

# **The Kværnerbyen flood of 2<sup>nd</sup> September 2015**

Reconstruction of the Alna River flows and assessment of the capacity of the Culvert-Tunnel System





Foto: nrk.no



Foto: dagsavisen.no



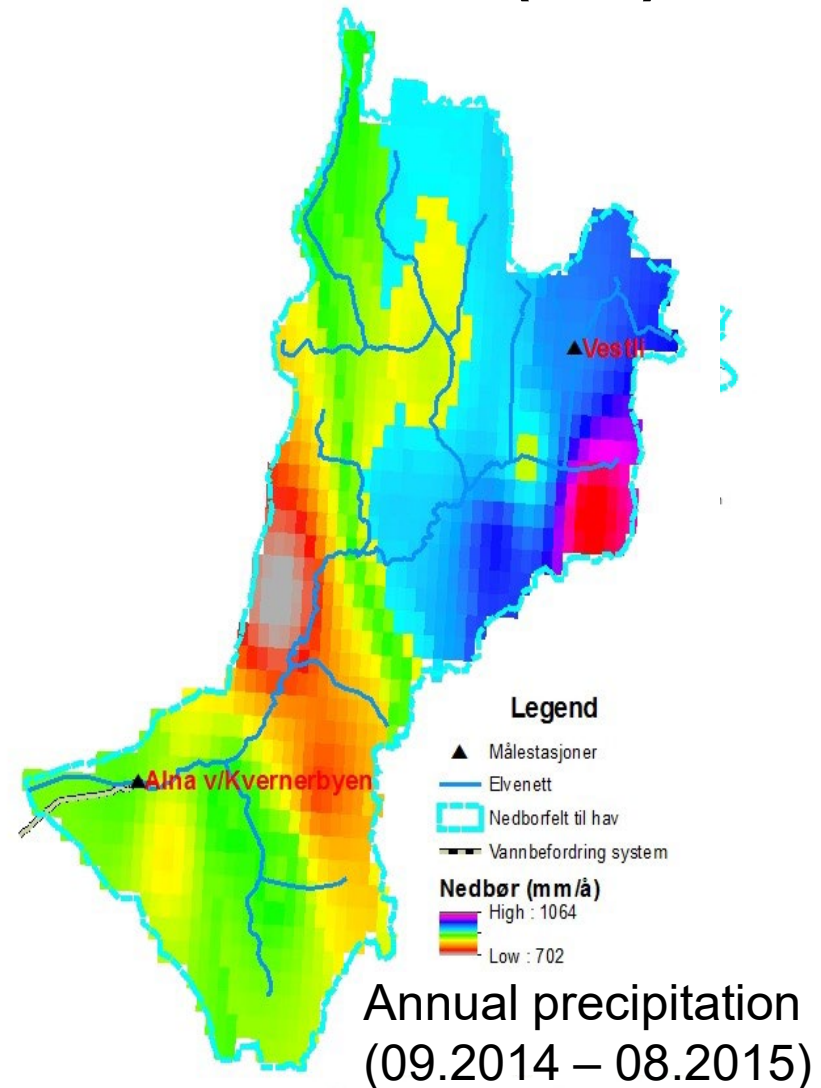
Foto: dn.no

