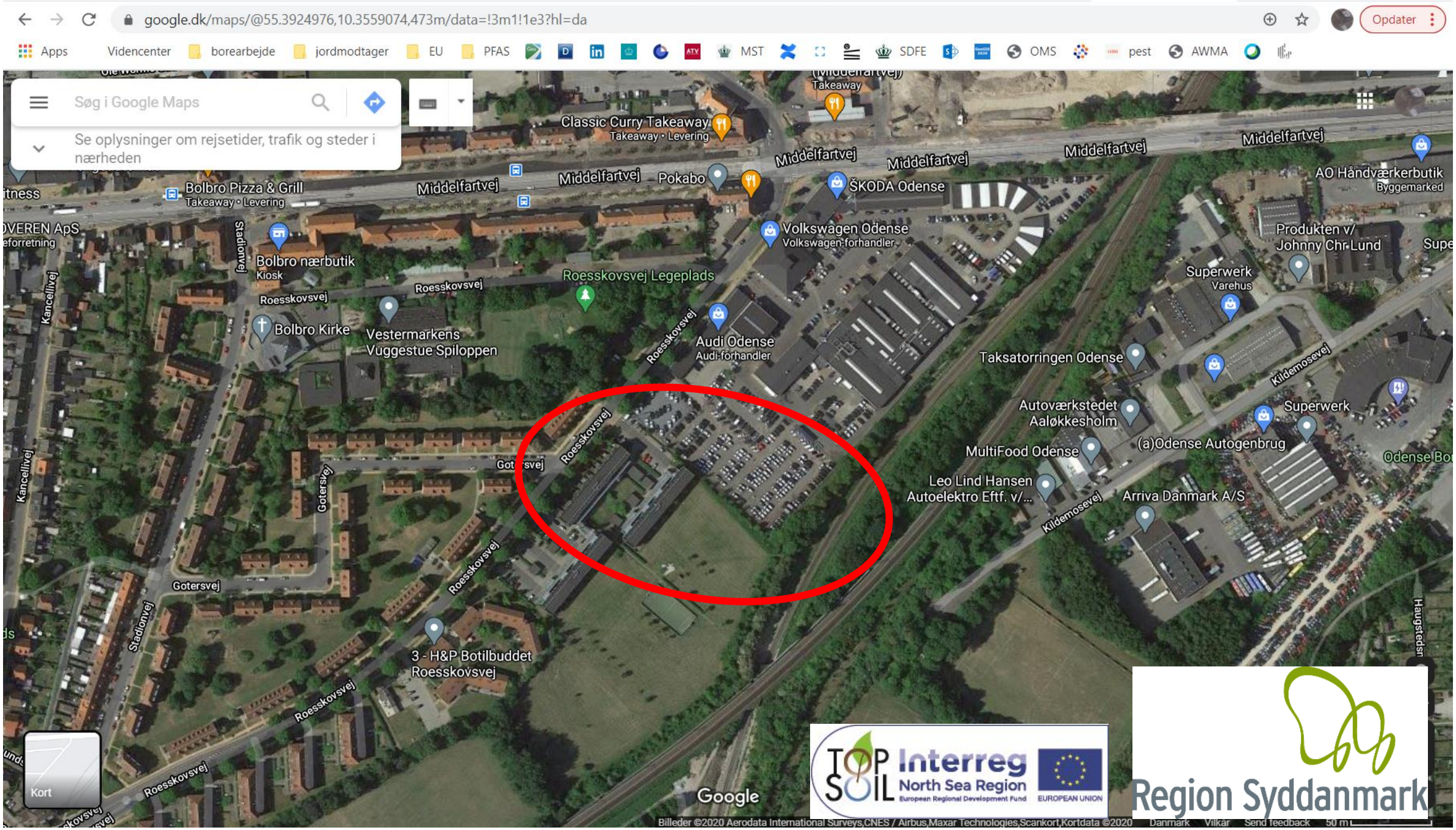
Online partner meeting: 17th – 19th November 2020

TopSoil – extension:
Controlling groundwater pollution better

DK-4 Odense Vest

Agnieszka T. Bentzen, Region of South Denmark

Region Syddanmark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Takeaway · Levering
Takeaway
Middelfartvej
Bolbro Pizza & Grill
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Byggemarked
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Volkswagen-forhandler
Produkten v/ Johnny Chr. Lund
Bolbro nærbutik
Kiosk
Stadionvej
Roesskovsvej Legeplads
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Varehus
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Bolbro Kirke
Vestermarkens Vuggestue Spiloppen
Audi Odense
Audi-forhandler
Taksatorringen Odense
Kildemosevej
Autoværkstedet Aaløkkesholm
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The session:

Controlling groundwater pollution better

- The landfill contamination: percolates, oil and phenols.
- The challenges:
  - The heterogeneity of the underground in the **urban area**
  - Closeness of the **drinking water** extraction wells
  - The **climate adaptation** in the urban areas
  - The risk assessement towards the **surface water** (new task)

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The TopSoil project…

- *TopSoil: DK-4 - defining the uppermost layers in the urban areas: geology and anthropology*
- *The forecast the future way of the contaminated groundwater under different climate conditions*
- *The robust risk assessment from the contaminated sites in the climate changing conditions*

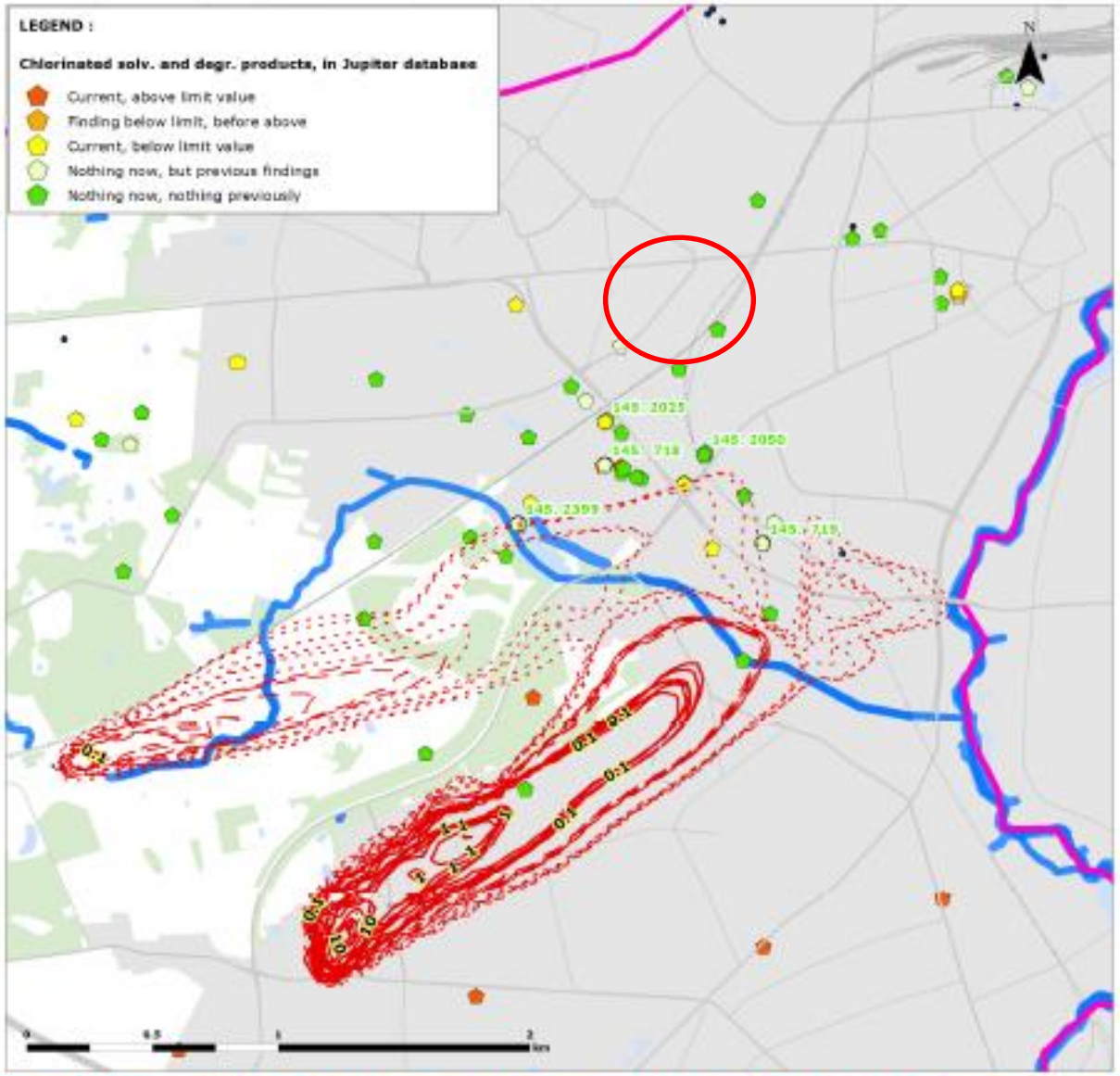

Figure 10.11. Simulated DCE and VC contaminant plumes in the Sand 2 aquifer at year 2050, compared with boreholes analysed for chlorinated solvents and their degradation products, from the national Jupiter database /29/.

