

## Supplementary information

1, The figure below shows how the Mjøndalen bridge is defined in the model.

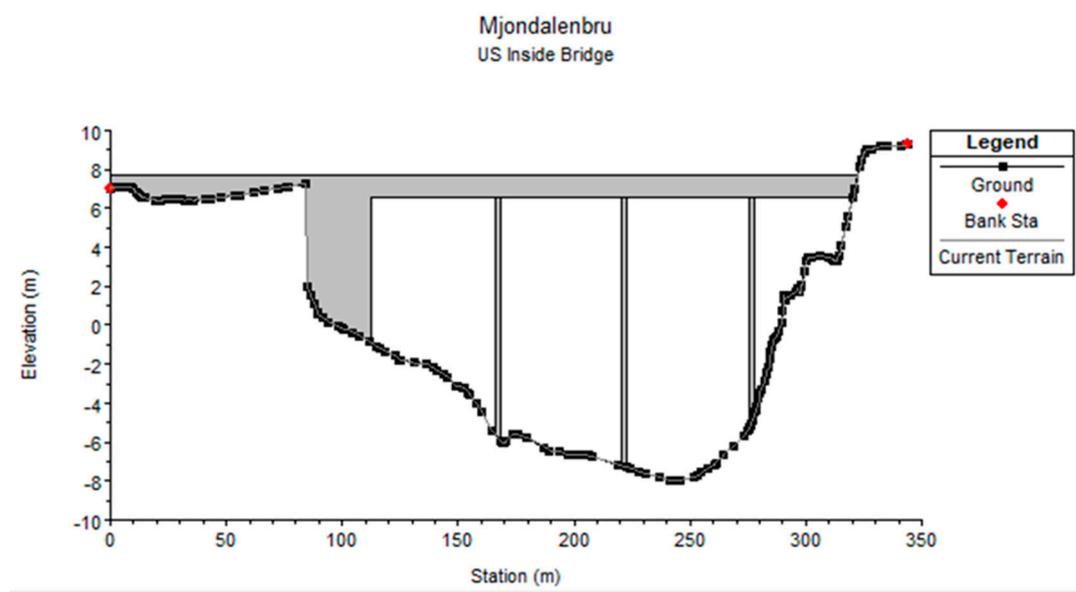


Figure S1 definition of Mjøndalen bridge in the model.

