

Presented at the FIG Working Week 2016,  
May 2-6, 2016 in Christchurch, New Zealand

# Use of Cadastral Data in Recovery from Disaster - Quality Issues

*The Norwegian cadastre as a tool for reconstruction of boundaries*

*FIG WW 2016 Christchurch*

*Leiv Bjarte Mjøs*

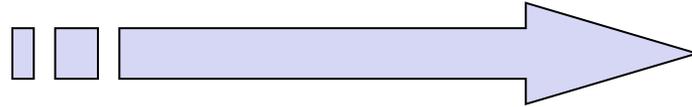
*Associate professor, Bergen University College*



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1. Concept of boundary registration.
2. City fire in Bergen in 2008
3. How to better meet the needs?

# Concept of boundary registration in Norway



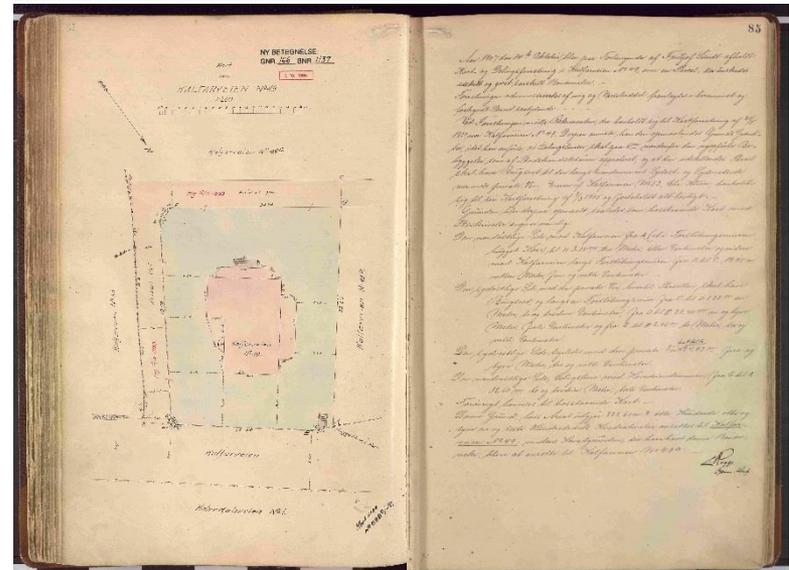
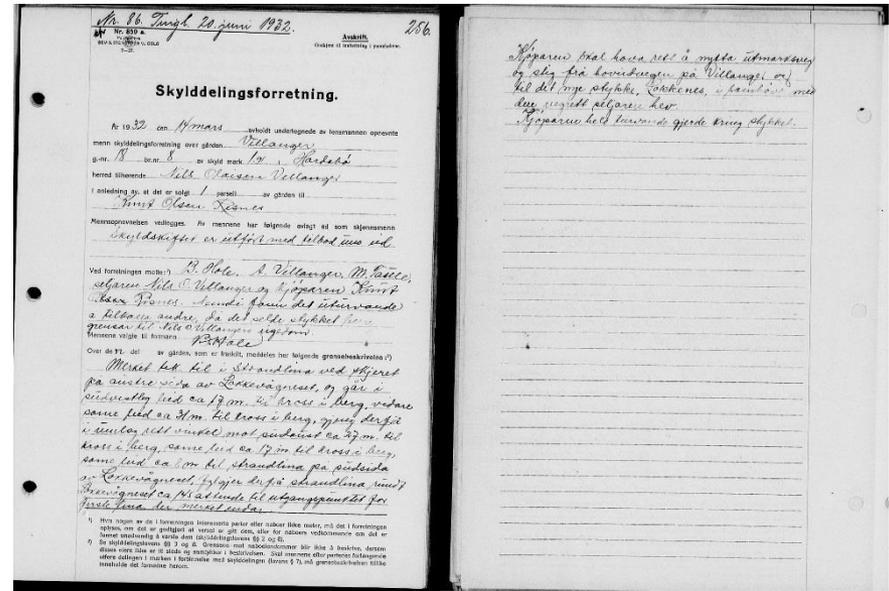