The extension…

- New site: new landfill
- Drinking water extractions wells about 600-700 m from the landfill
- The developing of the city
- The climate adaptation

<u>And…</u>

tTEM can not be used due to noise

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“….the goal in the extension….”

- *A **better understanding of the subsurface** (improved model locally)*
- *To develop **the new investigation method***
- *New task: risk assessment form the point source **towards the surface water***
- ***The climate change effect** on the ground water and therefore also on the pollution*

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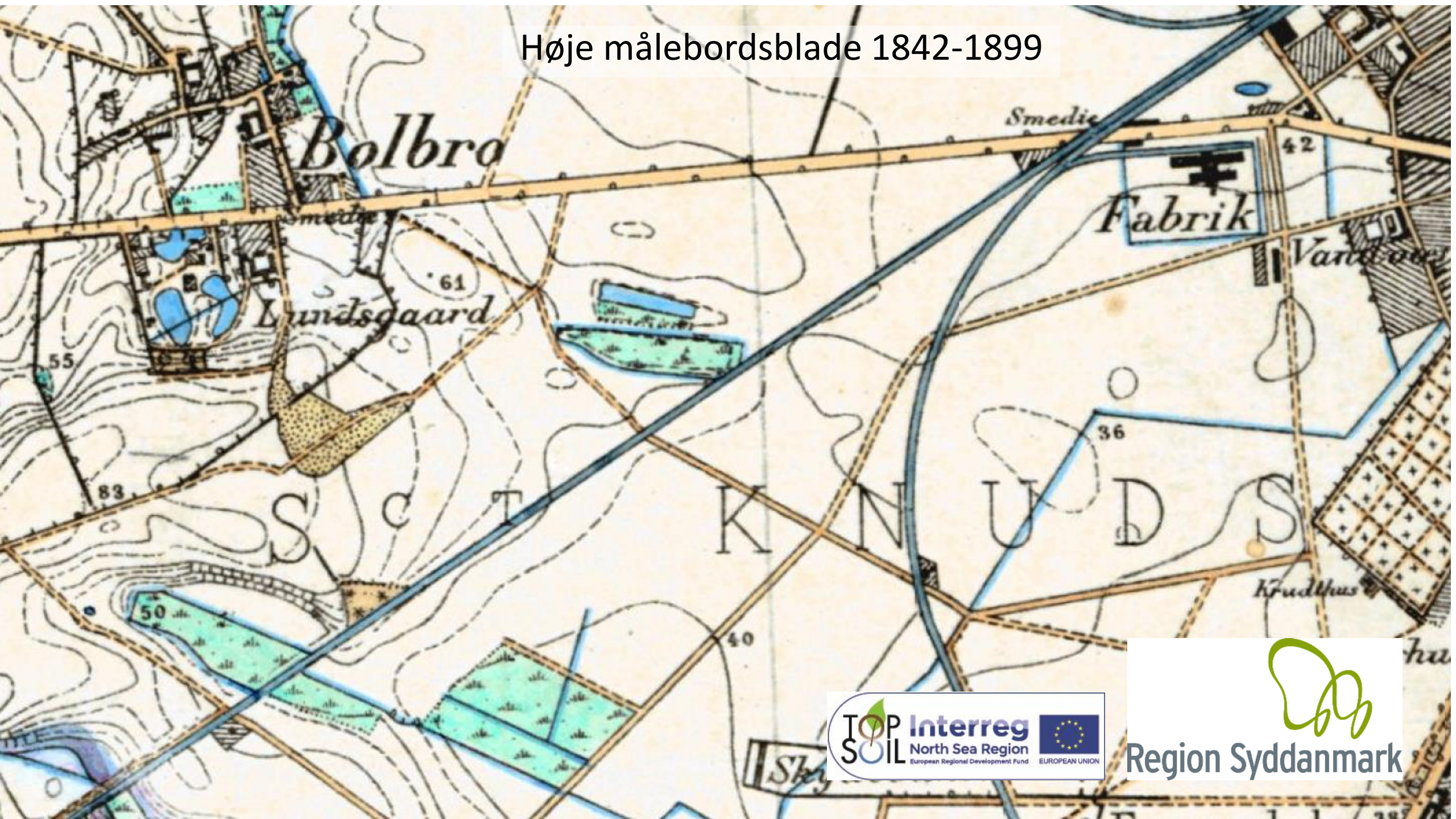
Høje målebordsblade 1842-1899