2 An excel-based flood cost estimation tool that includes the depth damage relationships is provided as an excel file.

### 3 FLOOD HAZARD MAPS FOR REPITITION INTERVALS

100 years

Flood intensity

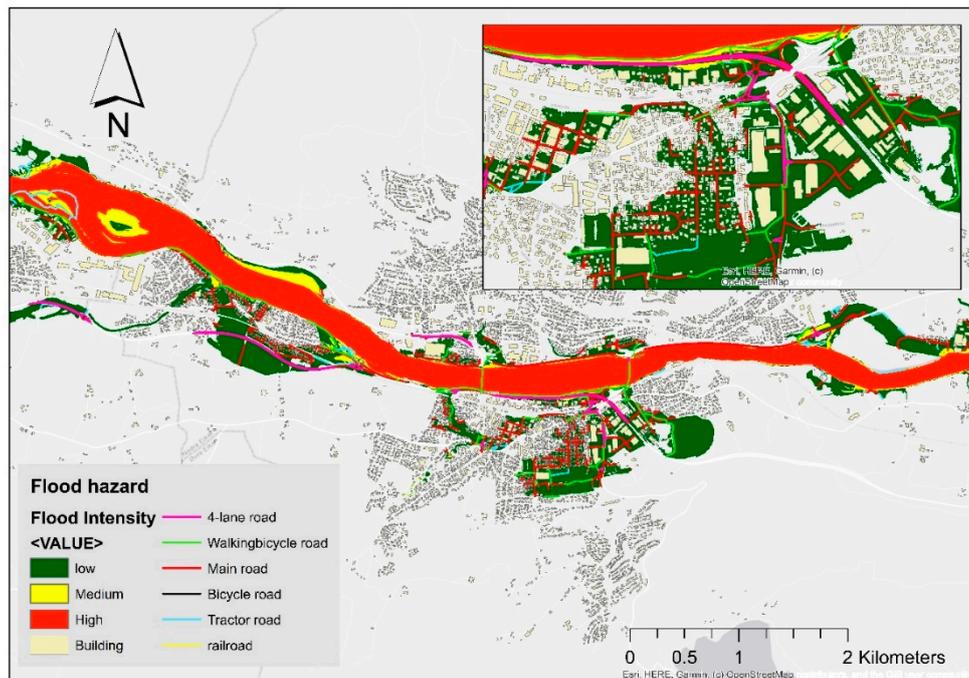


Figure S2 Flood intensity in the model area for the 100-year flood scenario under current climate.

Flood depth

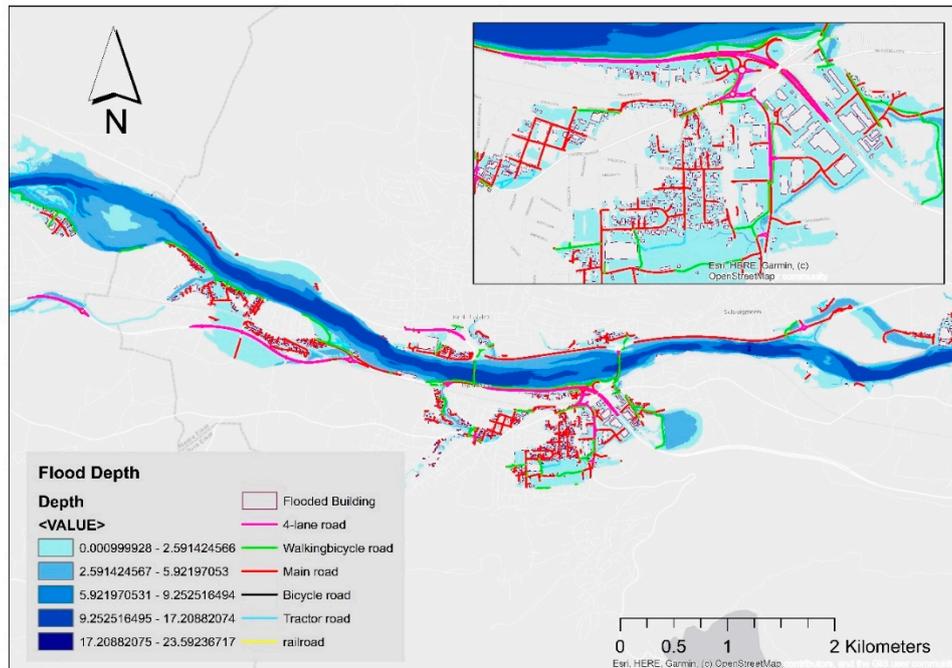


Figure S3 Water depth resulted from 100-year flood under current climate.

