

PROSJEKT
Ren
Indre havn



FORSVARSBYGG



HORTEN KOMMUNE



Horten Ren Indre havn
På jakt etter eksplosiver!
Miljøringen 29.10.2019



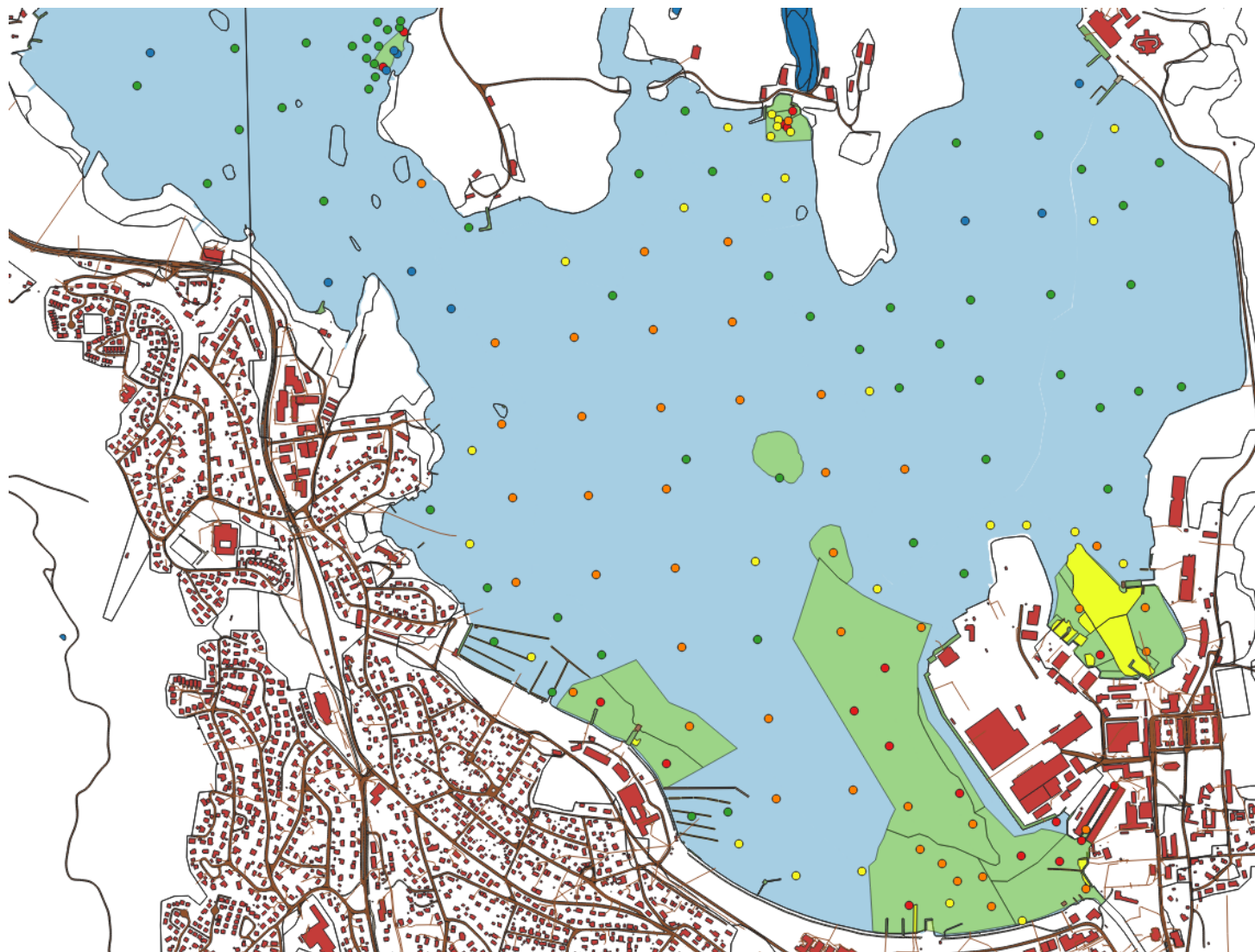
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Horten kommune

Hvordan står det til med HIH?