# The 1800s

- While neighbouring countries and elsewhere in central Europe made nationwide cadastral maps in the 1800s, this did not take place in Norway

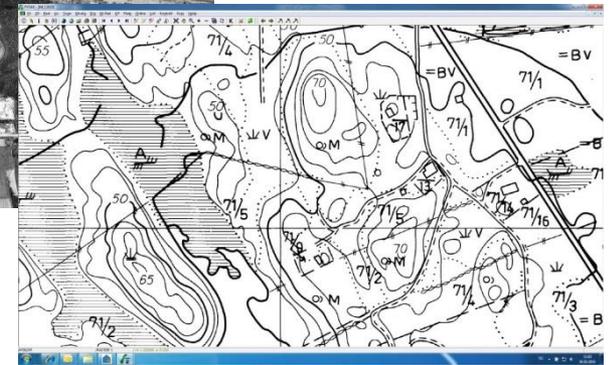
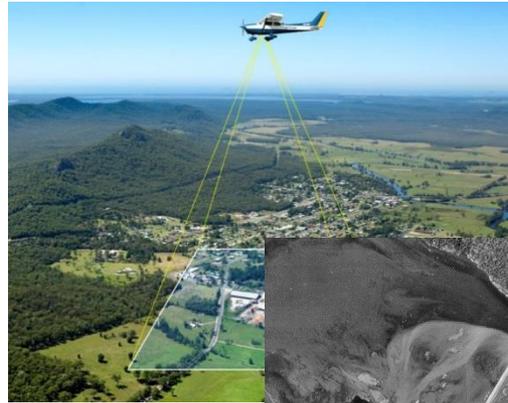
# Boundary registration up to 1980

- Rural areas
  - Written descriptions by laymen
  - Land consolidation maps
- Cities and towns
  - Cadastral mapping
  - Coordinates from latter 1920s



# Economic mapping project

- Cadastral mapping in rural areas firstly from 1960 in Norway
  - the Economic mapping project
  - triggered by the needs for land planning and control
  - Areal photogrammetry