Flood Extent

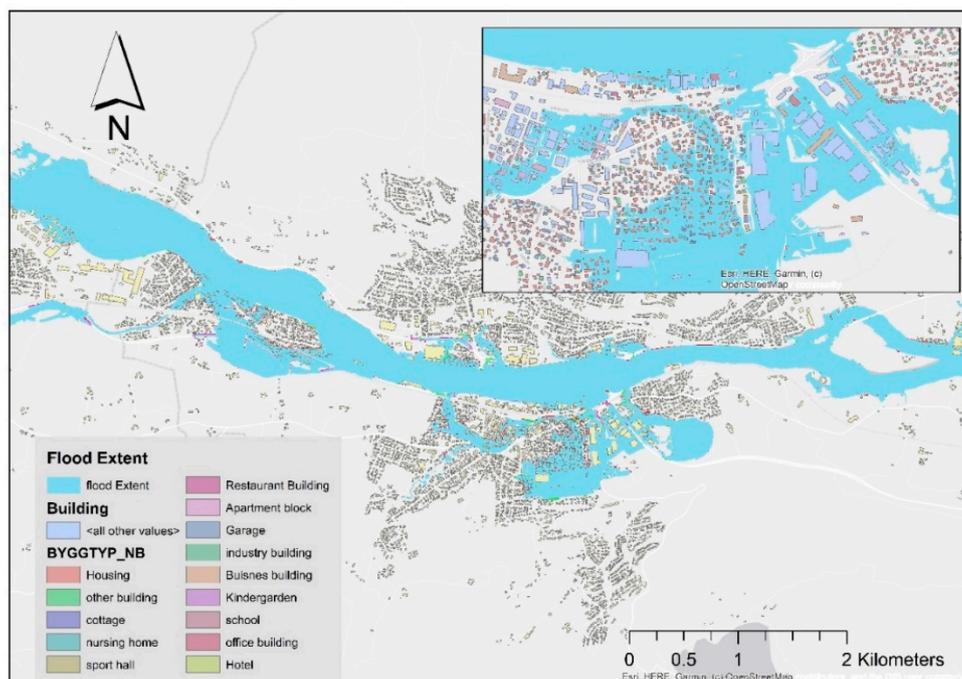


Figure S4 Flood inundation map of 100-year load under current climate. the colours in the above figures show different types of buildings and flooded surface in the study area.

Flood velocity

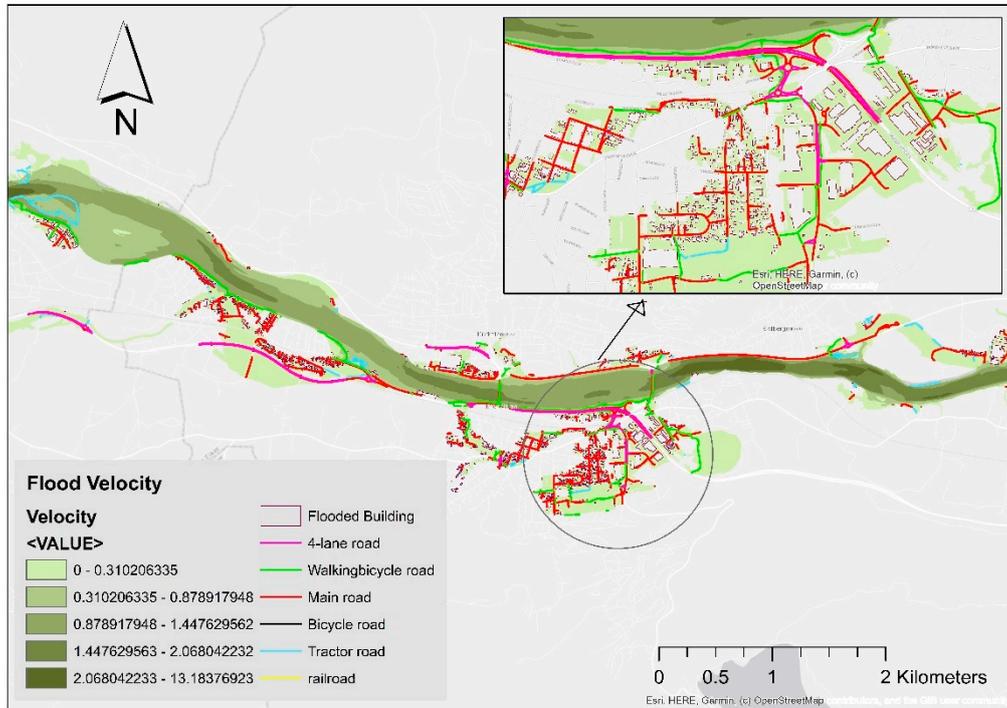


Figure S5 Flood velocities resulted from 100-year flood under current climate.