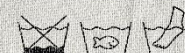


Miljøgifter

- PAH • Hg
- PCB • Pb

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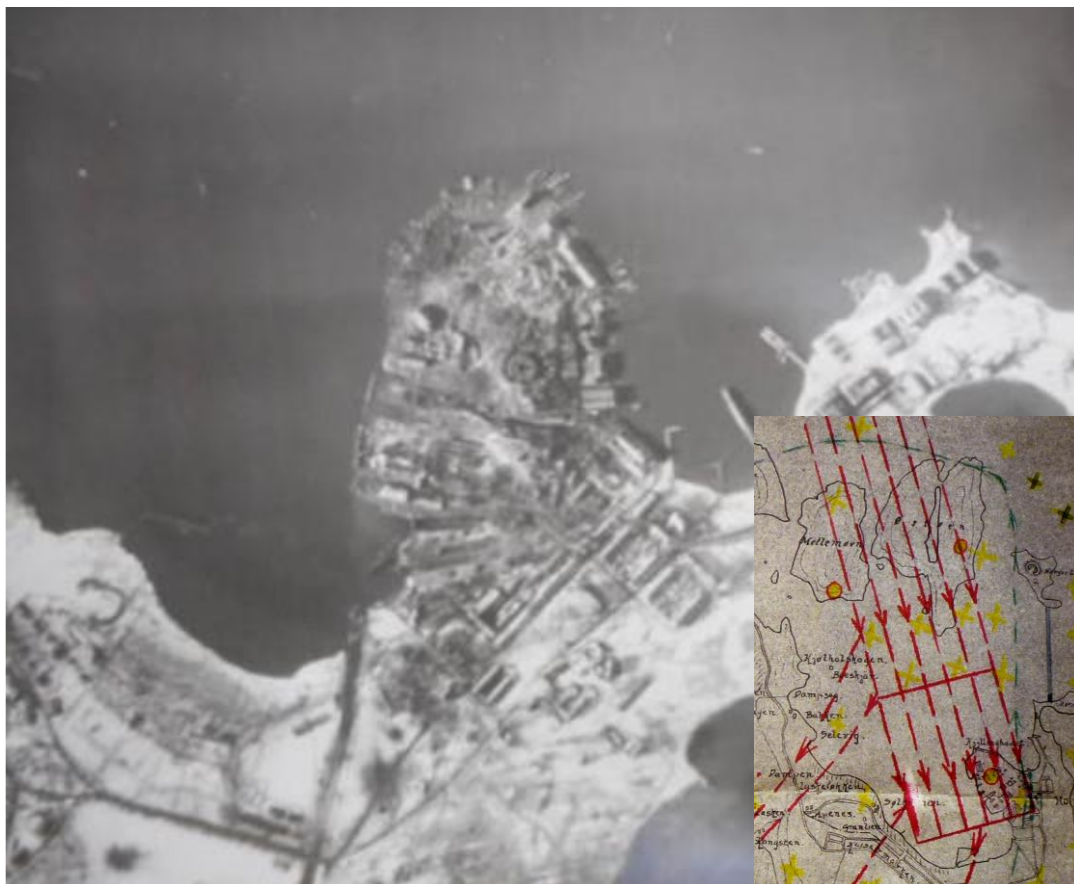
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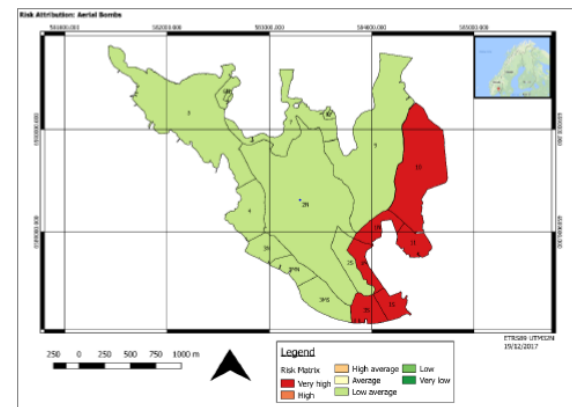
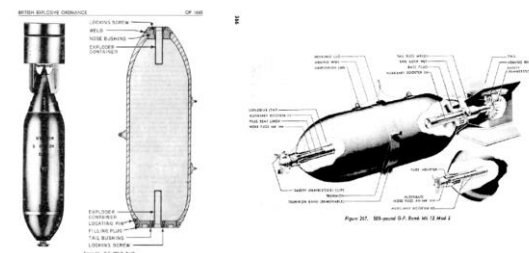
Horten kommune

Hva med bombene fra krigen?

- Historisk kartlegging gjennomført
 - 975 bomber sluppet over HIH februar 1945
 - 75 A MK I-IV bunnminer sluppet 25/26 April 1945 (*Horten was topped up*)
- Potensielt 30-40 udetonerte flybomber + ? miner – UXO – i Indre havn



500 LB M.C. & 500 LB USA BOMBS



Hva med styrende dokumentasjon for søk?

- Ingen styrende dokumentasjon
- UXO utviklingsprosjekt sammen med AdeDE og FFI
- FoU prosjekt - Formål – bygge veileder for UXO søk i sjø