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1953-1976


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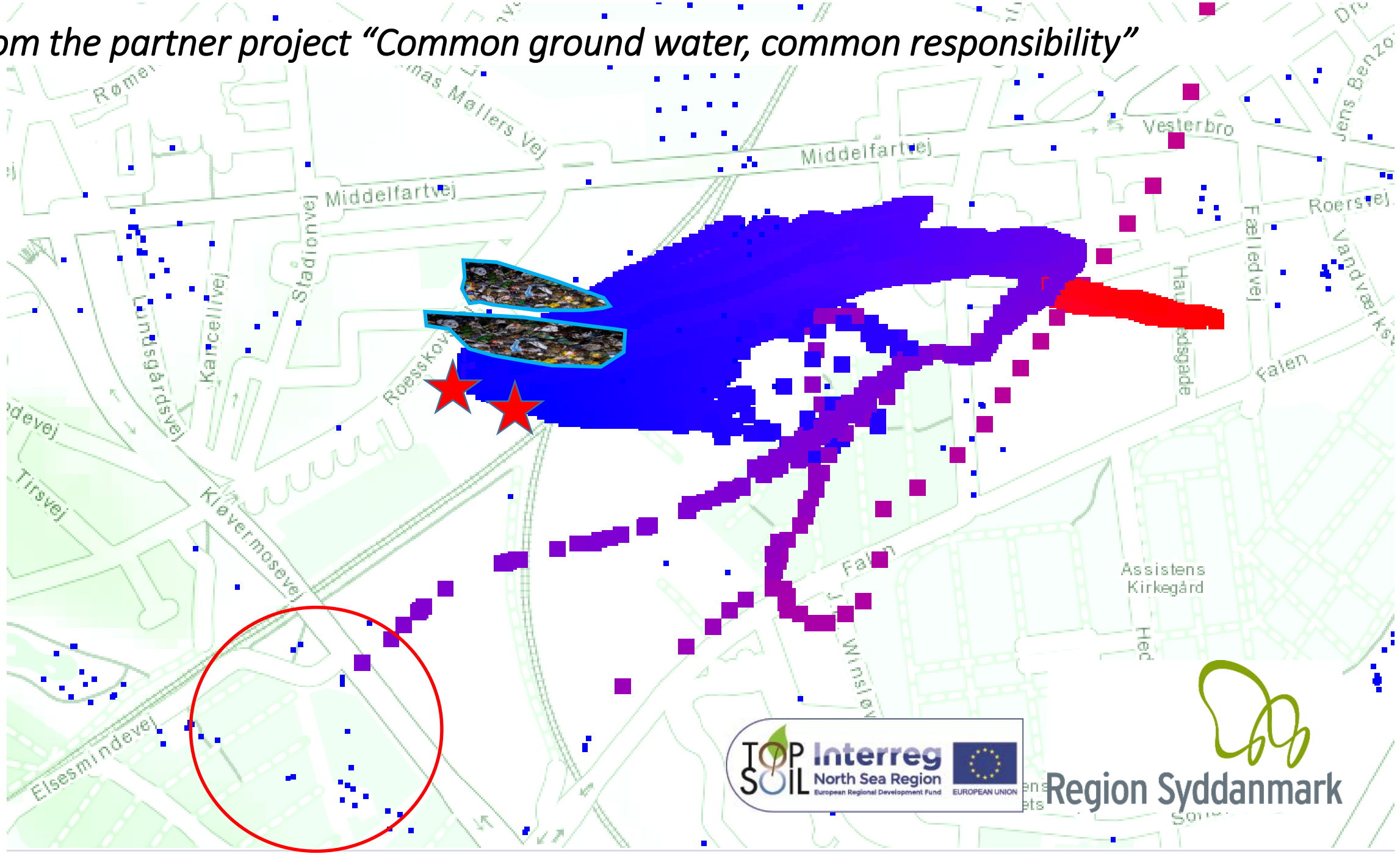
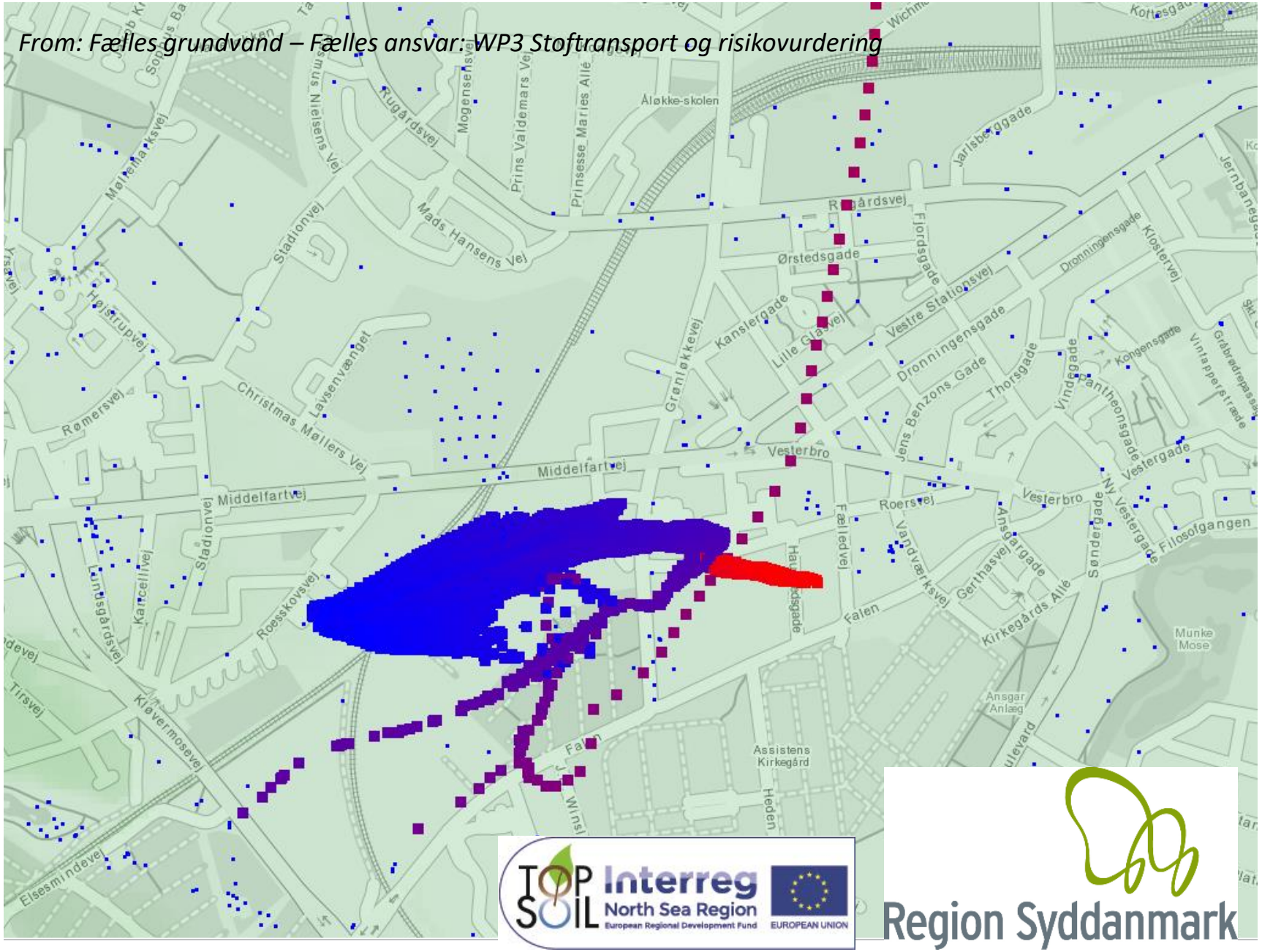
From the partner project "Common ground water, common responsibility"



Partikels…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Åløkke-skolen
Middelfartvej
Vesterbro
Roersvej
Ørstedsgade
Munke Mose
Assistens Kirkegård
Ansgar Anlæg
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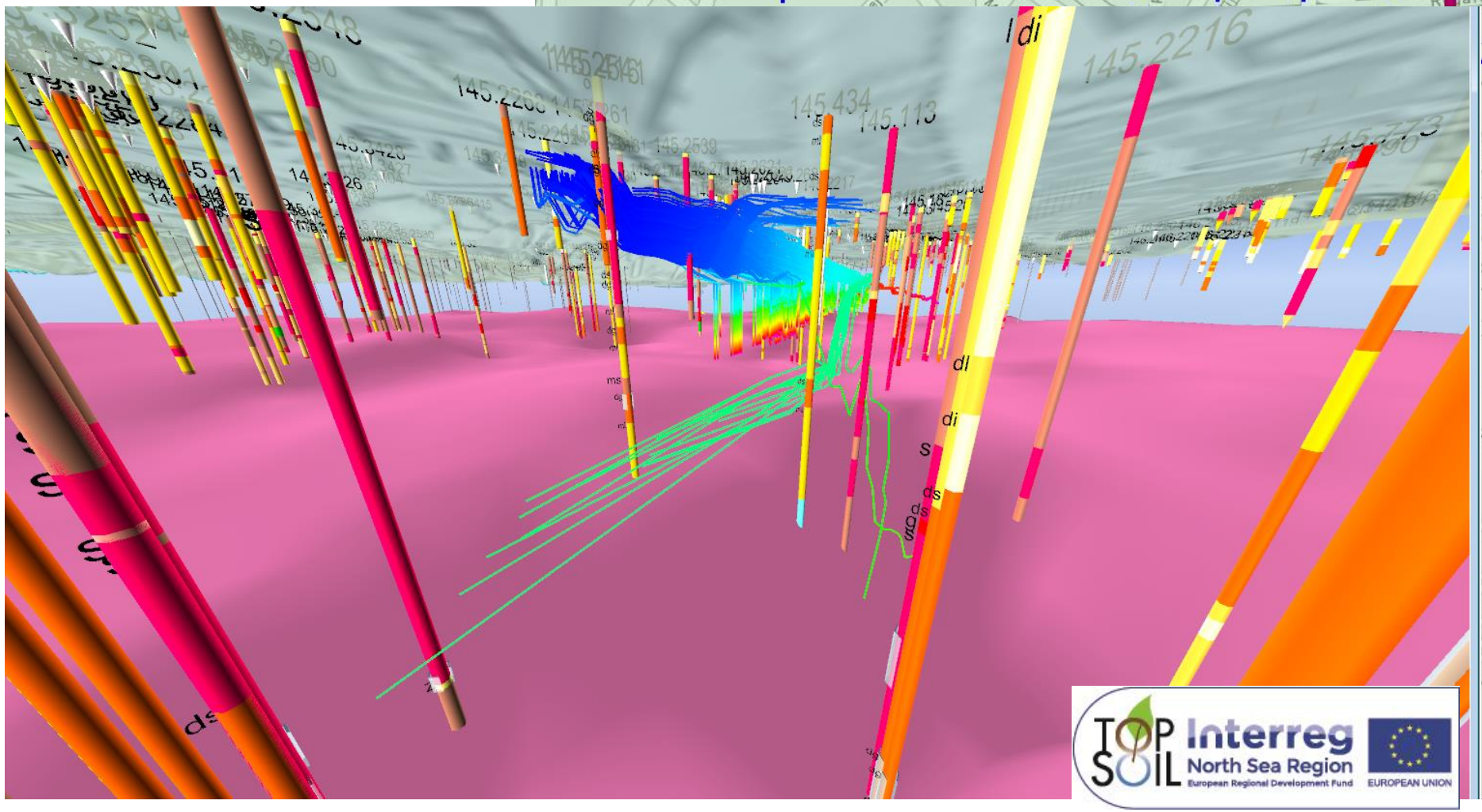
Partikels…