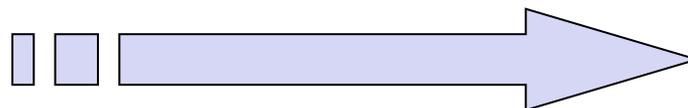


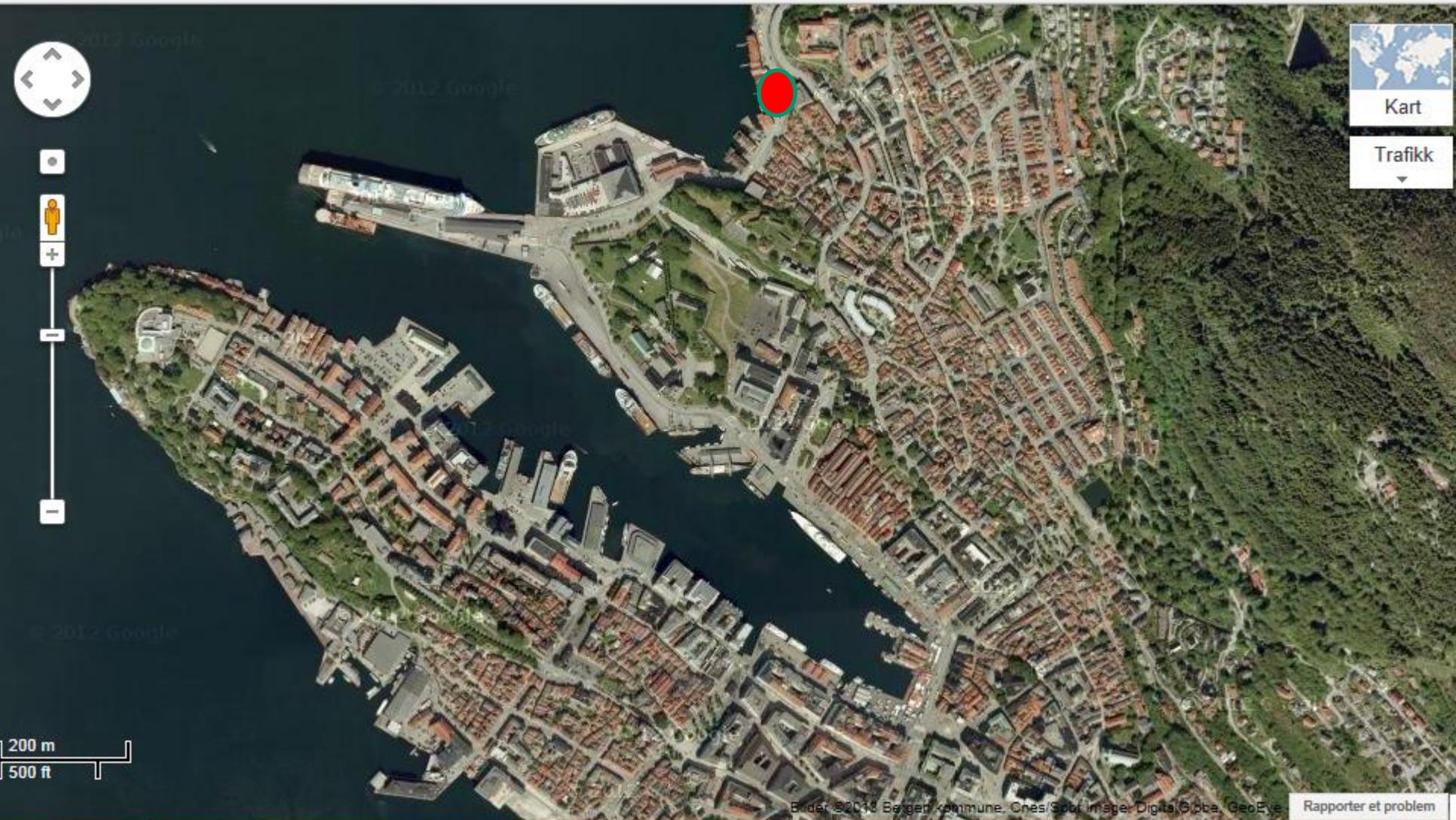






# Case Skuteviksboder





Kart

Trafikk