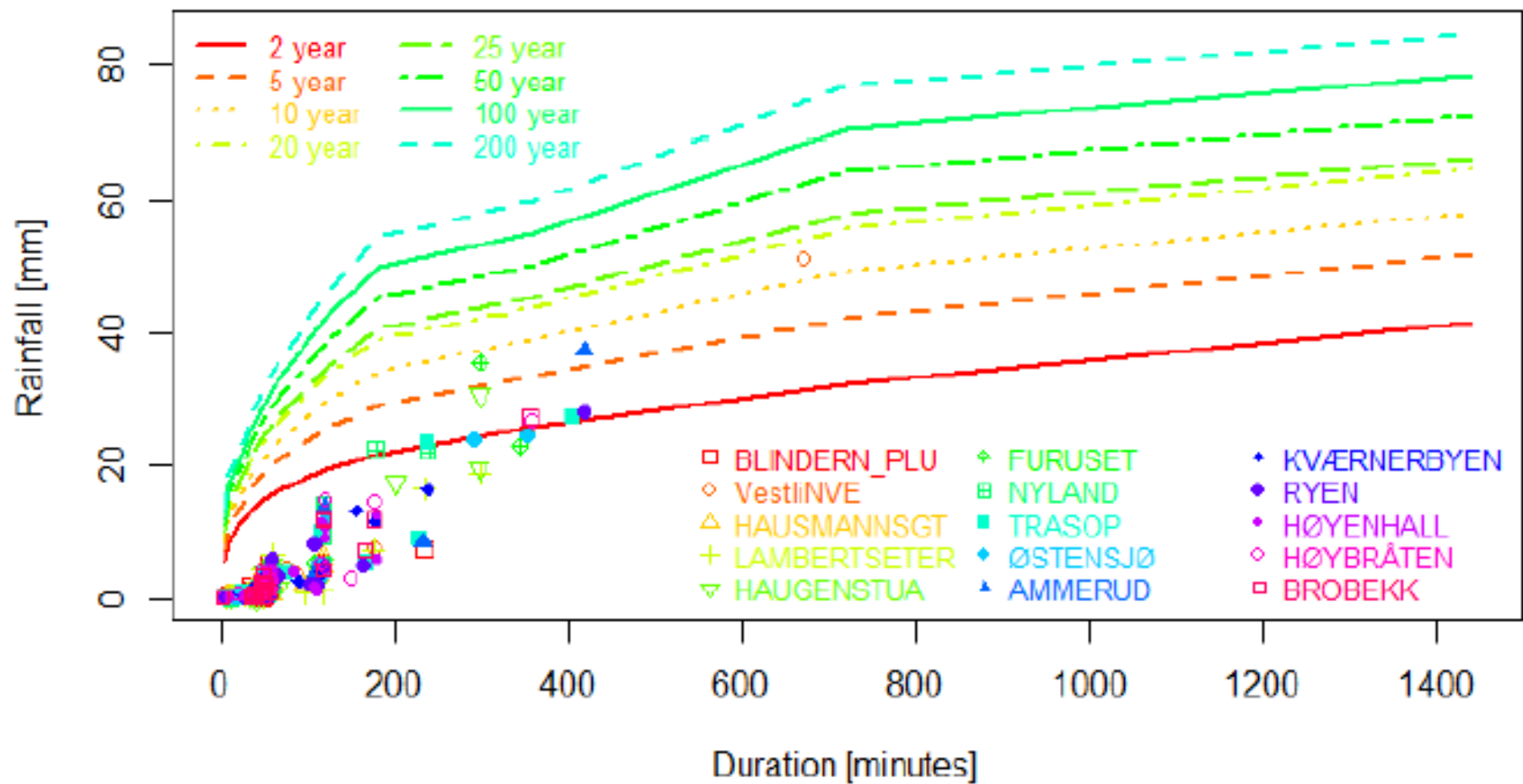


Foto: VG.no

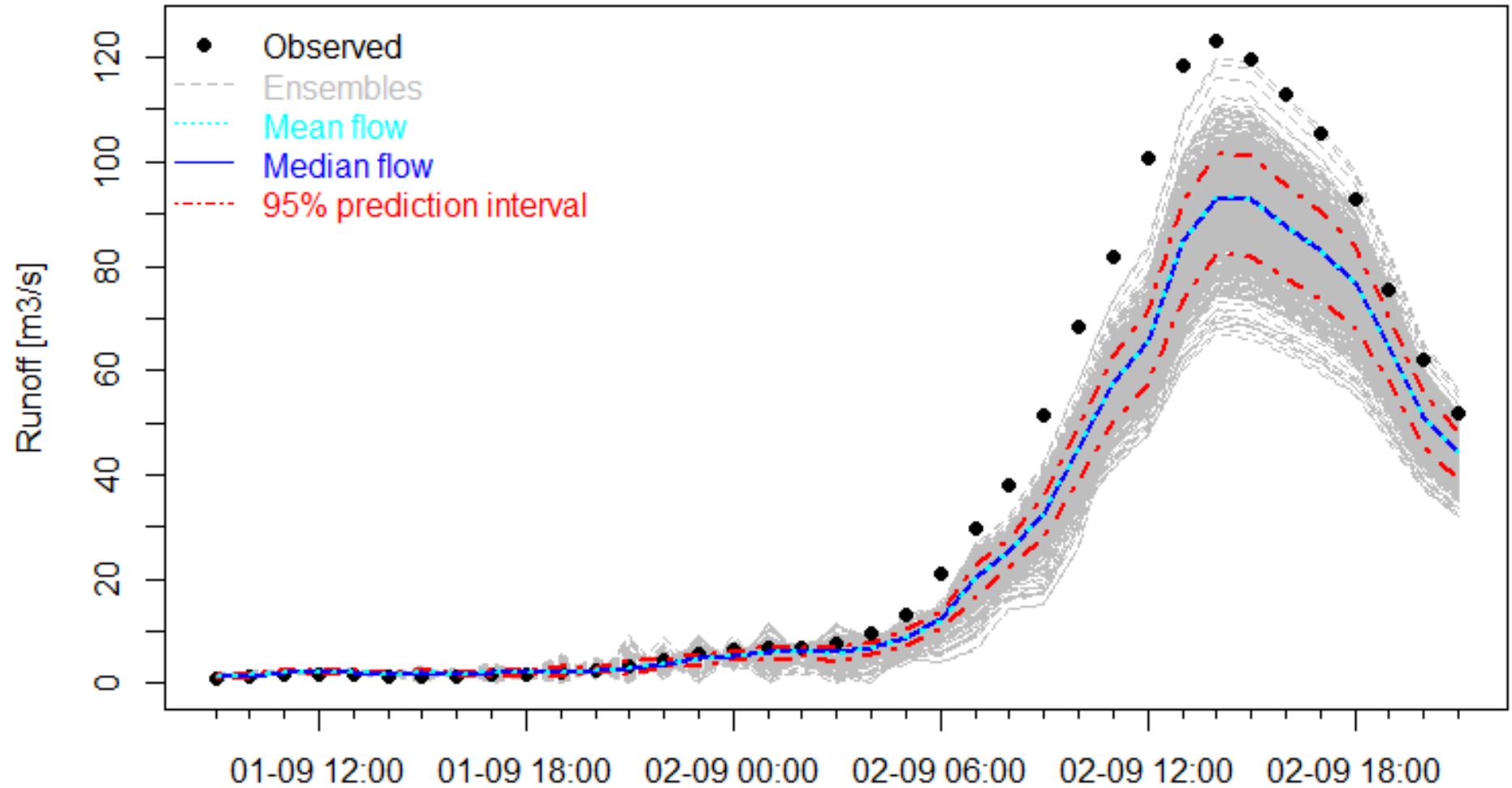
# Reconstruction of the Alna River flows (1/3)