From: Fælles grundvand – Fælles ansvar: WP3 Stoftransport og risikovurdering



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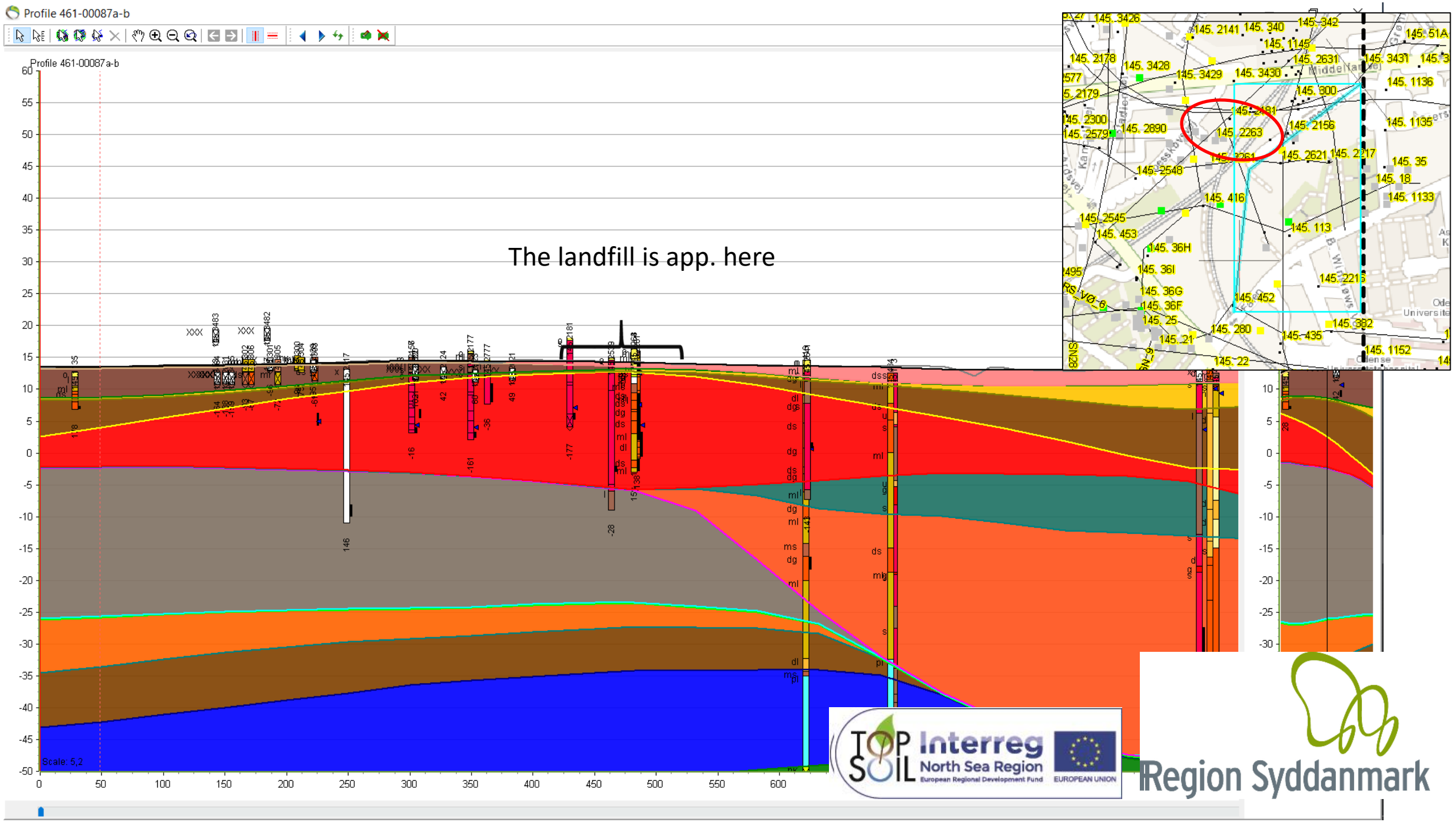
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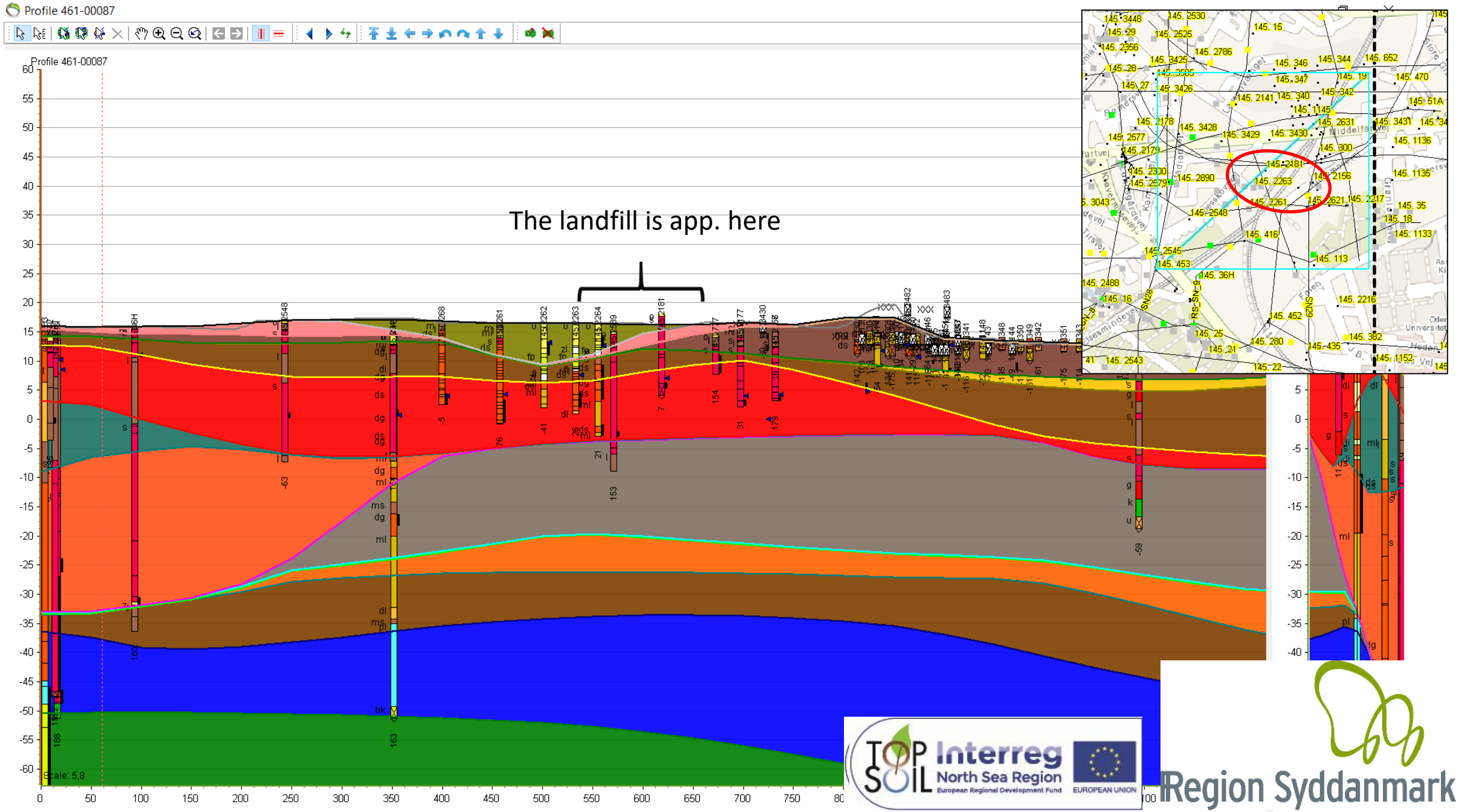