500 year

Flood intensity

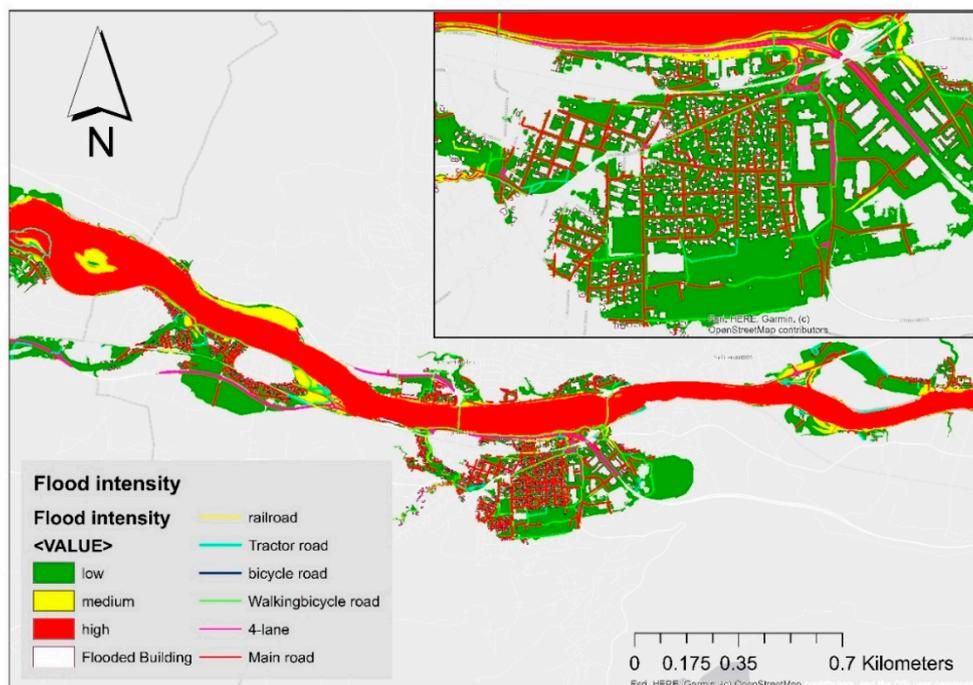


Figure S6 Flood intensity in the model area for the 500-year flood scenario under current climate.

Flood depth

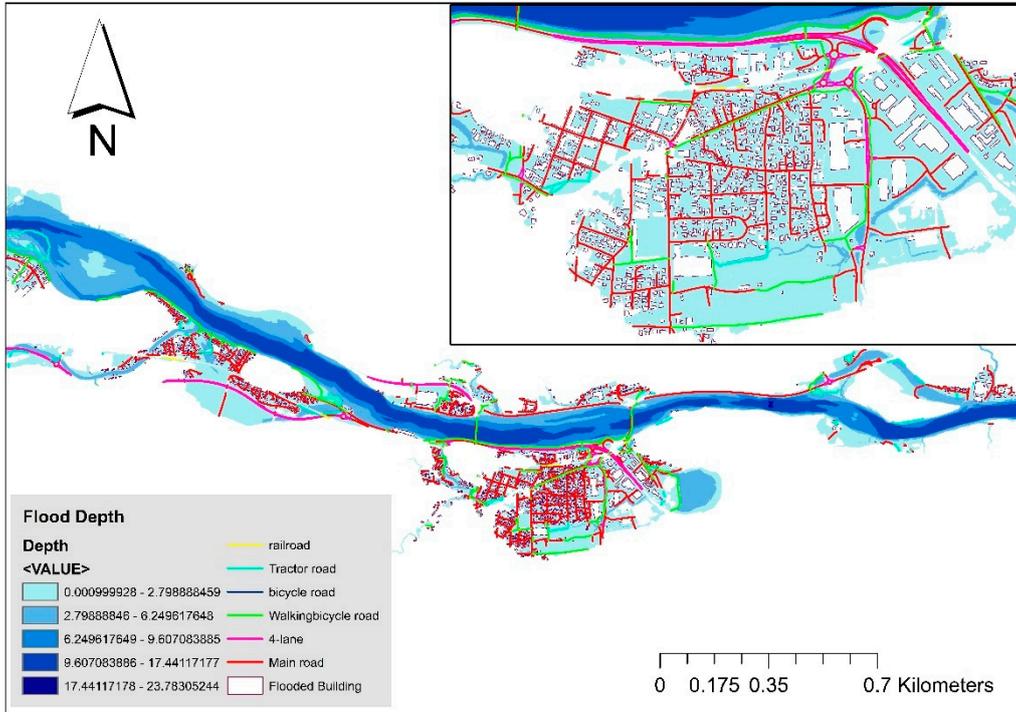


Figure S1 Water depth resulted from 500-year flood under current climate.