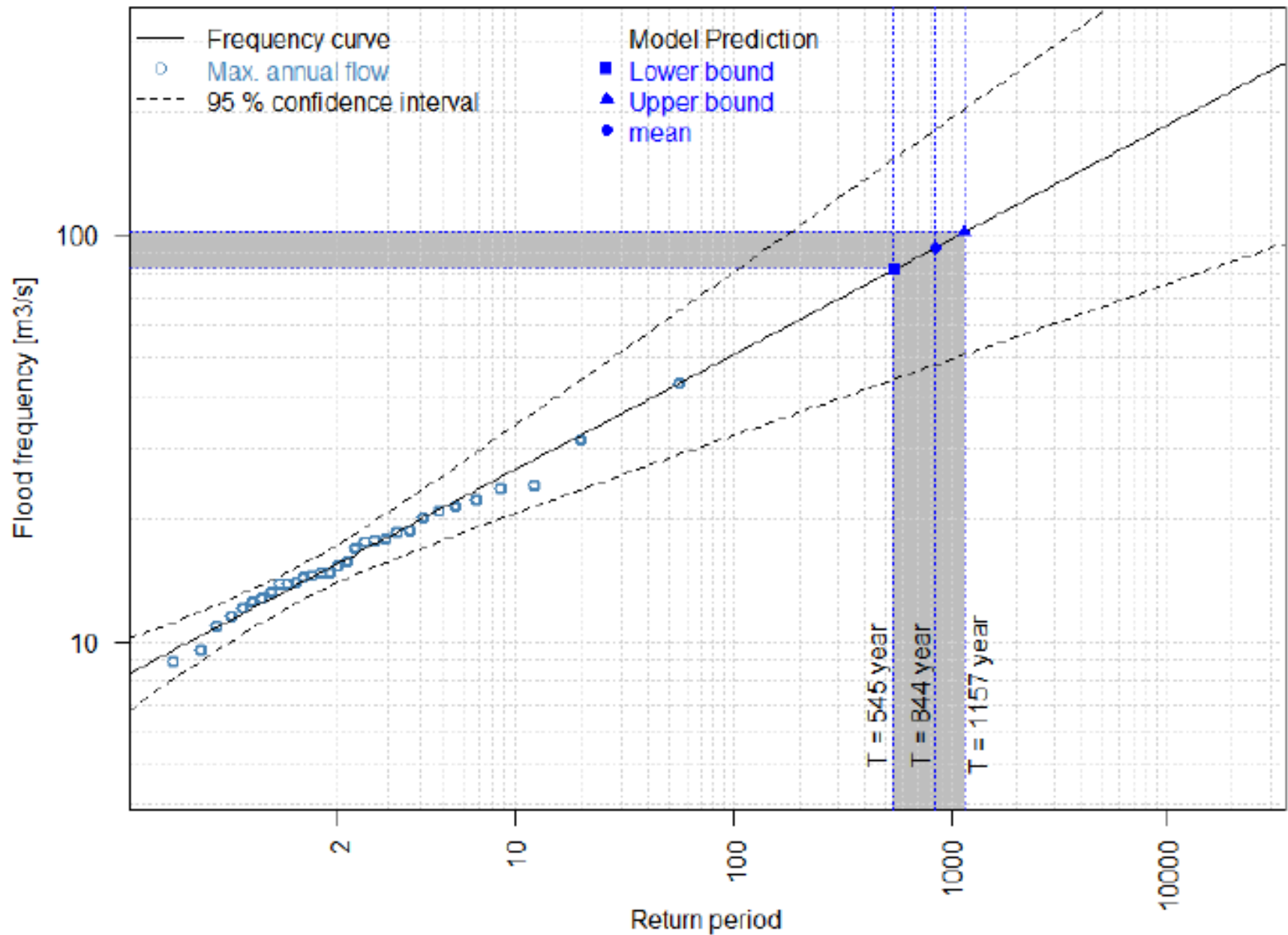
- Data
  - Discharge (stations)
    - Alna (2010 – 2015; Oslo VAV)
    - Vestli (1984 – 2015; NVE)
  - Precipitation (stations)
    - 12 stations (inside Alna catchment)
      - Mostly new (2014 – 2015)
      - Vestli (1974 – 2014; met.no)
    - High spatial variability





