

# On the transition to the new Swedish height system RH 2000

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The logo for Lantmäteriet, featuring a stylized red and white horizontal bar with a small green square on the left.

## Outline

- Background: Local control networks in Sweden
- Lantmäteriet has developed routines to help local authorities to do their transition from local height systems to the new national height system RH 2000
  - Readjustment of old levelling data
  - Alternative methods
- Concluding remarks

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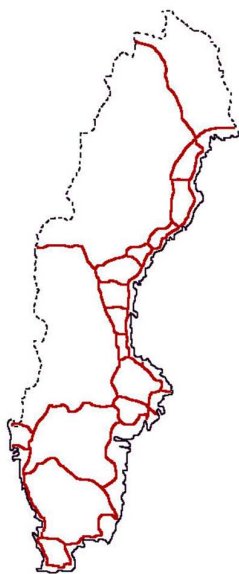
## Background

- Old local height systems
  - Not strongly linked to national height system
  - Because of the way the networks are established → systems are often distorted
  - More or less every local authority has its own height system
- Each municipality is responsible for its own geodetic control networks
- Lantmäteriet can only give advise

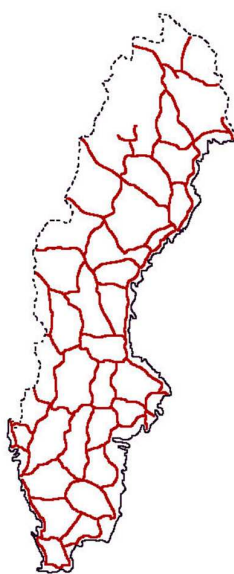
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## Precise levelling networks of Sweden



First precise levelling  
1886-1905



Second precise levelling  
1951-1967

Third precise levelling  
1979-2001

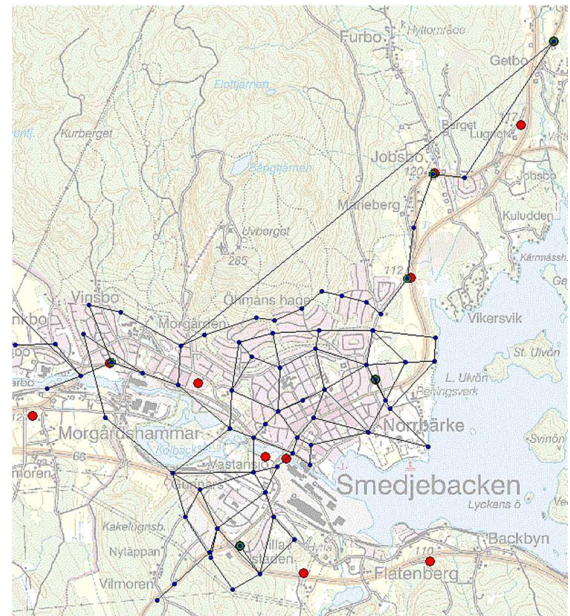


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## Preferred method for transition

- Readjustment of old levelling data
  - Municipalities compile and deliver old levelling data to Lantmäteriet
  - Connection to RH 2000 benchmarks of national precise levelling
  - Adjustment

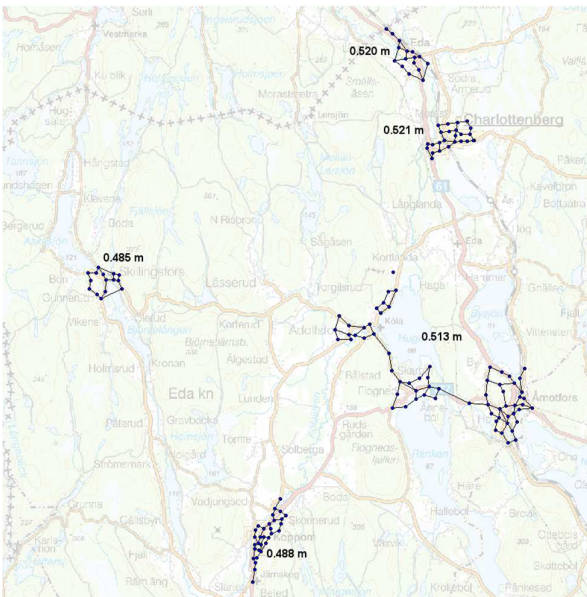


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## Comparison of heights

- New RH 2000 heights of local network are compared to old local heights
- The obtained system difference(s) can be used for transformation of other height data



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## Alternative methods

- No local levelling data, but national precise levelling available: Level loops of local benchmarks to obtain a number of RH 2000 heights, and system difference for other data.
- National precise levelling not available: Survey local benchmarks by GNSS to obtain absolute RH 2000 position, and adjust the old levelling data with minimal constraints.
- Neither local levelling data, nor national precise levelling available: Obtain RH 2000 heights by GNSS for a number of local benchmarks, to get system difference only for transformation of height data.

## Concluding remarks

- By analysing the local height system → good knowledge of existing deficiencies
- Transition to RH 2000 gives further advantages
  - Same height reference in all parts of the municipality
  - Decreased risk of mixing different height systems
  - Data in a well-known high quality reference frame are more attractive to external users
  - Data exchange between users/producers is facilitated
  - Opportunity to use GNSS technology – in combination with national geoid model – for a wider range of applications
- Information activities are crucial