Flood Extent

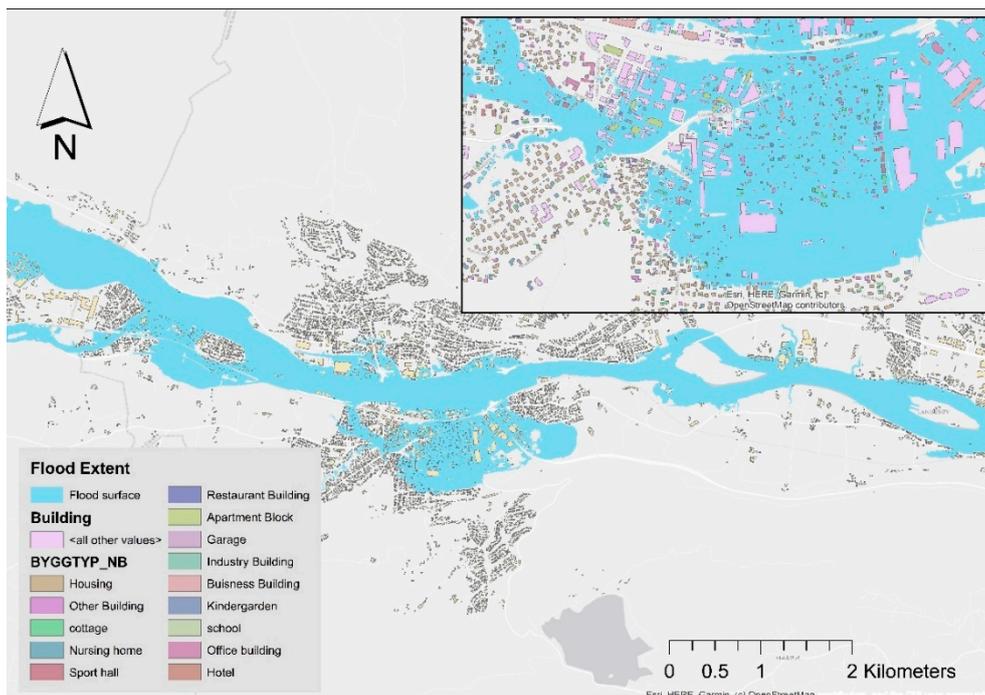


Figure S8 Flood inundation map of 500-year load under current climate. the colours in the above figures show different types of buildings and flooded surface in the study area.

Flood velocity



Figure S9 Flood velocities resulted from 500-year flood under current climate.

