

## Supplementary information

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

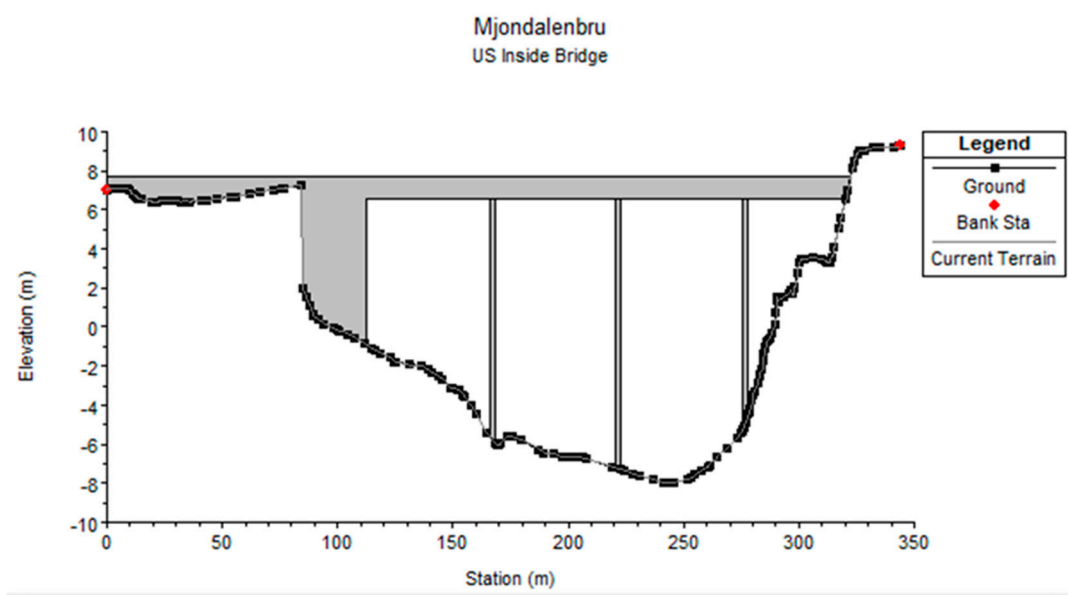


Figure S1 definition of Mjøndalen bridge in the model.

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

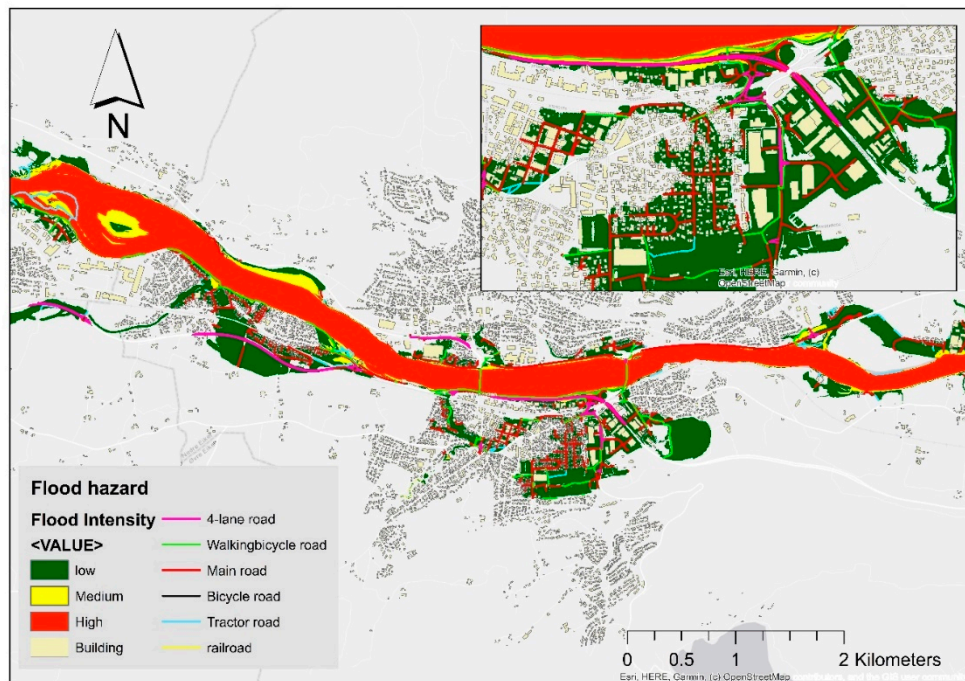


Figure S2 Flood intensity in the model area for the 100-year flood scenario under current climate.