200 m  
500 ft

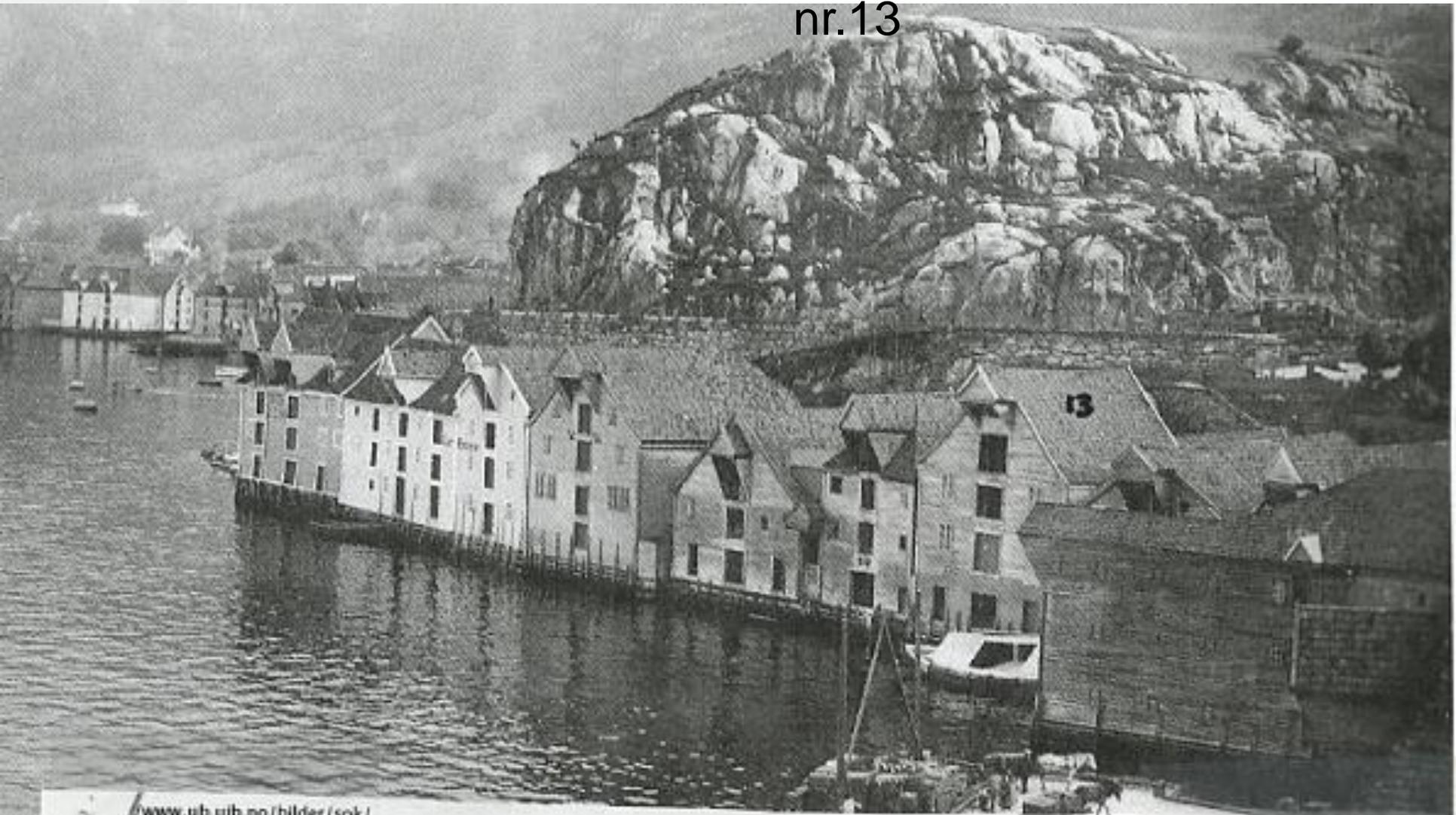
Bilder ©2013 Bergen kommune, Cnes/Spot Image, DigitalGlobe, GeoEye