# Rekonstruksjon av vannføringen i Alna 2. september 2015



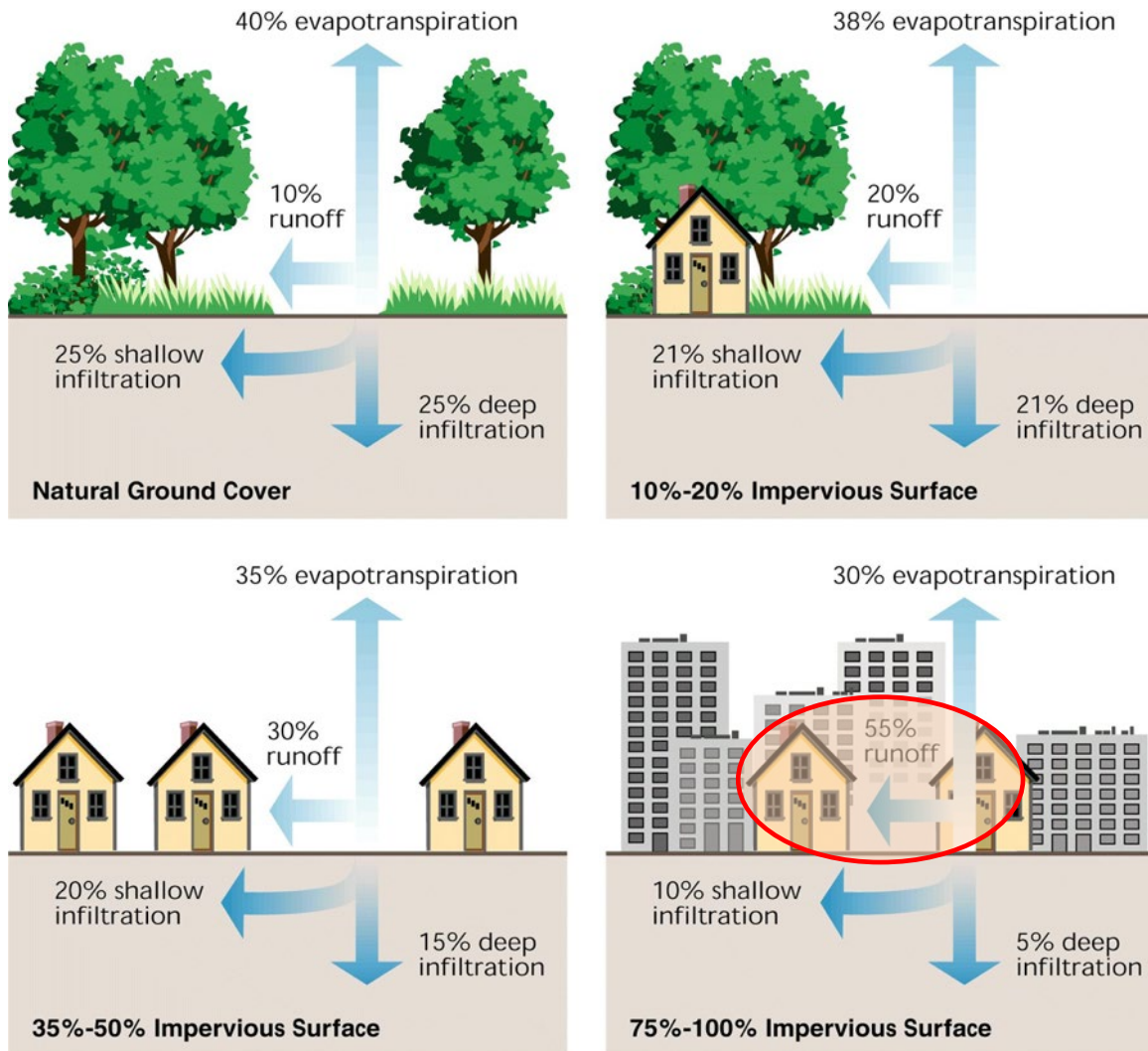


- Hvordan kan en nedbørshendelse med mindre enn 20års gjentaksintervall resultere i en så stor flom?