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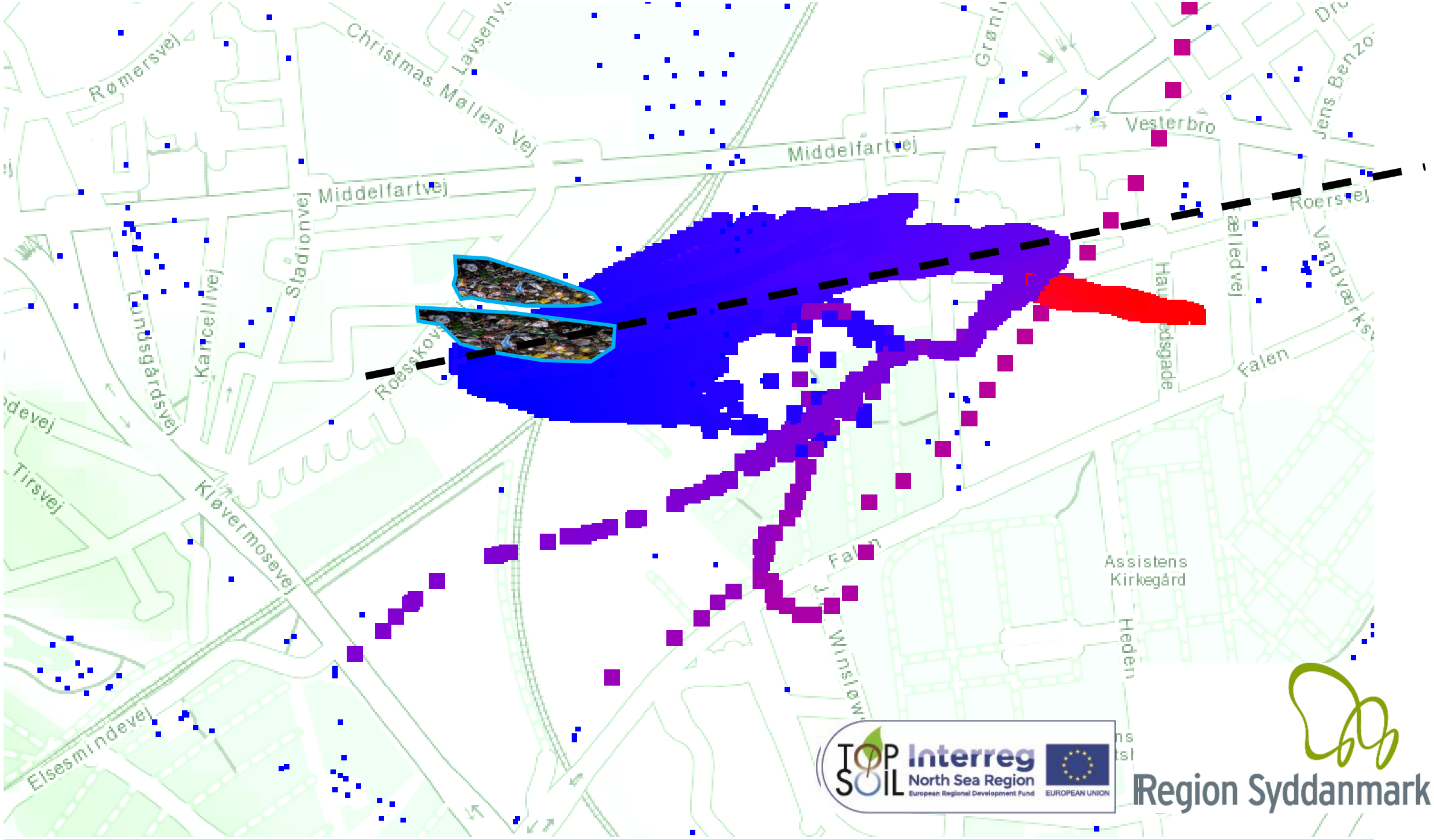
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Roersvej
Vandværksvej
Falen
Assistens Kirkegård
Tirsvej
Kløvermosevej
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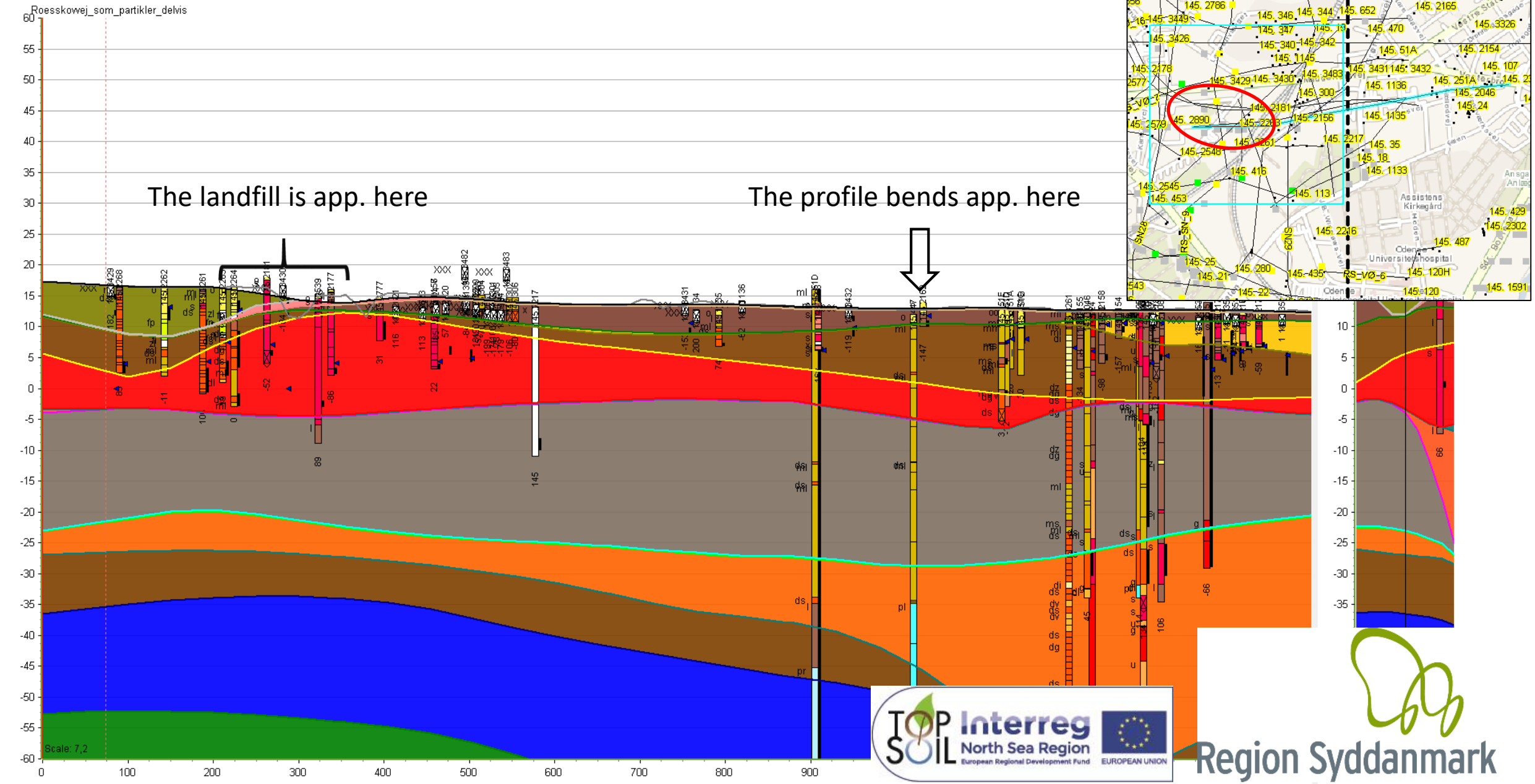
Roesskovvej_som_partikler_delvis