Rapporter et problem



NO 18:43  
12.02.2013

# Skuteviksboden nr.13







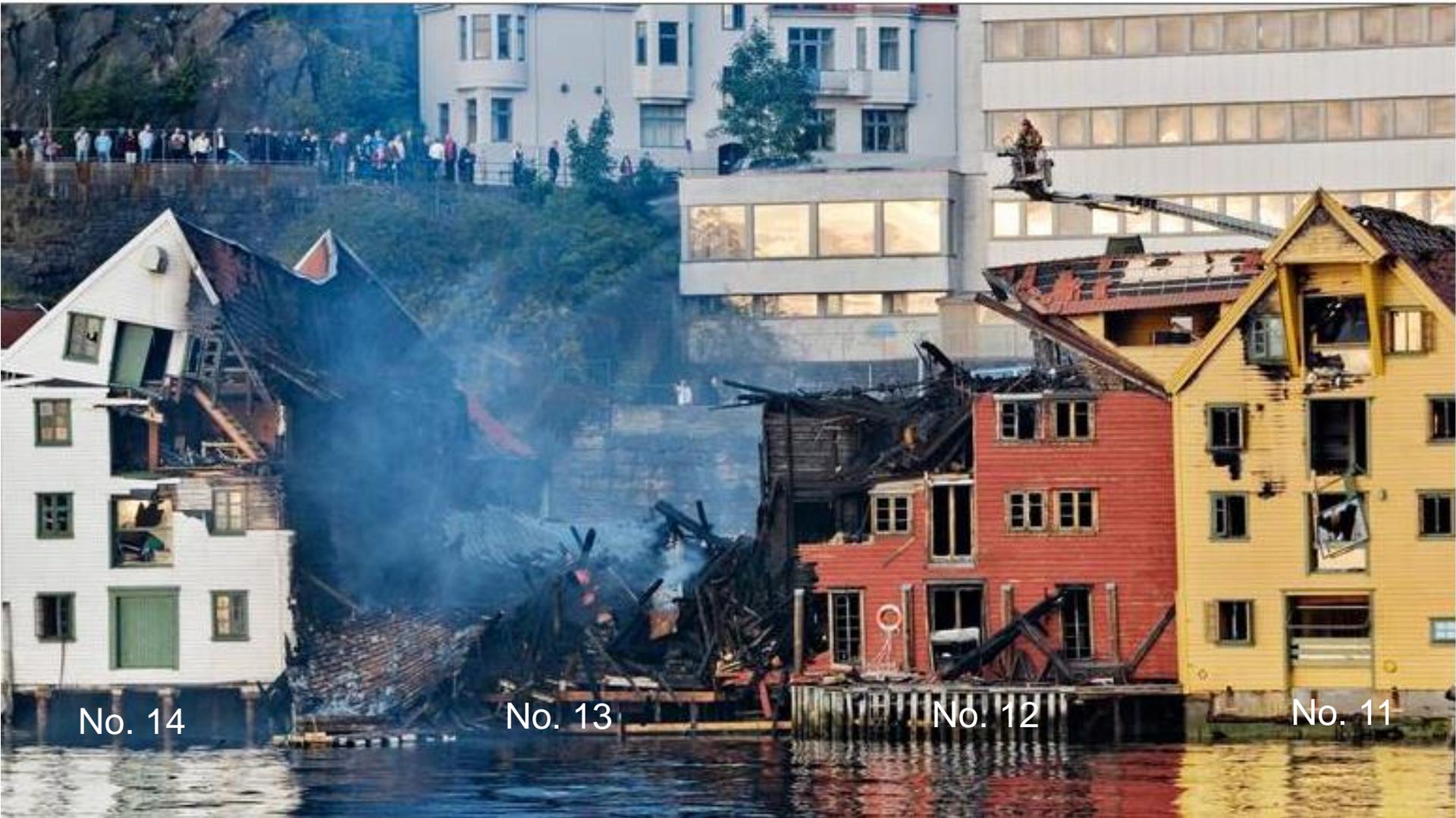




Kart

Trafikk





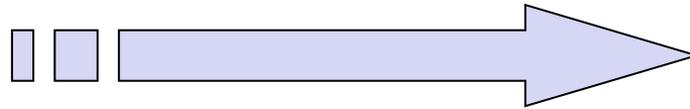
No. 14

No. 13

No. 12

No. 11

Agreements on reconstruction are entered, based on survey certificates from 1914 and 1920







fra matrikkelen og grunnboken

Søk → ×

eks: Grensen 8, Oslo

Søk

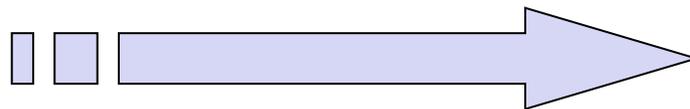
Søkekilder [+]