1000 year

Flood intensity

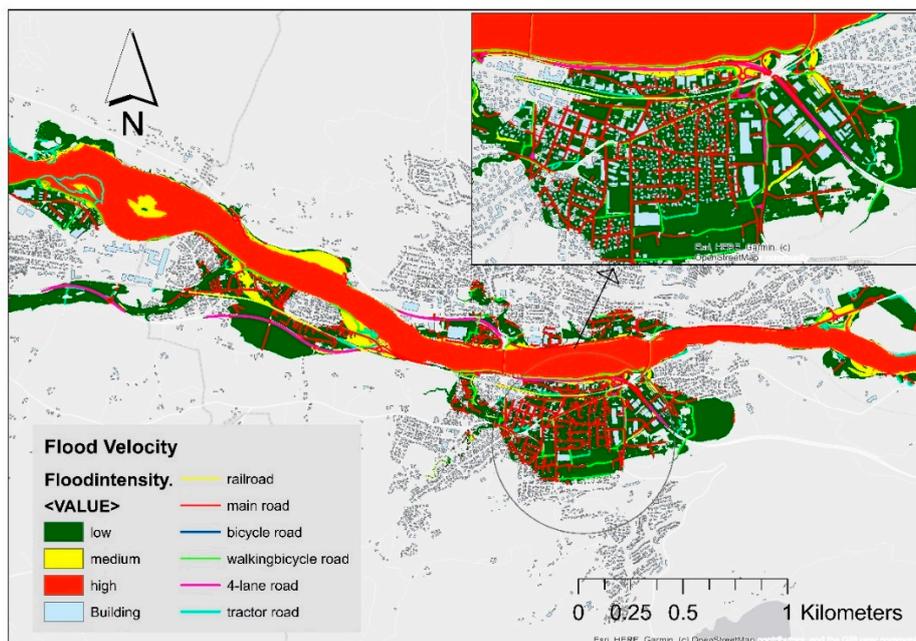


Figure S10 Flood intensity in the model area for the 1000-year flood scenario under current climate.

Flood depth

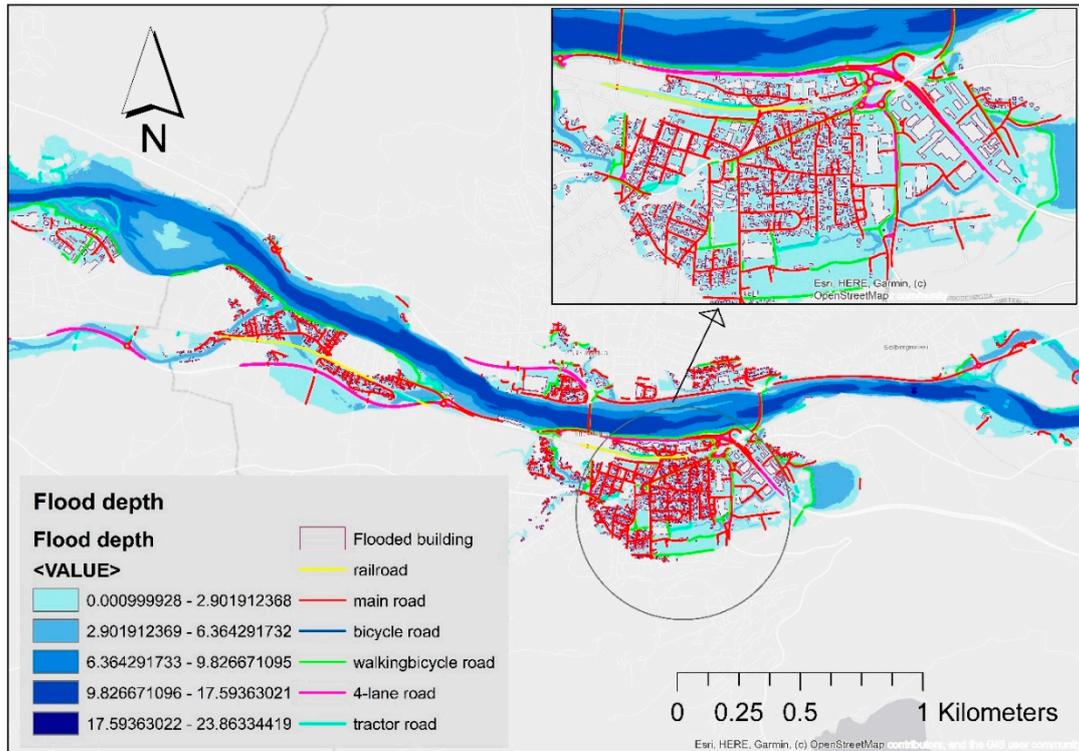


Figure S11 Water depth resulted from 1000- year flood under current climate.