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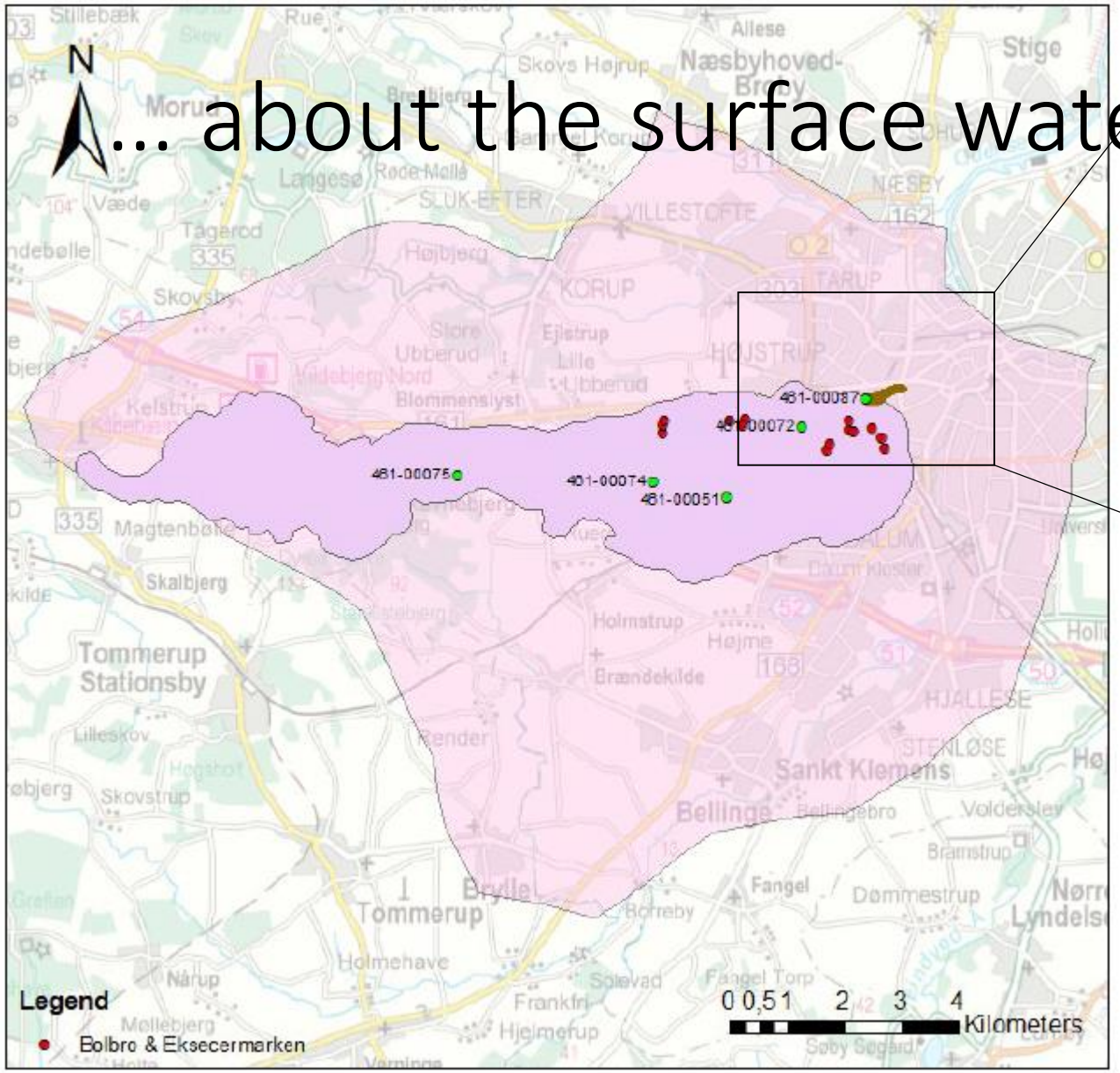
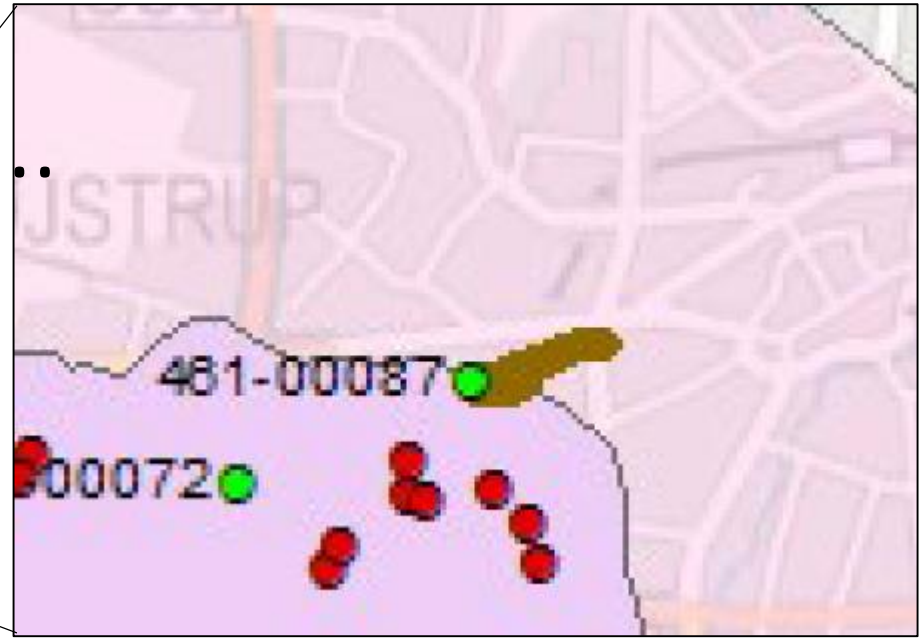
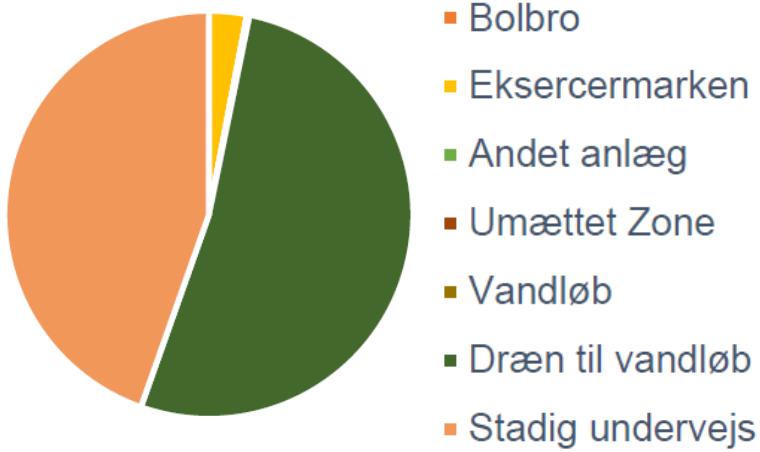
… about the surface water…