Skutevik



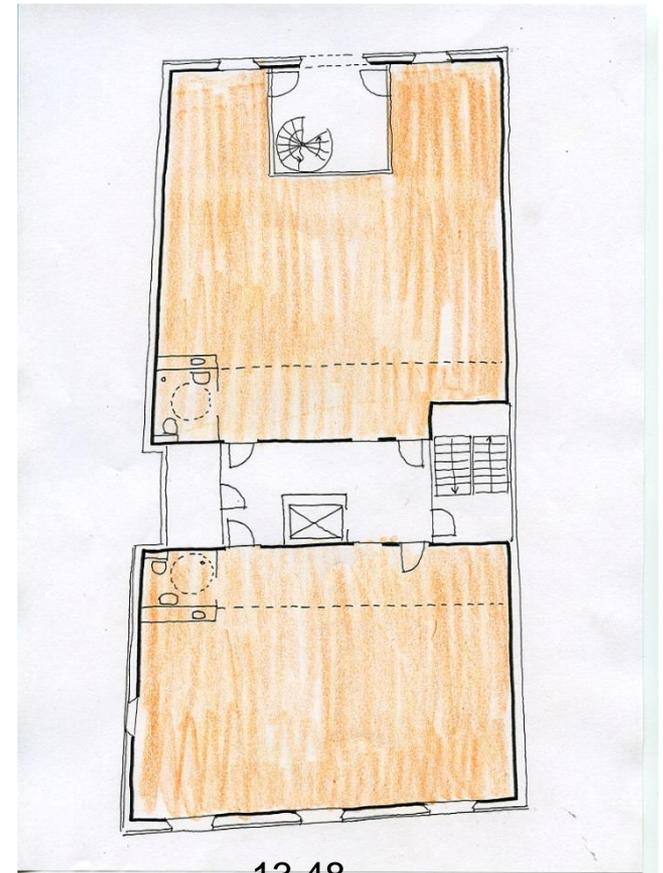


There are discussions



# New building planned on no. 13

- Disagreements occurs about how the building shall be positioned
- How «unravel the tangle» ?



13,48

Leviksbod.

N<sup>o</sup> 13.

Alternativ 1

Alternativ 2

C' 0.30  
C 0.44

13.48.

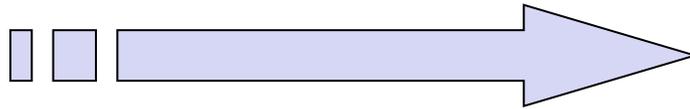
0.32  
A  
0.75

Alternativ 3

Kva er egentlig A – B?



Bergen City Archives are searched  
for more detailed information



No 13. ✓

636.00 m<sup>2</sup>

9.25.

Skuteviksbod

No 12.

12.73.

12.77.

veg. 0.46. veg.

0.32. 0.44.

B

Skuteviksbod.

No 13.

13.18

Baden i Grunden.

13.16.

10.34.

10.27.

3.18.

13.18.

0.82.