Flood Extent

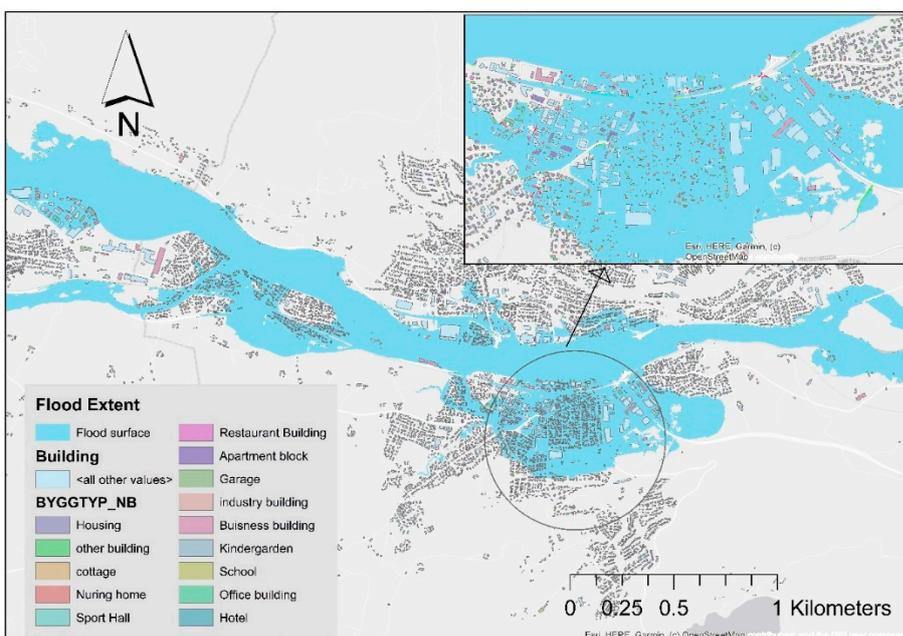


Figure S12 Flood inundation map of 1000-year lood under current climate. the colours in the above figures show different types of buildings and flooded surface in the study area.

Flood velocity

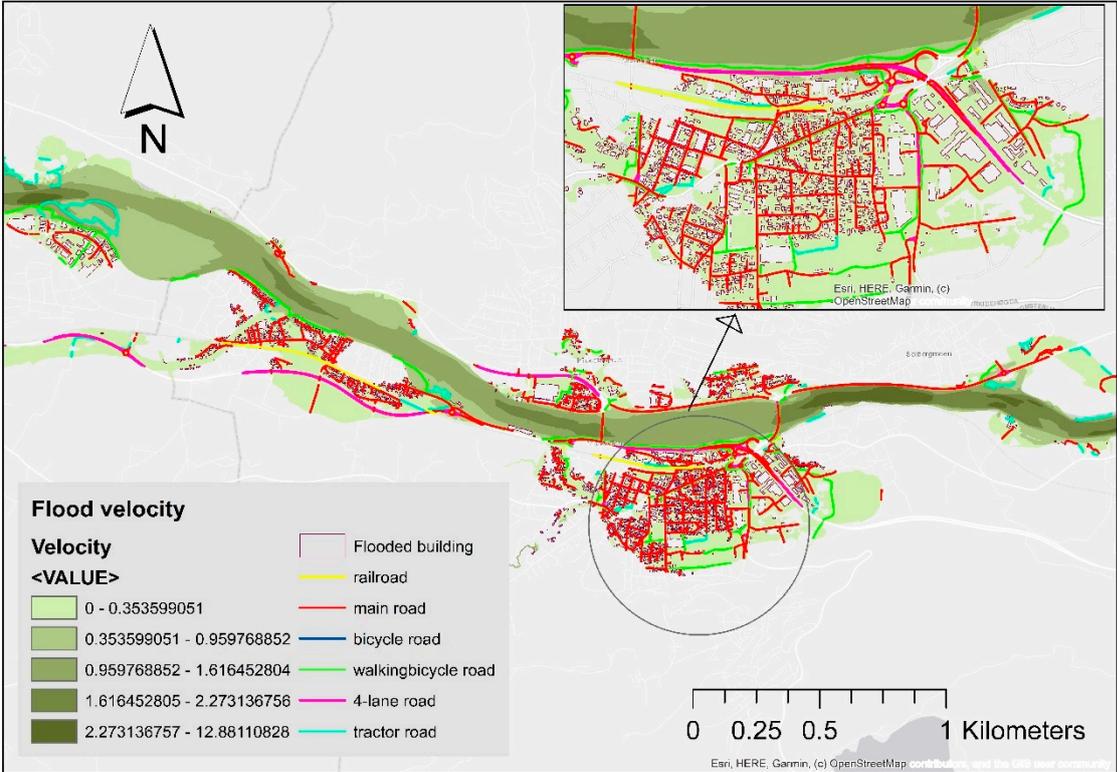


Figure S13 Flood velocities resulted from 1000-year flood under current climate.