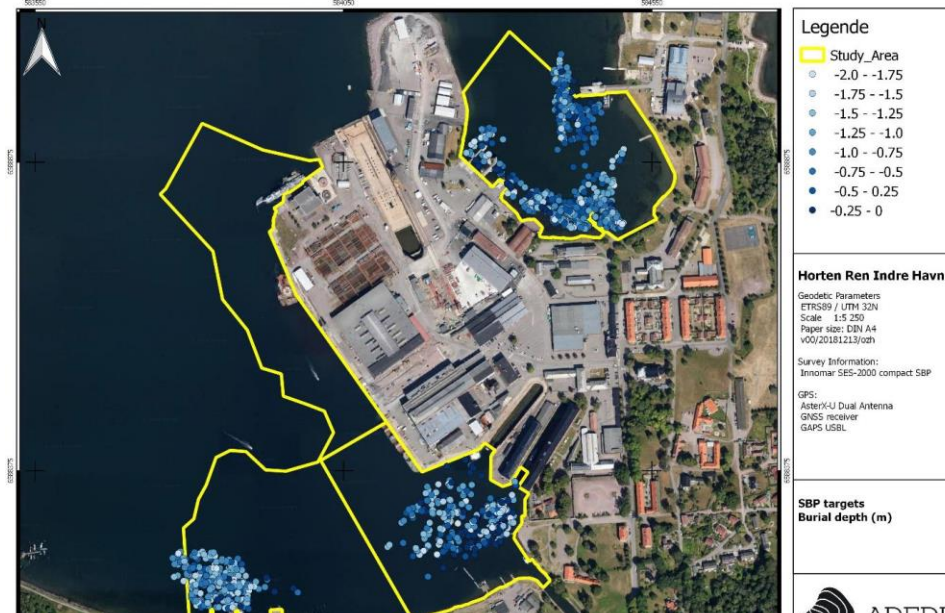
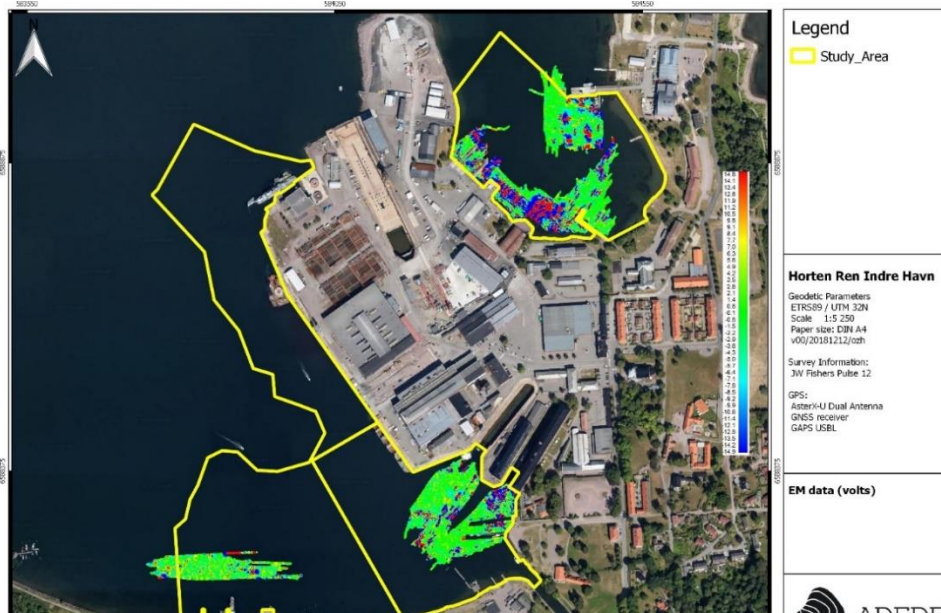
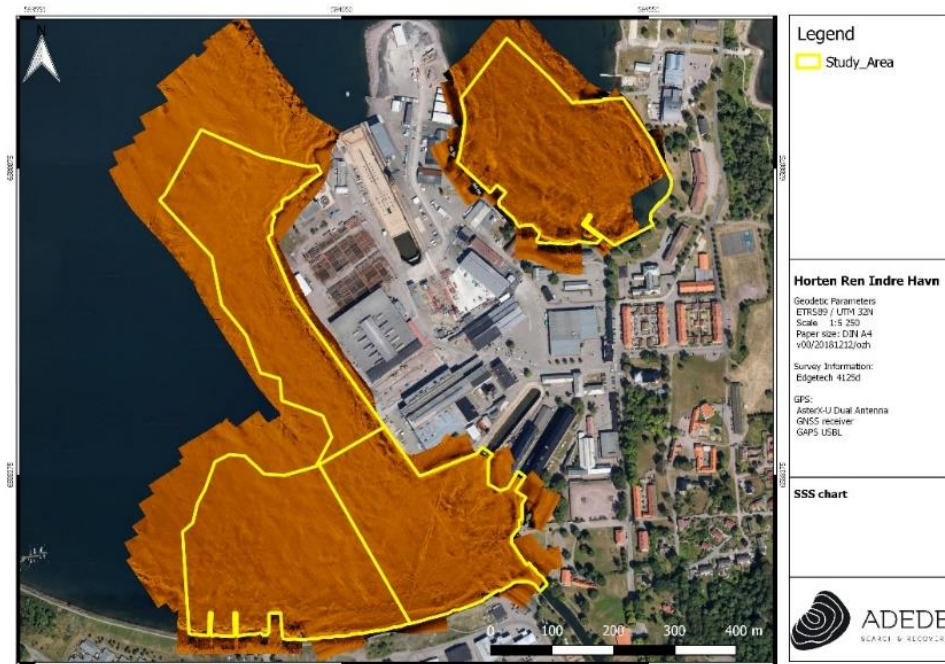
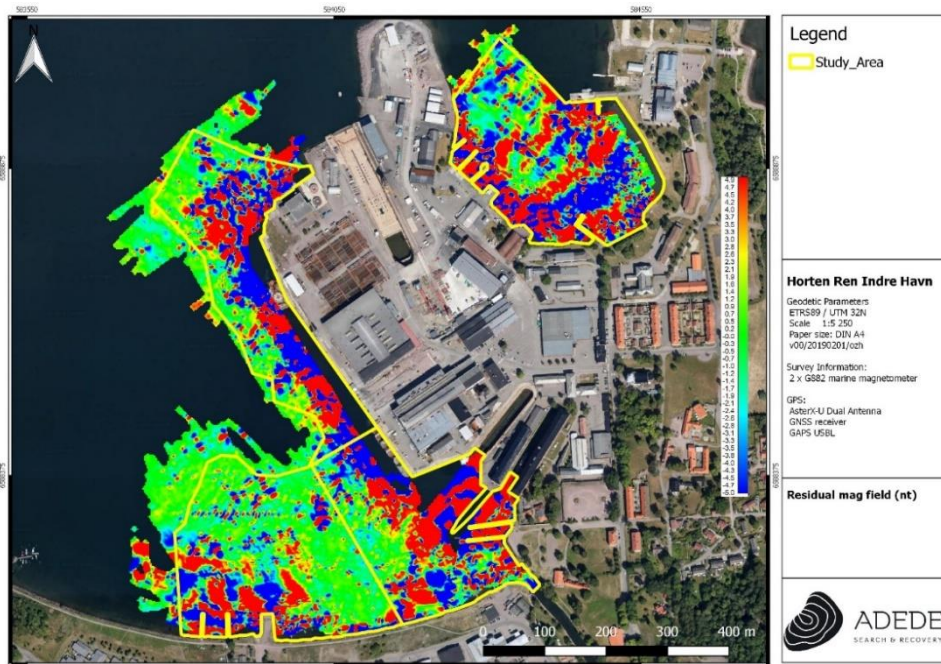
UXO investigation of Ren Indre Havn