From: Fælles grundvand – Fælles ansvar: WP3 Stoftransport og risikovurdering

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"…models can only be as strong as their data""

We need more data

- *DCIP method instead of tTEM*
- *S-wave reflection seismic ca. 1 km*
- *Direct Push, 3-5 stk. – lithology and groundwater analysis data*
- *2 new monitoring wells to the NE*
- *Groundwater sampling*
- *Infrastructure data (sewer, tunnels and other underground facilities)*

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DCIP – Direct Current Resistivity og Induced Polarization

- Supportive for construction of a geological model
  - Correlation of geological layers
  - Identification of low permeability features
- Helpful in inorganic landfill leachate plume delineation
  - Planning of drilling and sampling
  - possible for the 3D plume mapping

https://hgg.au.dk/instruments/ert-ip/

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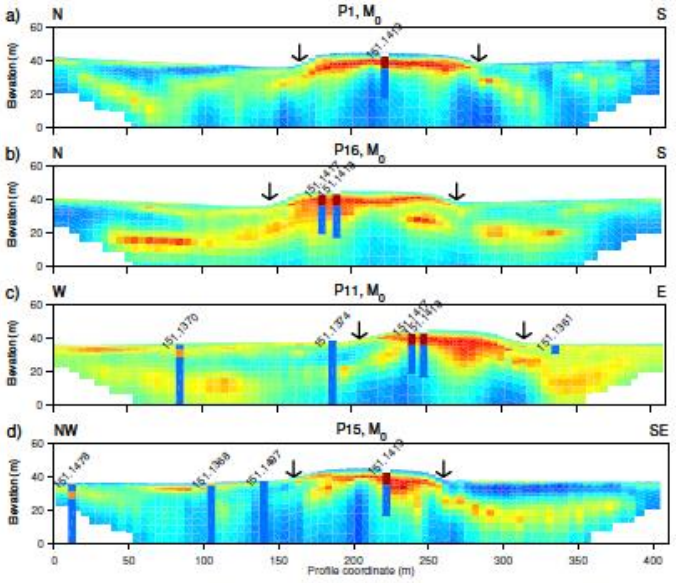
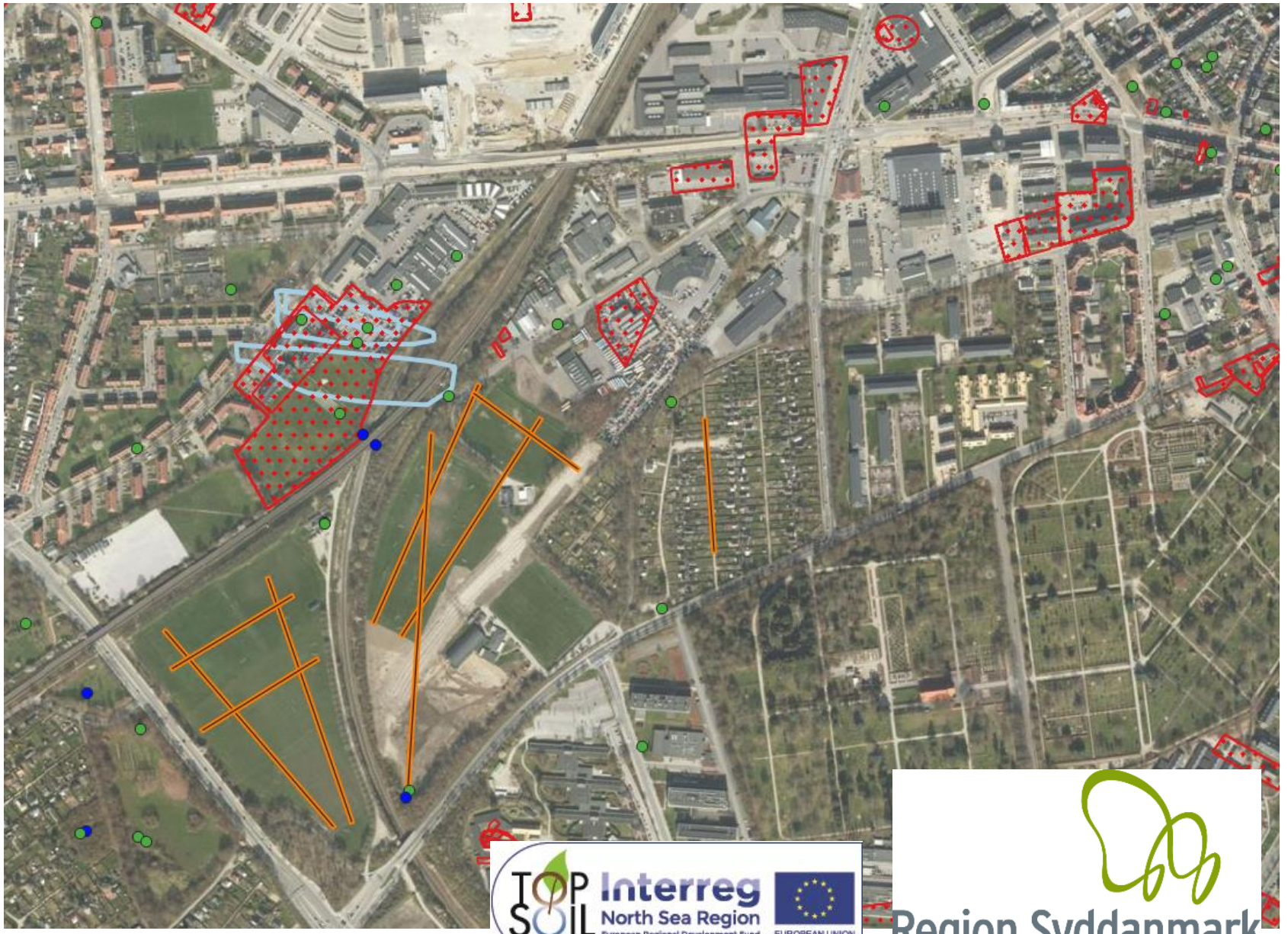
The DCIP survey (AAU)

December 2020





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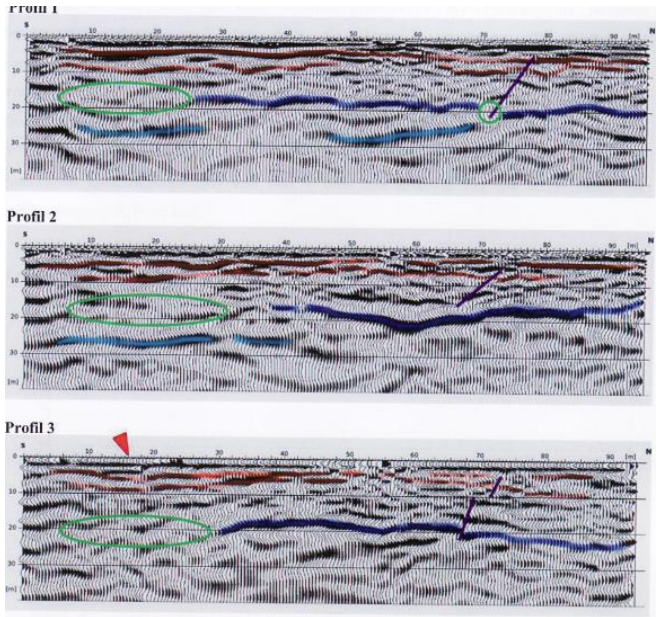
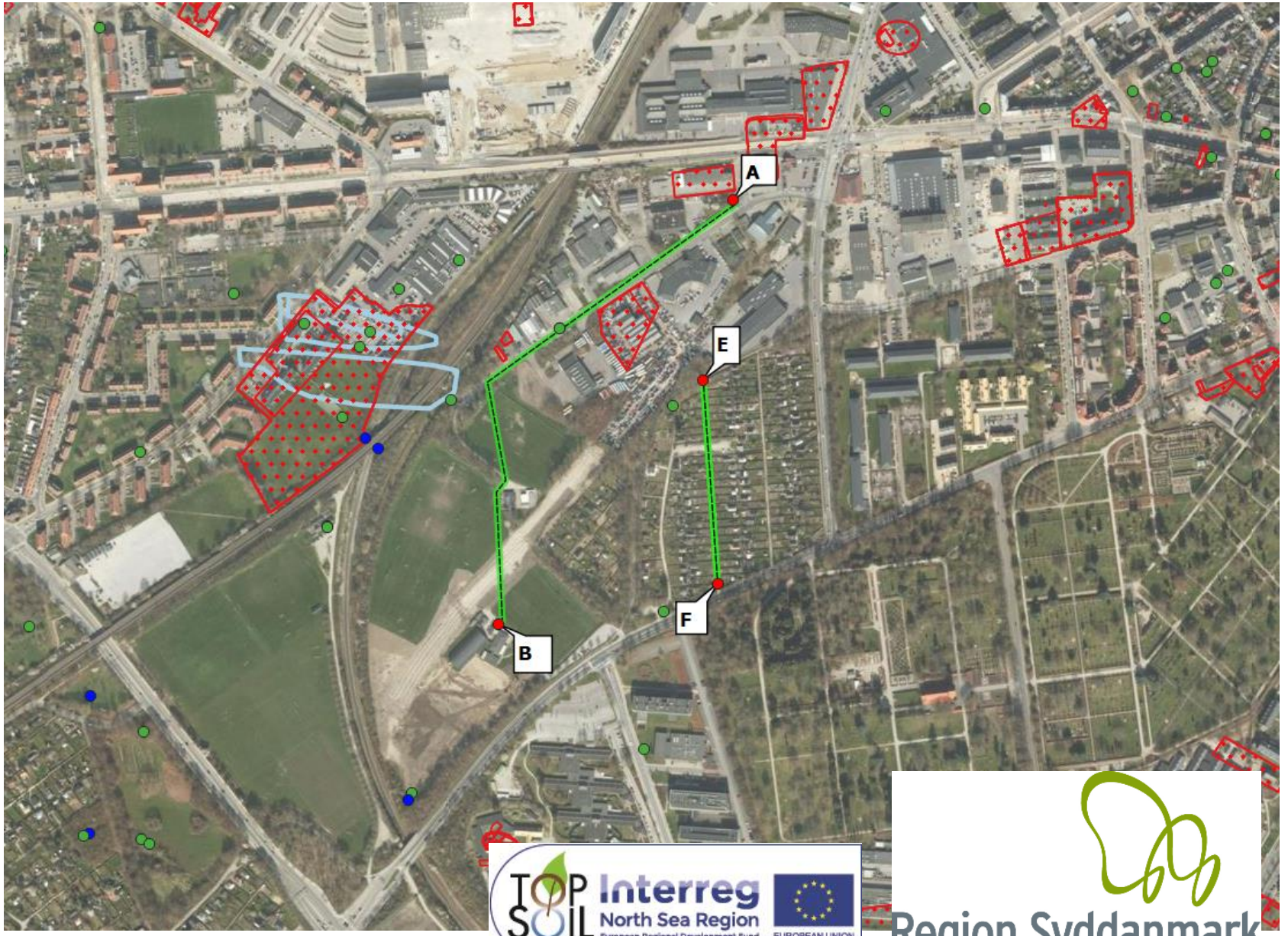
The seismic survey (???) January 2021