0.11

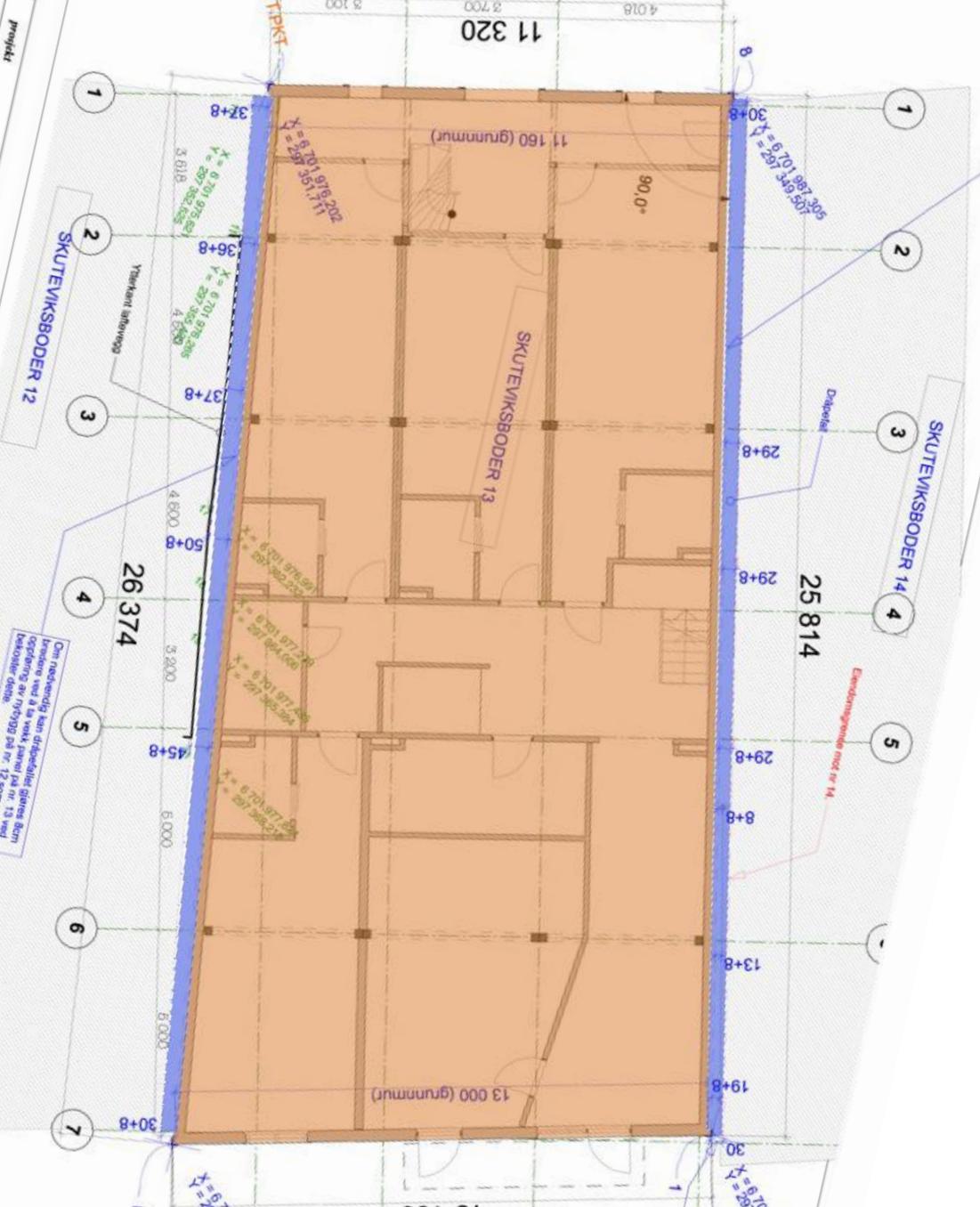
24 Rade No 175a.

S

8

S

Skive i delområdet  
disponibelt som brostene



prosjekt  
Skuteviksboder 13  
Snr/Bnr 167/881

D	Målestokk	Skive nr 12	17.01.13	
C	Prosjektleder	Per Arne Rasmussen	18.01.13	
A	Prosjektleder	Per Arne Rasmussen	18.01.13	
REV.	Drømt med nr nr 14	Per Arne Rasmussen	18.01.13	
	ENDRINGEN GJELDER			
	PRØV			
	KONTR.			

Om nødvendigt kan dristedelet gjenvises. Børn  
brosjyre nr 14, 15 og 16 på nr. 13 med  
vedlegg av nr. 17 og 18 på nr. 12 som også  
brosjyre dekke.