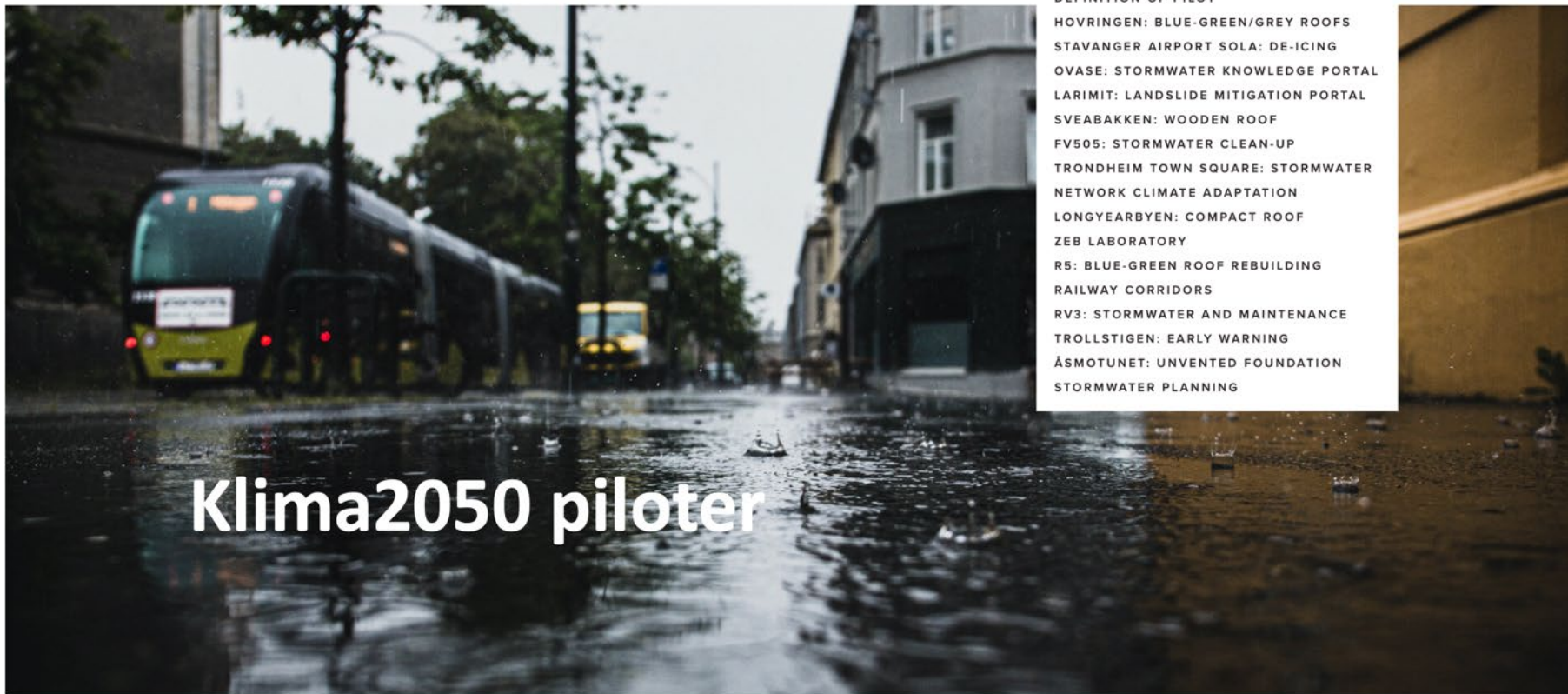




# Urbanisering og overvann



Source: FISRWG (2001)