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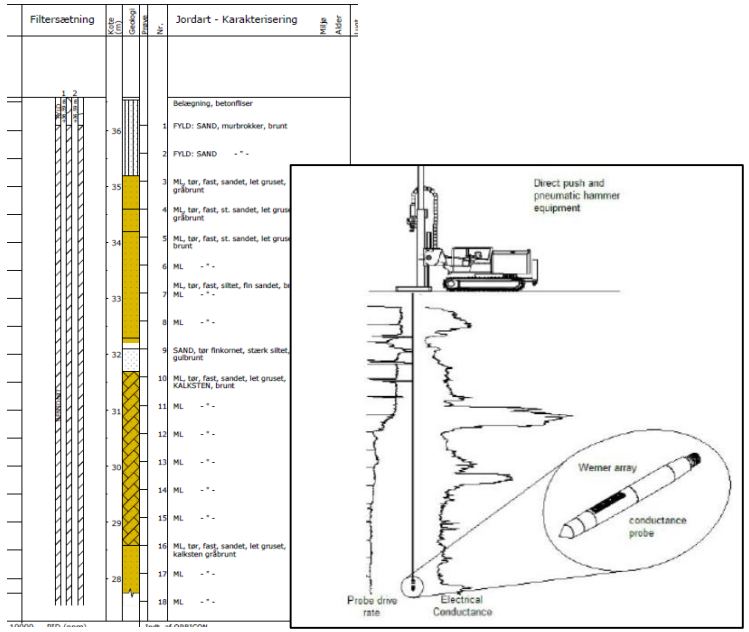
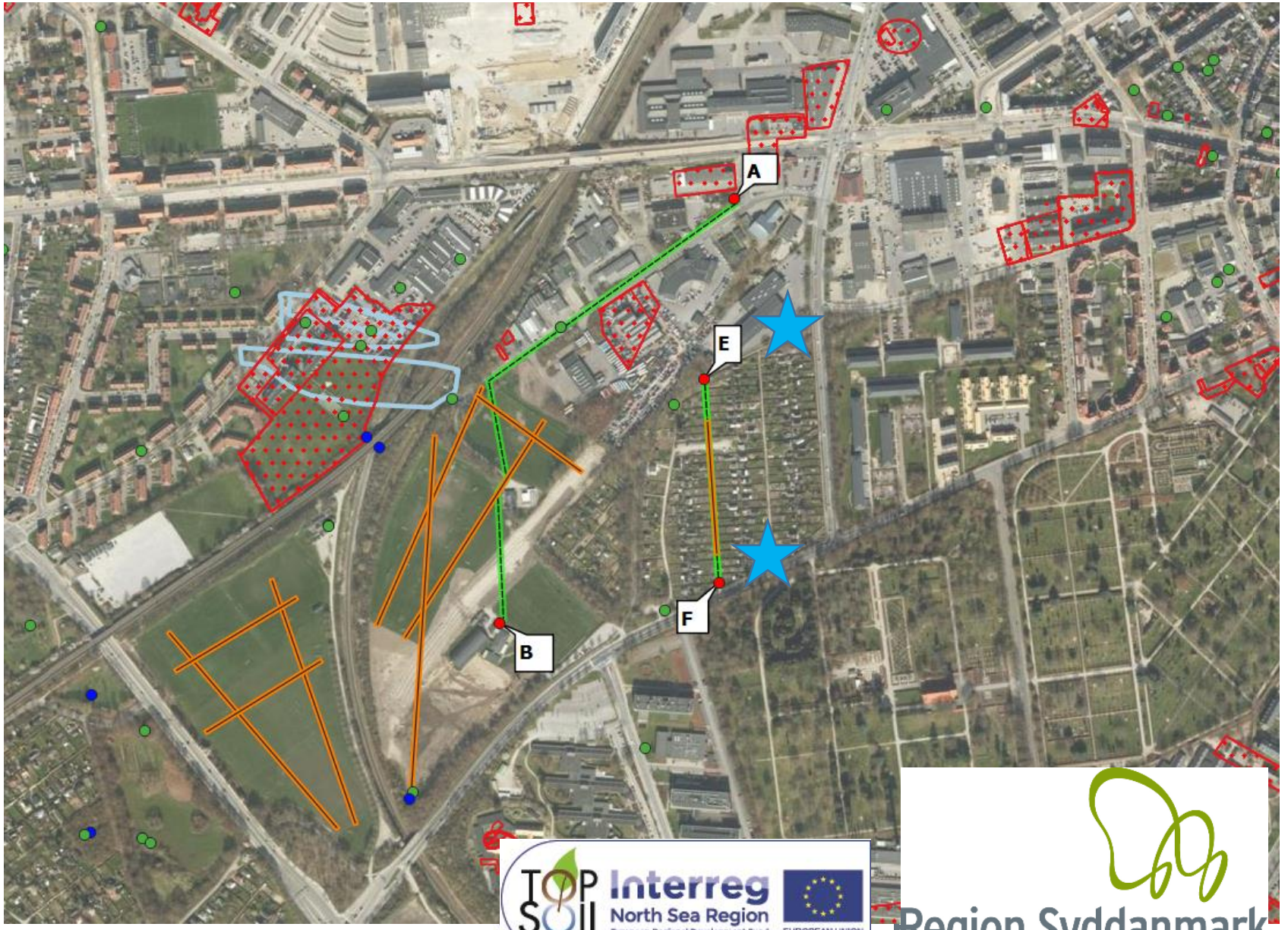
The Direct Push Drillings and monitoring wells





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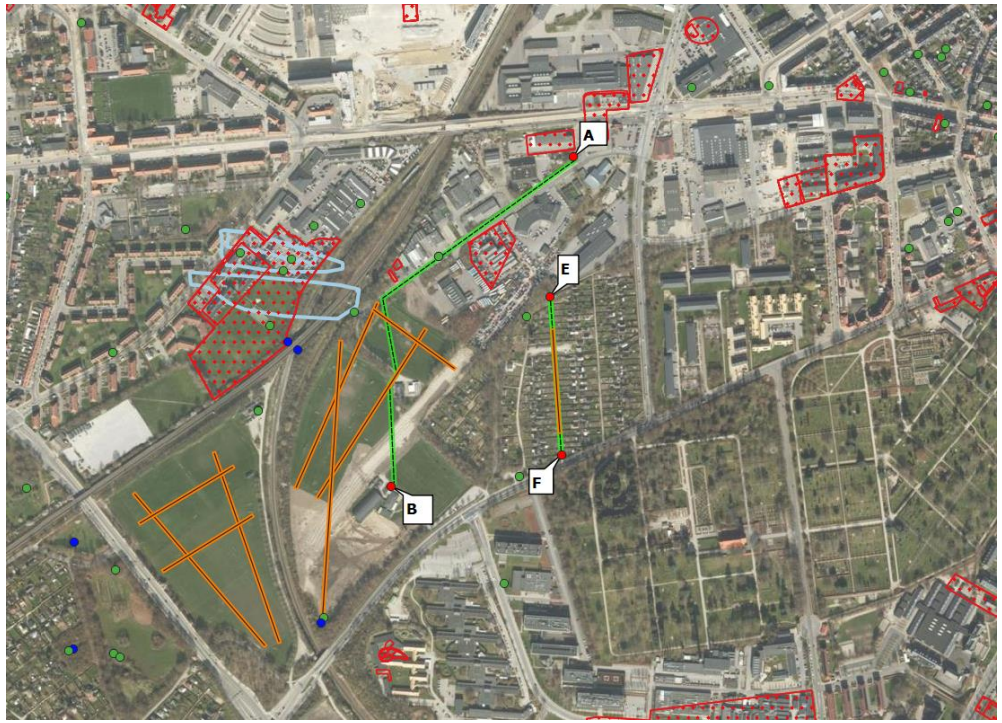
Thank you for you attention



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