Best-practice guidelines

Author ADEDE	Projectmanager ADEDE	CEO ADEDE
Autograph	Autograph	Autograph
Gijs Berghmans		
Alexander Cattrysse	Alexander Cattrysse	Bart Van der Speeten

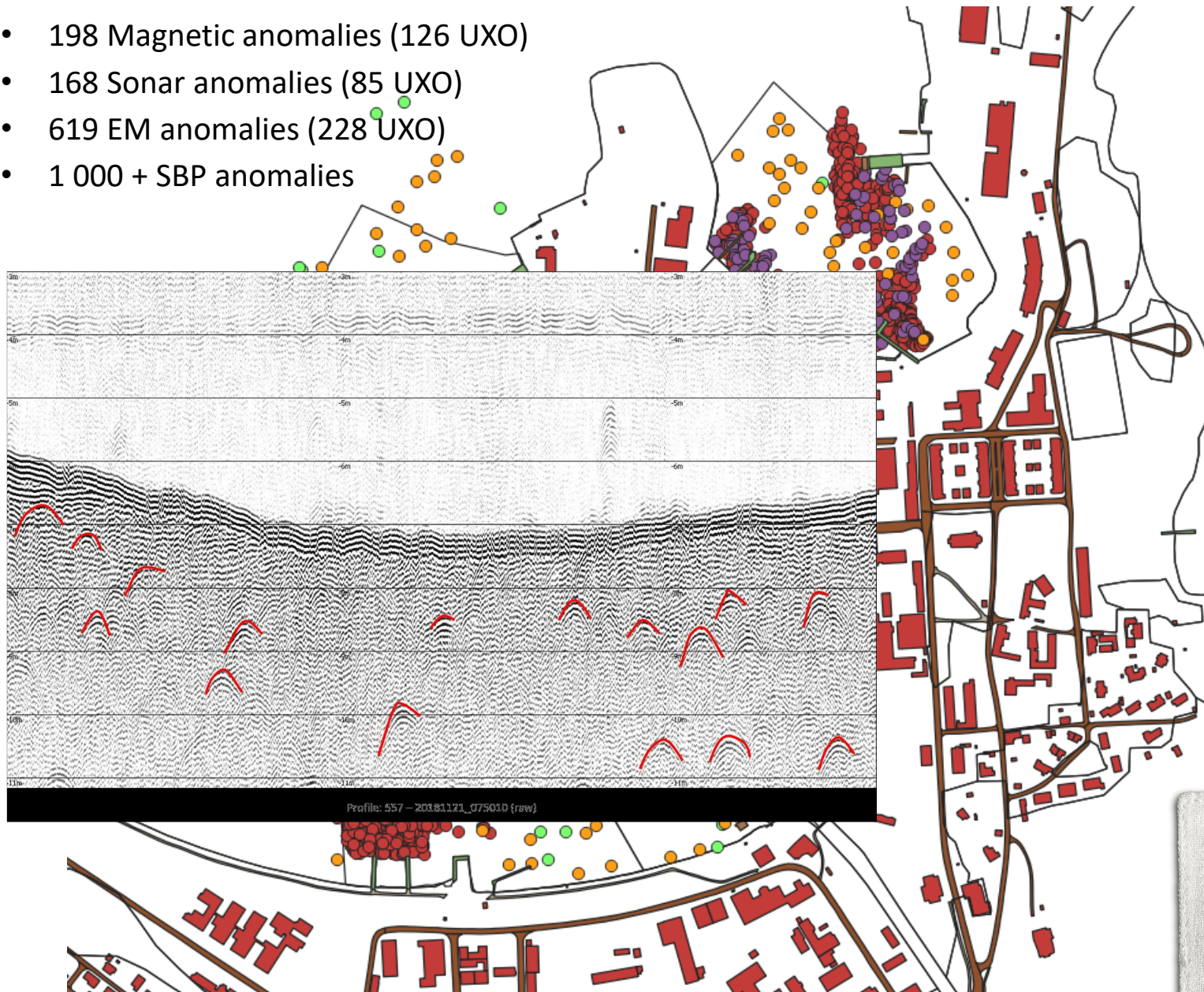


Datainnsamling



Resultater

- 198 Magnetic anomalies (126 UXO)
- 168 Sonar anomalies (85 UXO)
- 619 EM anomalies (228 UXO)
- 1 000 + SBP anomalies