# Klima2050 piloter

- DEFINITION OF PILOT
- HOVRINGEN: BLUE-GREEN/GREY ROOFS
  - STAVANGER AIRPORT SOLA: DE-ICING
  - OVASE: STORMWATER KNOWLEDGE PORTAL
  - LARIMIT: LANDSLIDE MITIGATION PORTAL
  - SVEABAKKEN: WOODEN ROOF
  - FV505: STORMWATER CLEAN-UP
  - TRONDHEIM TOWN SQUARE: STORMWATER NETWORK CLIMATE ADAPTATION
  - LONGYEARBYEN: COMPACT ROOF
  - ZEB LABORATORY
  - R5: BLUE-GREEN ROOF REBUILDING RAILWAY CORRIDORS
  - RV3: STORMWATER AND MAINTENANCE
  - TROLLSTIGEN: EARLY WARNING
  - ÅSMOTUNET: UNVENTED FOUNDATION STORMWATER PLANNING

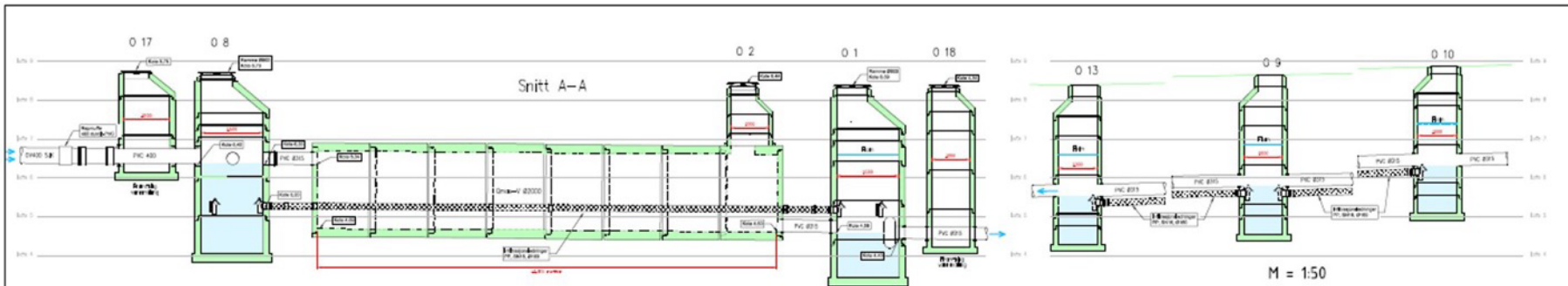


# Nye Trondheim Torg

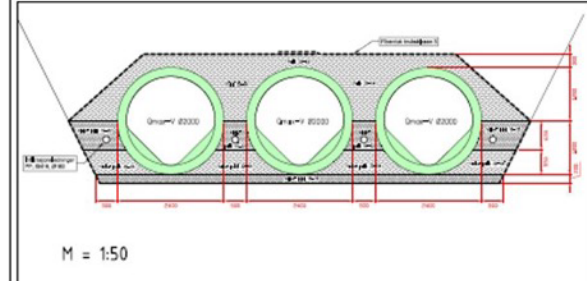
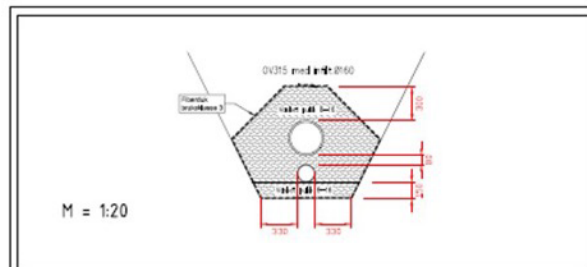
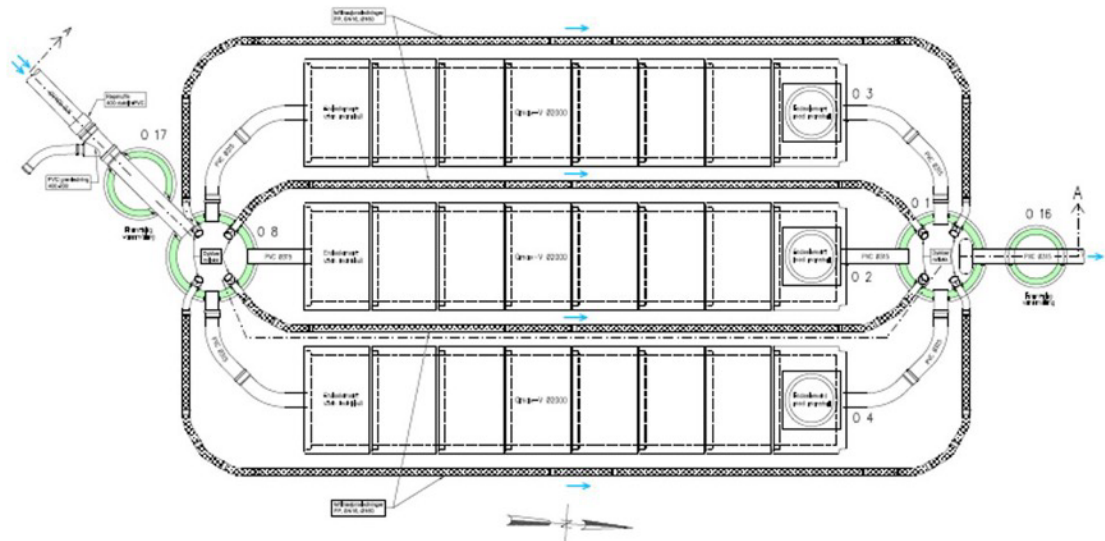


