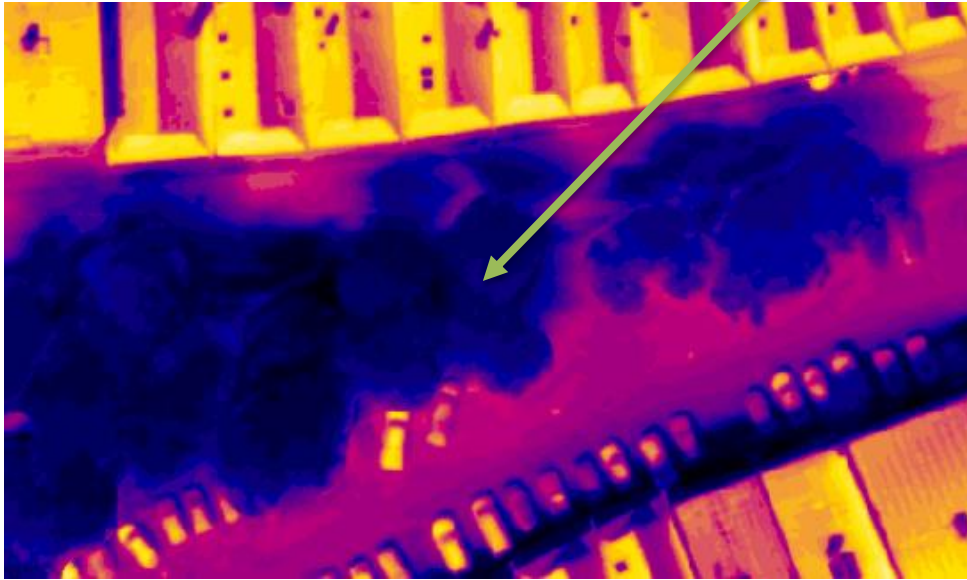
17:50 - 18:45

## GSD

14.53 cm/px

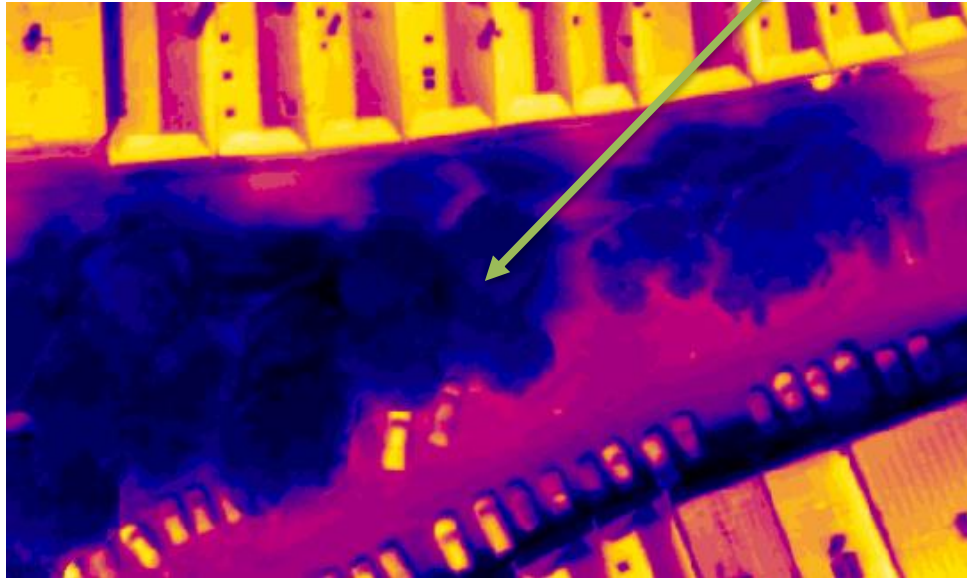
Historical center

15°C



Vegetation cools the surroundings

Historical center



Vegetation cools the surroundings



15°C

Block of flats



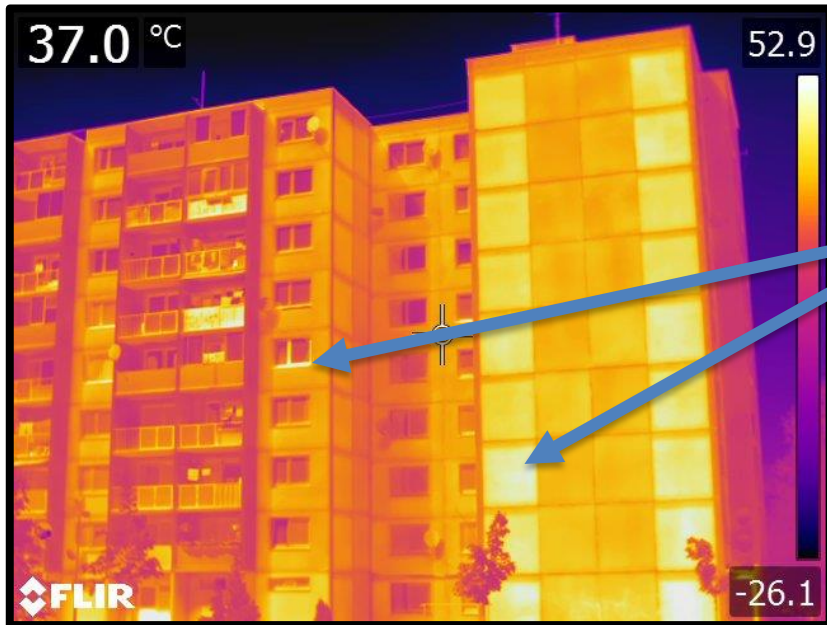
The highest temperature on concrete surfaces - housing estate, parking