Veien videre? → Ground truth



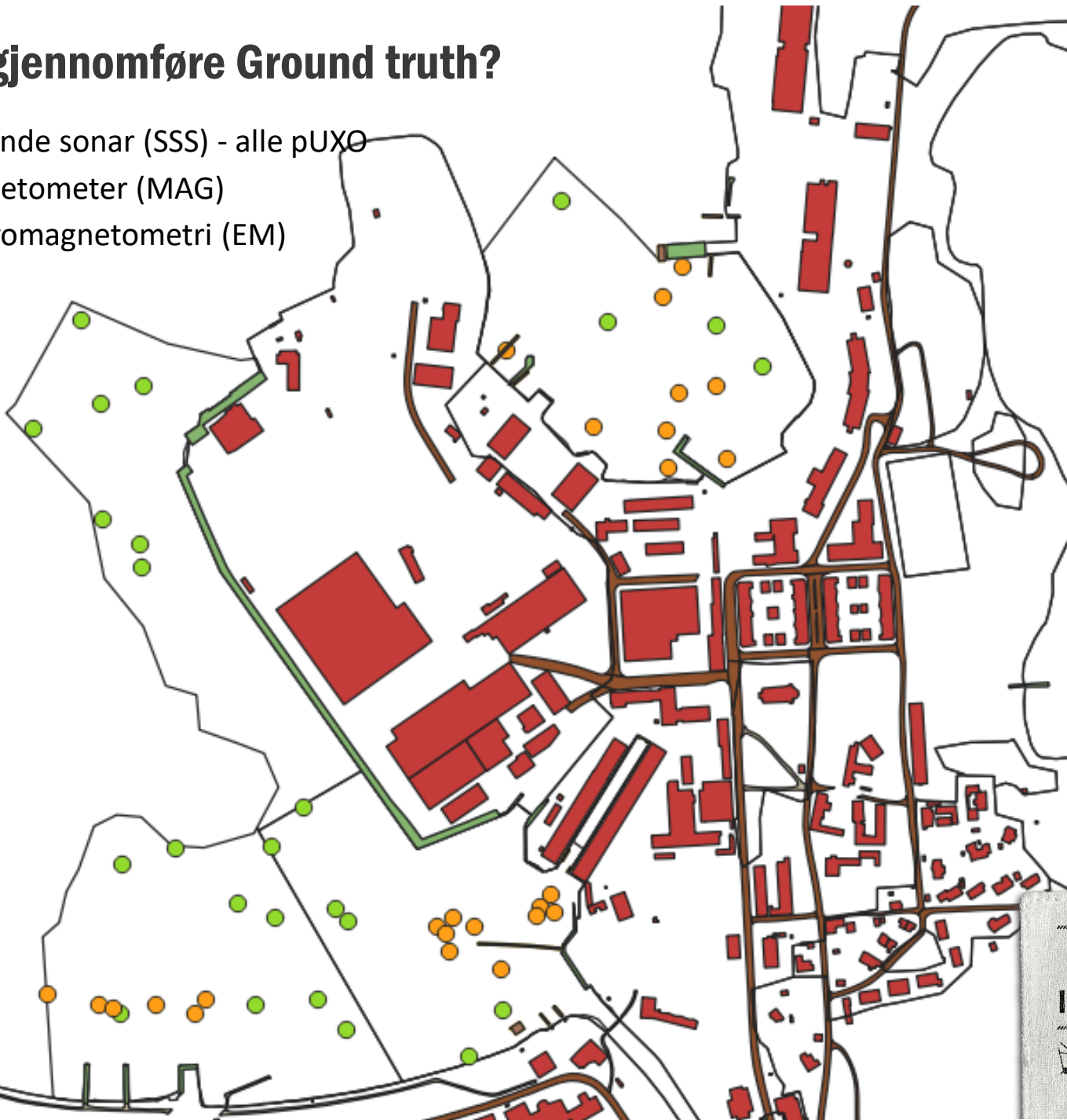
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Hvordan gjennomføre Ground truth?

- Sidesøkende sonar (SSS) - alle pUXØ
- 25 Magnetometer (MAG)
- 25 Elektromagnetometri (EM)