# Trondheim





M = 1:50



ARBEIDSTEGNING

	Oppdrager: A1726-24	Prosjektforingsgruppe <input type="radio"/> LARK: Agraff AS <input type="radio"/> RB: Multiconsult ASA <input type="radio"/> RE: Multiconsult ASA <input checked="" type="radio"/> RIVA: Multiconsult ASA <input type="radio"/> RV: Multiconsult ASA	Nedre Sl 29 3218 Trondheim Tlf: 47 48 25 95 f.wasson@multiconsult.no	Fase: Byggetrinn 2, Target Motpart: Trondheim kommune og PP, SN16, Ø160, Profanum Ø160 med full BS, 300 full p. motte.		Godkjent Kontroll prosjekt SV Tegning BS Dato 23.3.2018 Målestokk 1:50 og 1:20 (A1)	<table border="1"> <tr> <td>02</td> <td>Rev laget TF-liste for rev. 01</td> <td>25.04.2018</td> <td>BB</td> <td>SMV</td> <td>TF-18</td> </tr> <tr> <td>01</td> <td>Arbeids-tegning</td> <td>23.03.2018</td> <td>BB</td> <td>SMV</td> <td>HT</td> </tr> <tr> <td>01</td> <td>Forbuds-tegning</td> <td>14.12.2017</td> <td>BB</td> <td>KSE</td> <td>HT</td> </tr> <tr> <td>00</td> <td>Beskrivelse</td> <td></td> <td></td> <td>Tegn</td> <td>Kontr</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td>TF-liste</td> </tr> </table>	02	Rev laget TF-liste for rev. 01	25.04.2018	BB	SMV	TF-18	01	Arbeids-tegning	23.03.2018	BB	SMV	HT	01	Forbuds-tegning	14.12.2017	BB	KSE	HT	00	Beskrivelse			Tegn	Kontr						TF-liste
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Oppdragsleder: Trondheim Kommune Erling Skakkas gate 14, Trondheim	Godtaksreferanse: Kartplan (X,Y) NTH Høyde/Referanse: N10200	Skjøttveien 75 3327 Trondheim Tlf: 75 40 42 60 trondh@multiconsult.no	Prosjekt Trondheim Kommune Erling Skakkas gate 14, Trondheim	Tegningsnr. Byggetrinn 2 - Target Detaljtegning infiltrasjonsanlegg TF-liste GH-01	Tegningsnr. GH-206 Revisjon: 02																																