51°C !!!!



# **Drones and Thermal inspection of facade buildings and other structures**

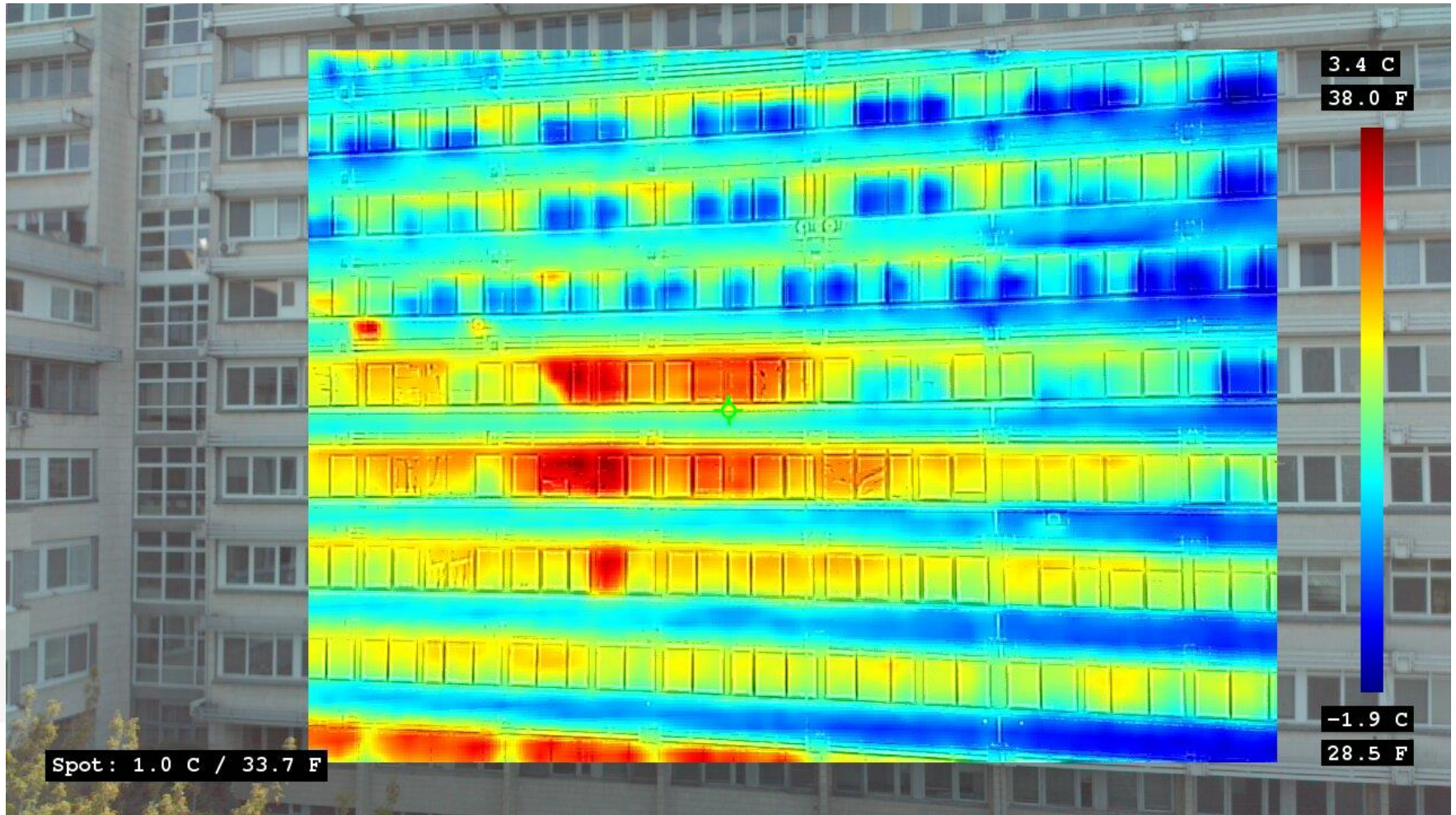
How to save on heating?