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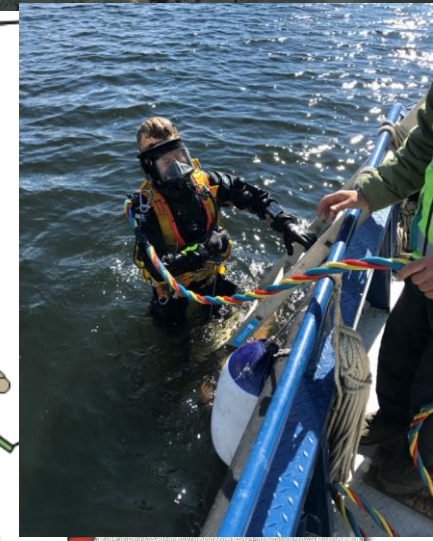
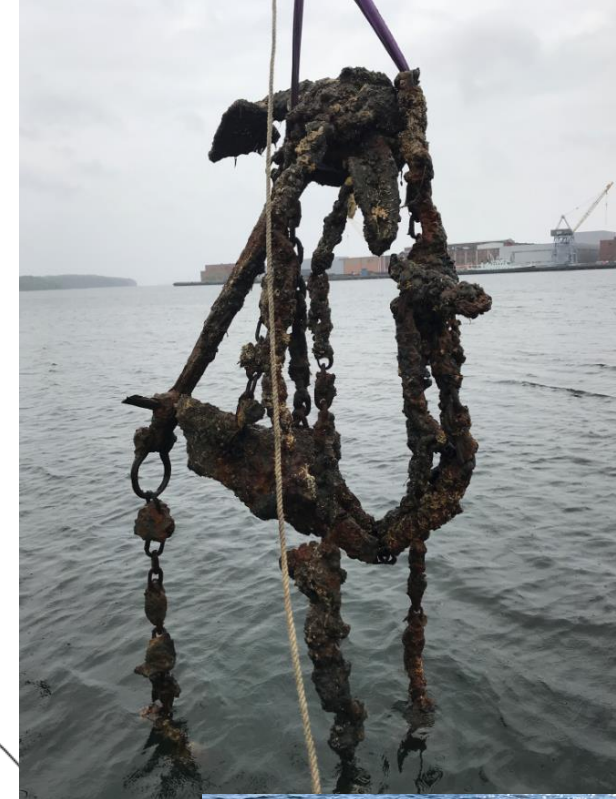
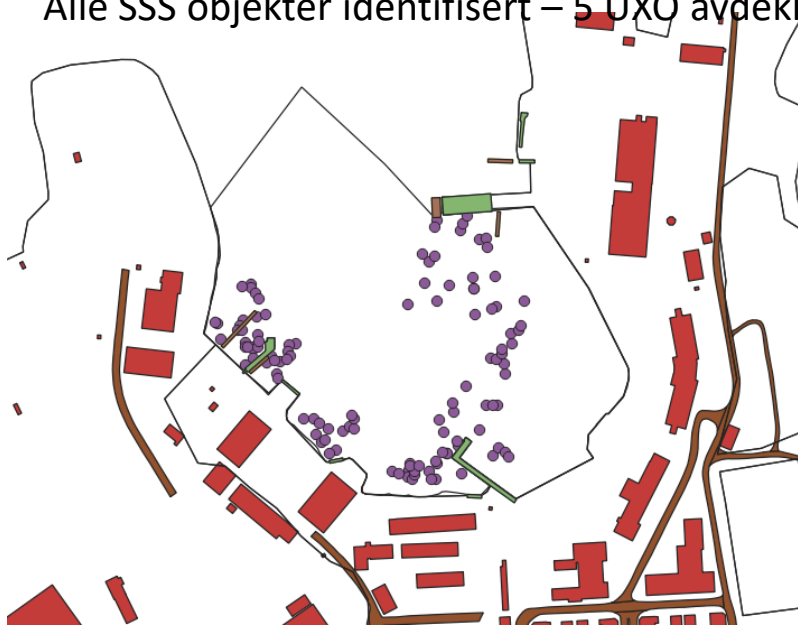
**Ren
Indre havn**



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Resultater GT

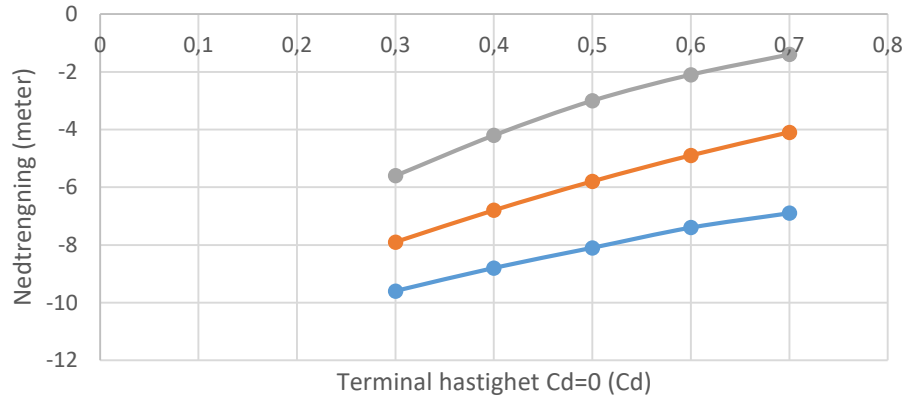
- Utfordringer
 - Store mengder skrot
 - Vanskelig å skille skrot fra pUXO
 - Spesielt for EM hvor sammenligningsgrunnlaget er lite
- 25 Elektromagnetometri (EM) – ingen UXO
- 25 Magnetometer (EM) - ingen UXO
- Ny prosessering basert på GT funn
- Antall EM/MAG pUXO betydelig redusert
 - EM fra 116 til 34 i Stjertebukt
- Alle SSS objekter identifisert – 5 UXO avdekket



Hvordan akseptere restrisiko?