Table S1 The number of flood-affected buildings at various recurrence intervals.

Types of building	Number of affected buildings													
	100yr Basement 0-1 m	100yr Basement 0-1 m >1 m	200yr Basement 0-1 m	200yr Basement 0-1 m >1 m	500yr Basement 0-1 m	500yr Basement 0-1 m >1 m	1000yr Basement 0-1 m	1000yr Basement 0-1 m >1 m	200yrfut Basement 0-1 m	200yrfut Basement 0-1 m >1 m				
Shed, garage	0	578	87	718	0	141	862	227	0	921	358	0	786	200
Cottage	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Housing, three	687	4	34	6	908	36	1125	8	38	1311	16	40	1040	44
Housing, wall														
Housing, concrete	2	0	0	0	3	0	3	0	0	4	0	0	4	0
Apartment block, three														
Apartment block, concrete	55	0	4	0	73	0	93	0	4	113	0	5	104	5
Operating buildings etc.														
Business building, wood														
Commercial building, concrete	31	0	0	0	36	0	48	0	1	56	0	1	59	0
Commercial building, metal														
Office building, wood														
Office building, concrete	42	0	3	0	51	0	66	1	3	79	2	3	80	0
Office building, metal														
Industrial building, wood														
Industrial building, concrete	200	8	16	7	239	18	270	12	21	293	19	23	305	20
Industrial building, metal														
Hotel, three														
Hotel, concrete	21	0	1	0	21	0	26	0	1	27	0	1	29	0
Hotel, metal														
Restaurant, three														
Restaurant, concrete	9	0	0	0	10	0	11	0	0	12	0	0	11	0
Place of service, metal														
School, three														
School, concrete	6	0	0	0	8	0	7	1	0	8	1	0	8	0
School, metal														
Kindergarten, three														
Kindergarten, concrete	2	0	0	0	2	0	4	0	0	5	0	0	4	0
Kindergarten, metal														
Nursing home, three														
Nursing home, concrete	0	0	0	0	2	0	3	0	0	6	0	0	4	0
Nursing home, metal														
Hospital, three	1	0	0	0	2	0	2	0	0	5	0	0	3	0
Hospital, concrete														
Hospital, metal														
Sports hall, three														
Sports hall, concrete	7	0	0	0	10	0	11	0	0	10	1	0	11	0
Sports hall, metal														
Sports field, artificial turf														
Sports field, grass / gravel														
Other buildings, wood														
Other buildings, concrete	73	0	5	0	94	6	113	2	6	121	2	6	128	6
Other buildings, metal														

Table S2 length of flood-affected infrastructure at various recurrence intervals in meters.

infrastructure	100yr	200yr	500yr	1000yr	200yrfut
Tractor Road	10408.4	10408.4	12016.69	12687.37	11944.94

Forest Road					
Private road, gravel	10030.03	11810.76	13856.32	15539.23	15175.59
Privat vei, fast dekke	10030.03	11810.76	13856.32	15539.23	15175.59
Municipality road, gravel					
Municipality road, asfalt	25768.24	29384.07	38885.31	44398.96	39883.74
County road	8702.214	9225.628	11264.42	12241.22	11982.33
Highway road, 2 lane	6159.706	6355.951	6780.632	6976.447	7126.349
Highway road, 4 lane	4855.274	4855.274	5573.684	5856.87	5714.659
Jernbane enkeltspor	1806.749	1806.749	2576.827	4734.242	3033.92