Heat leak from the wall

Problem with panel thermal insulation







## RGB image without visible damage

18. 4. 2017 11:51:48



FLIR0448.jpg

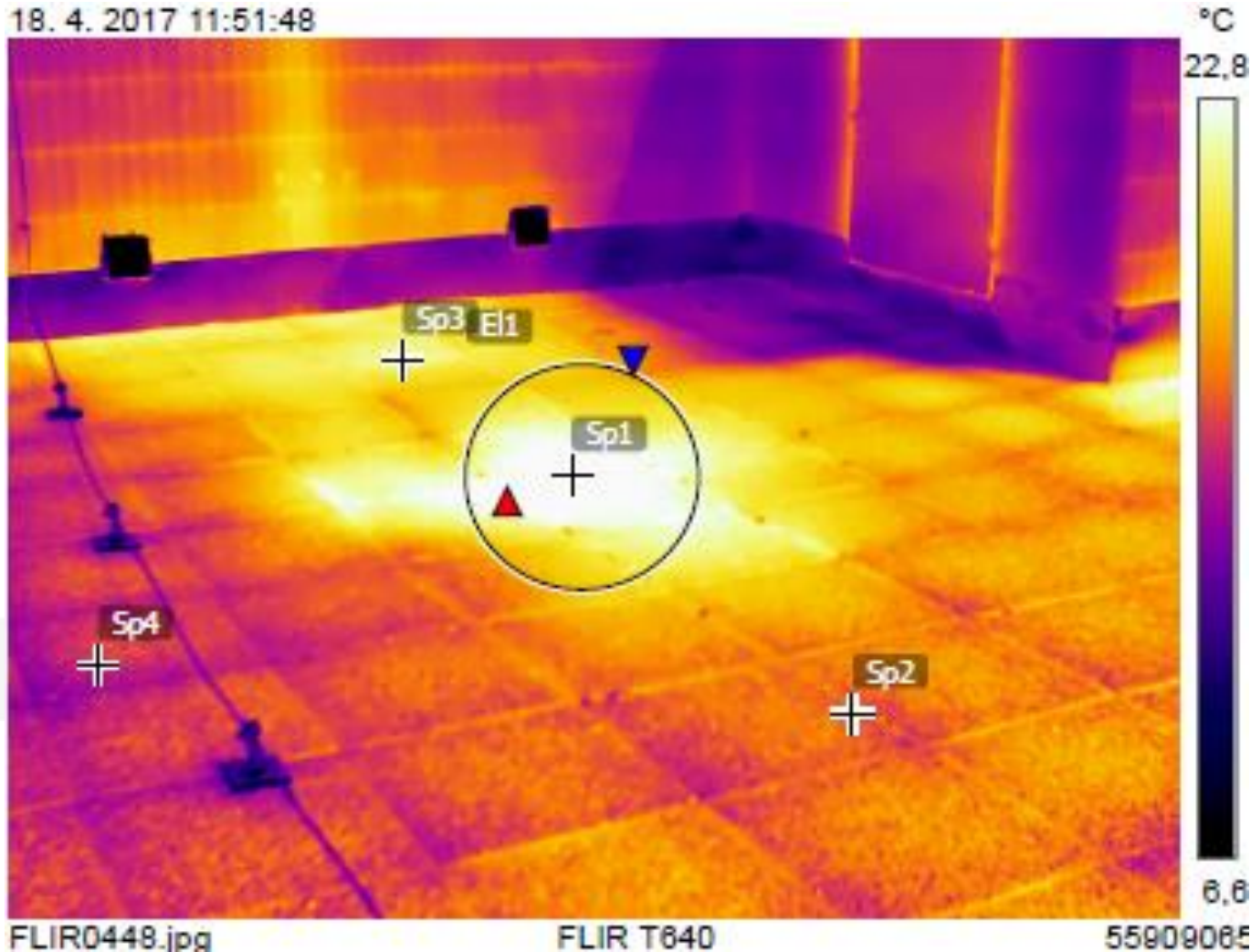
FLIR T640

55909065



## Roof damage and discovered heat leak from the roof

18. 4. 2017 11:51:48



### Měření

EI1	Max	23,5 °C
	Min	17,8 °C
	Average	21,4 °C
Sp1		23,0 °C
Sp2		16,6 °C
Sp3		21,9 °C
Sp4		15,8 °C
Dt1	Sp1 - Sp2	6,4 °C

### Parametry

Emisivita	0.86
Odr. tepl.	8 °C



THANK YOU FOR YOUR  
ATTENTION

DO YOU HAVE ANY QUESTIONS?  
WE ANSWER TO YOU LATER...  
IF WE WILL KNOW ;)



**TMG Dronity**