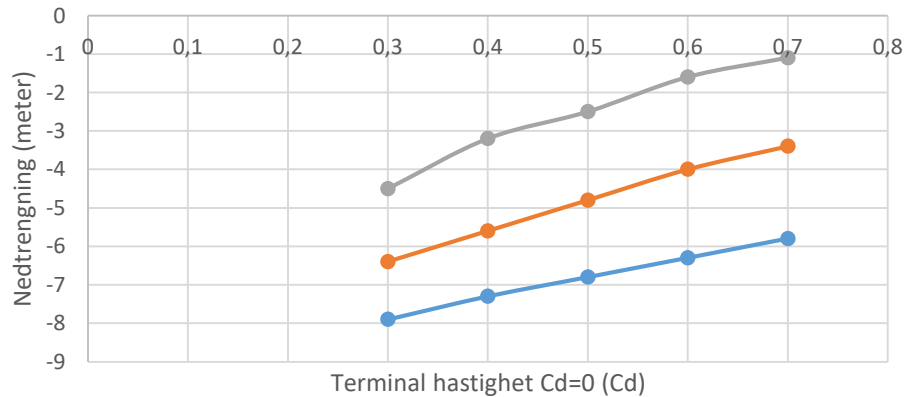
- H.E. Bombs - 500lb

Dybde nedtrengning silt - Dropphøyde 12000 fot

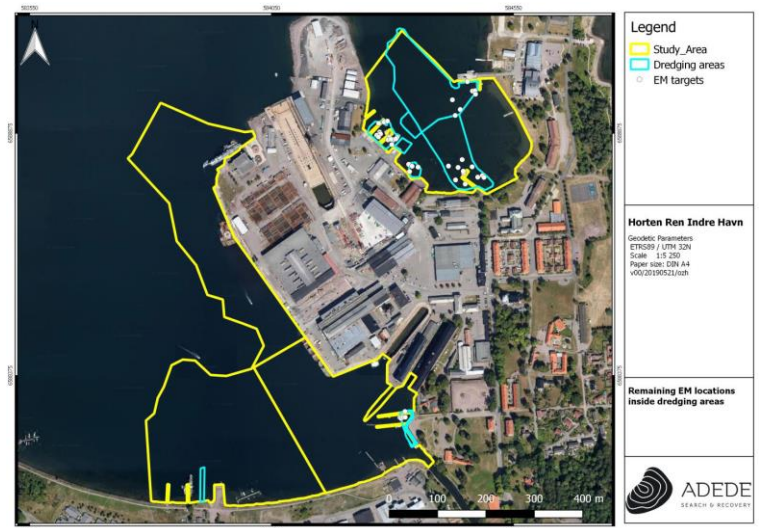
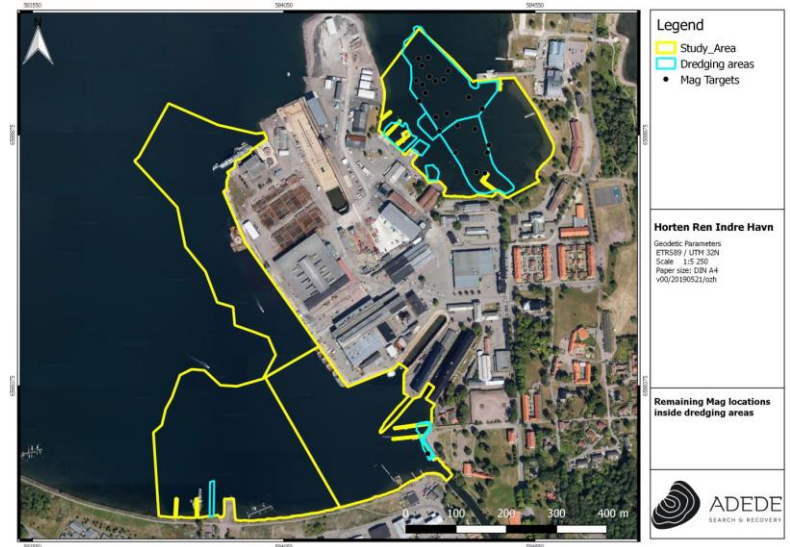


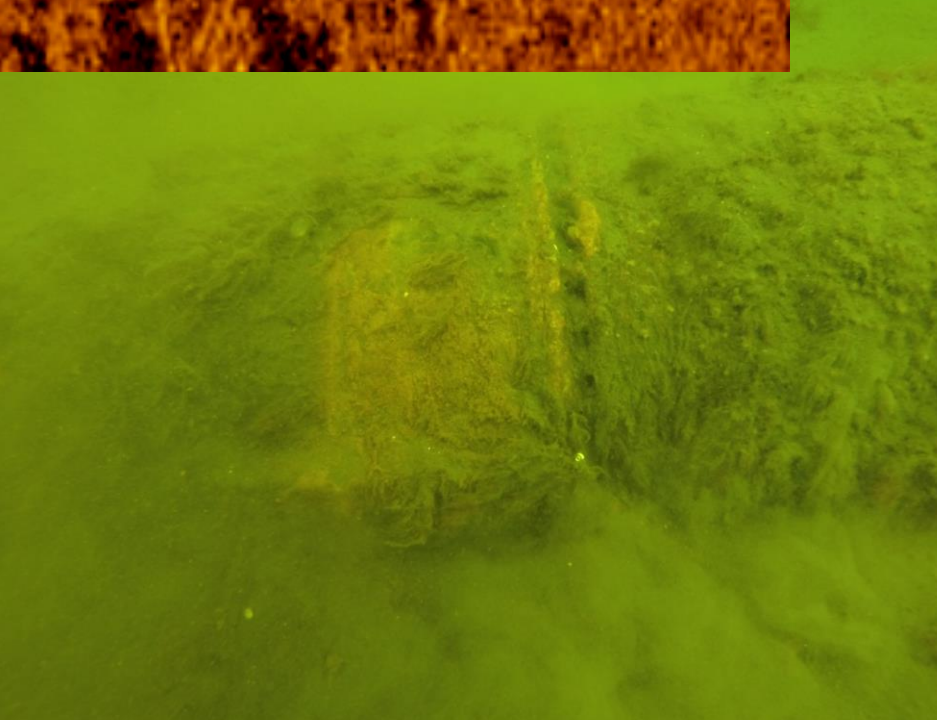
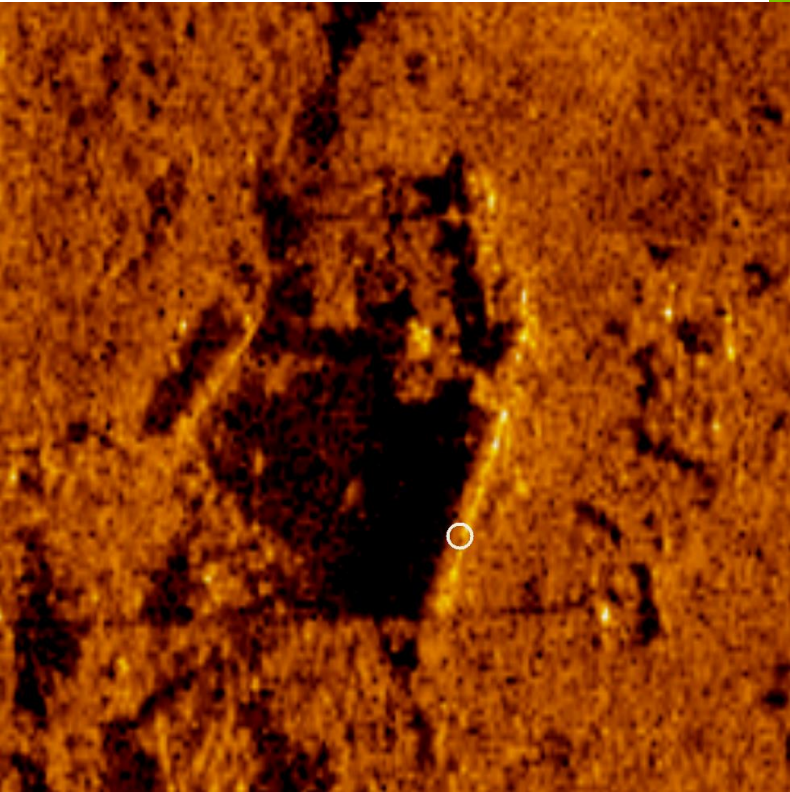
● Vanndyp 2m ● Vanndyp 5m ● Vanndyp 10m