**DETALPROSJEKT**  
Koordinatplan for byggets plassering

Kontak

MAK

1:100 / A3 20.12.12

**INKLUSIV**

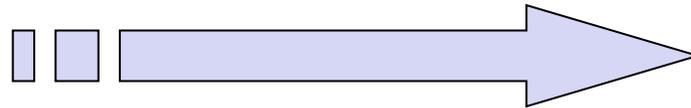
Bertram D. B.  
siv ark. MM

Pnr: 037

A3:1



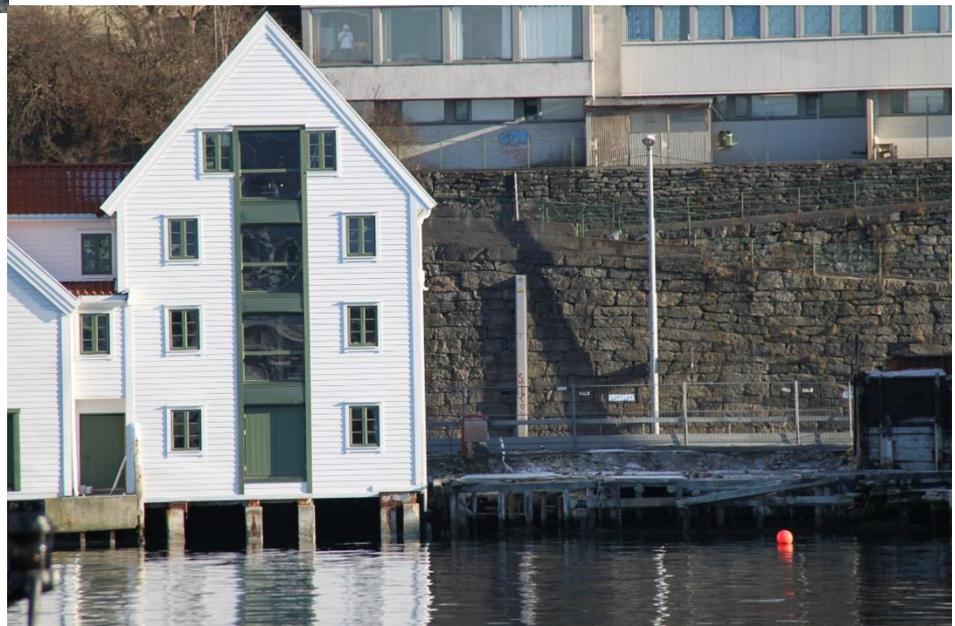
There are new discussions about  
the width of the plot towards the  
sea



Survey certificate of 1914: 24,33 m  
Construction map: 24,26 m  
Measured 1.2.2013: 24,04 m

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# The solution

THE PARTIES AGREE ABOUT THE  
REBUILDING OF THE NEW BUILDING  
ON SKUTEVIKSBOEDER 13



Alternative: the courts



12.3.2014 – Recovered



# Se eiendom

trikkelen og grunnboken

+ x

Grensens 8, Oslo

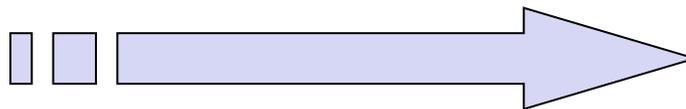
Søk

Søkekilder [+]





How better meet the challenges



# Discussion

- The case highlights the strong standing of the freedom to enter into contracts in Norway
- The solution was found in professional attitude and negotiations
- The cadastral map and its coordinates does not have sufficient quality for reconstruction of boundaries and positioning of buildings after fires in dense built areas
- Normally coordinates with accuracy 0,1 m will have sufficient quality in rural areas
  - But what if the coordinates are not correct?
- Coordinates as boundary evidence have clear limitations
  - There are no regulations in Norwegian law giving coordinates any legal significance, and coordinates have low evidentiary value in court; Rt-2000-1325
  - Accuracy of 10 cm is anyway not good enough where it is cramped for space and land values are very high (eg. in city centers)

# Finally

- We can better meet the challenges in the Norwegian cadastral system by strengthening the role of the surveyor, more than only to handle coordinates
- Is there also a need to return to the old ways of boundary documentation, by distances to local points like corners of houses, walls and other fixed points?



**Thank you!**