Dybde nedtrengning silt - Dropphøyde 8000 fot



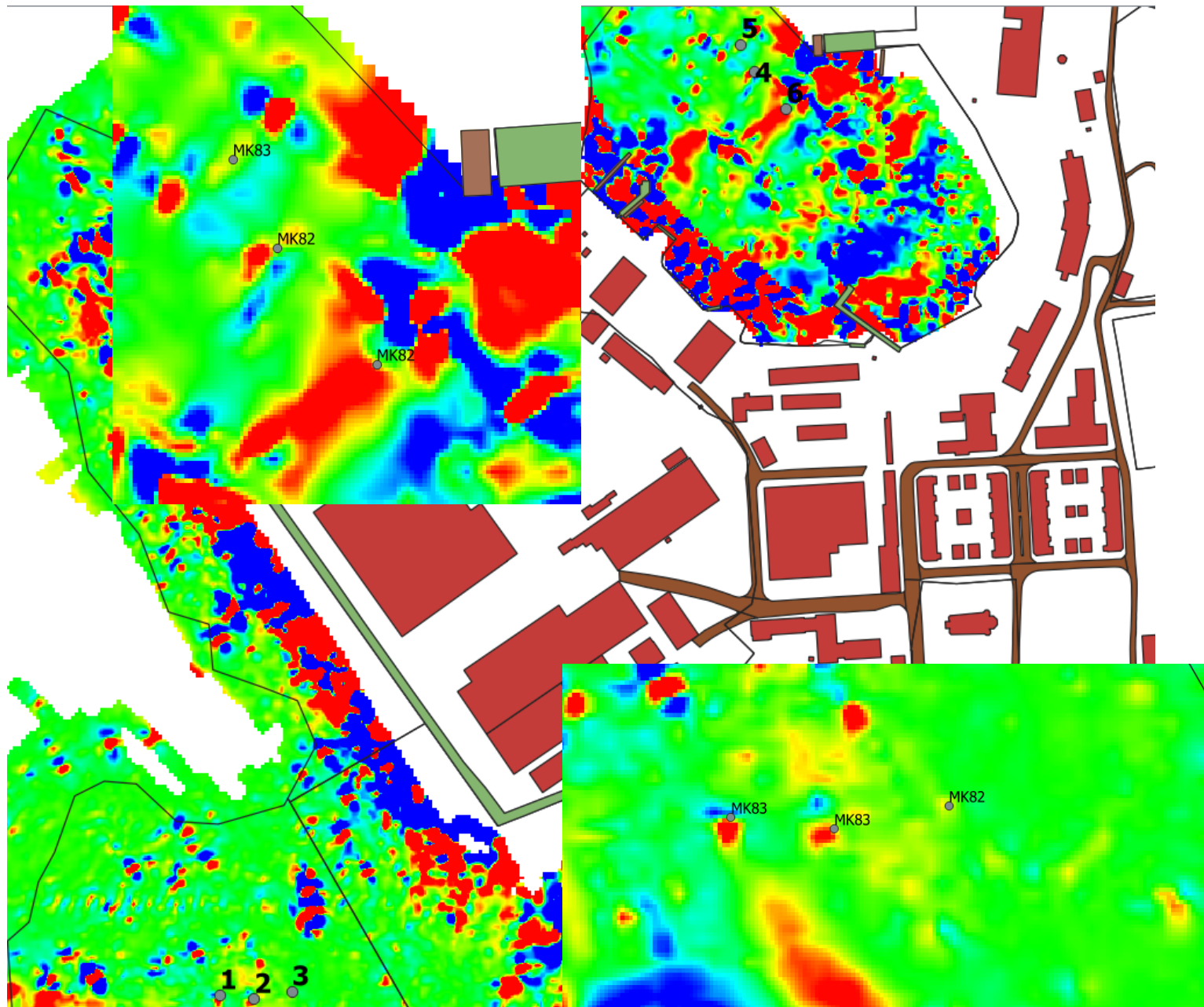
● Vanndyp 2m ● Vanndyp 5m ● Vanndyp 10m







Hvordan gikk med lokalisering av dummy objektene (surrogates)





www.horten.kommune.no/ren-indre-havn