Flood depth

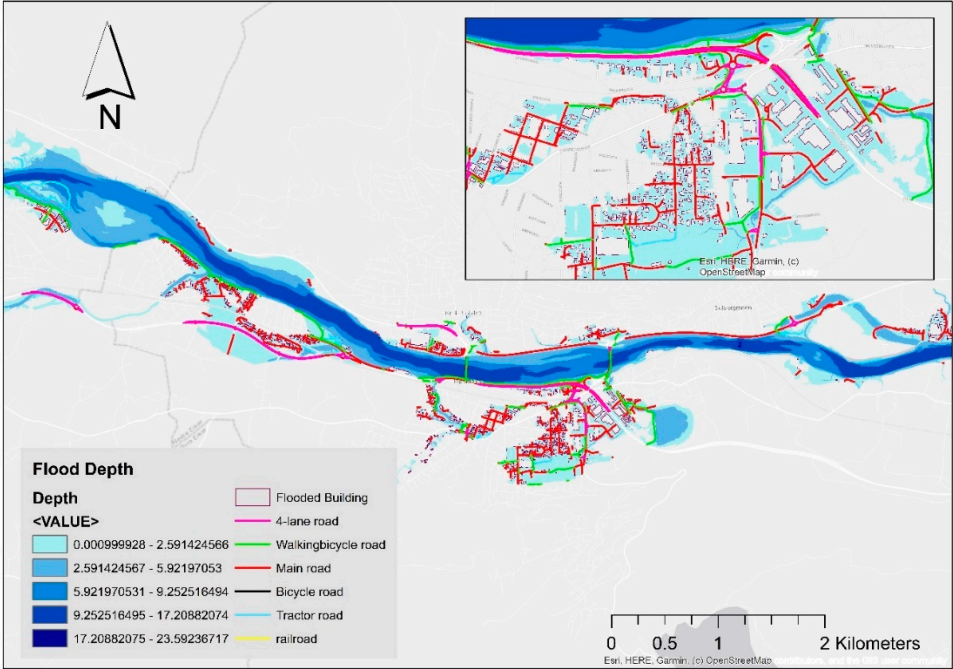


Figure S3 Water depth resulted from 100-year flood under current climate.

Flood Extent

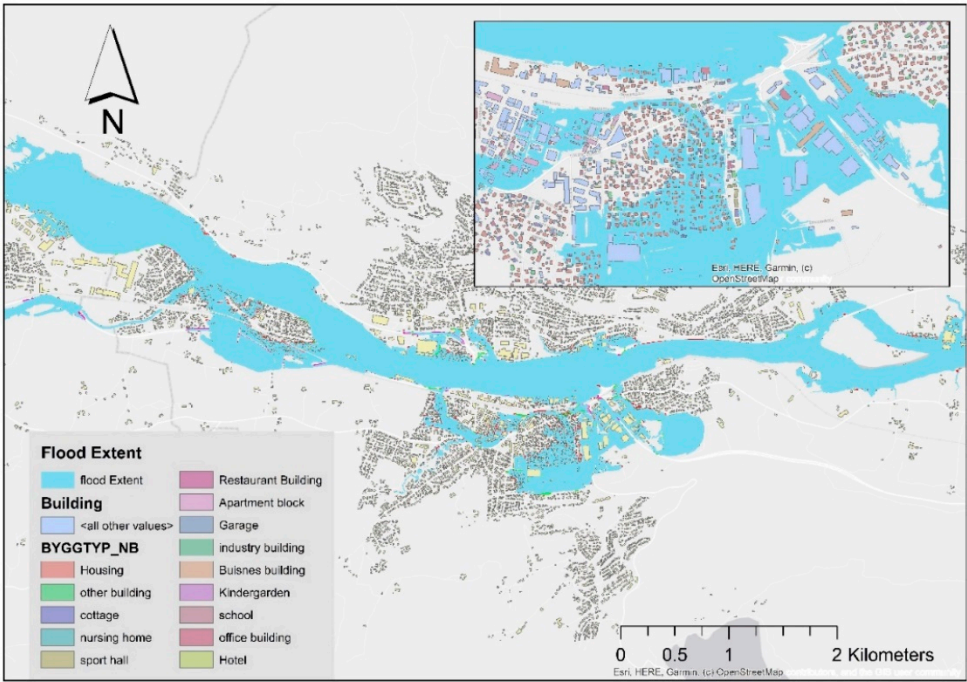


Figure S4 Flood inundation map of 100-year load under current climate. the colours in the above figures show different types of buildings and flooded surface in the study area.

Flood velocity

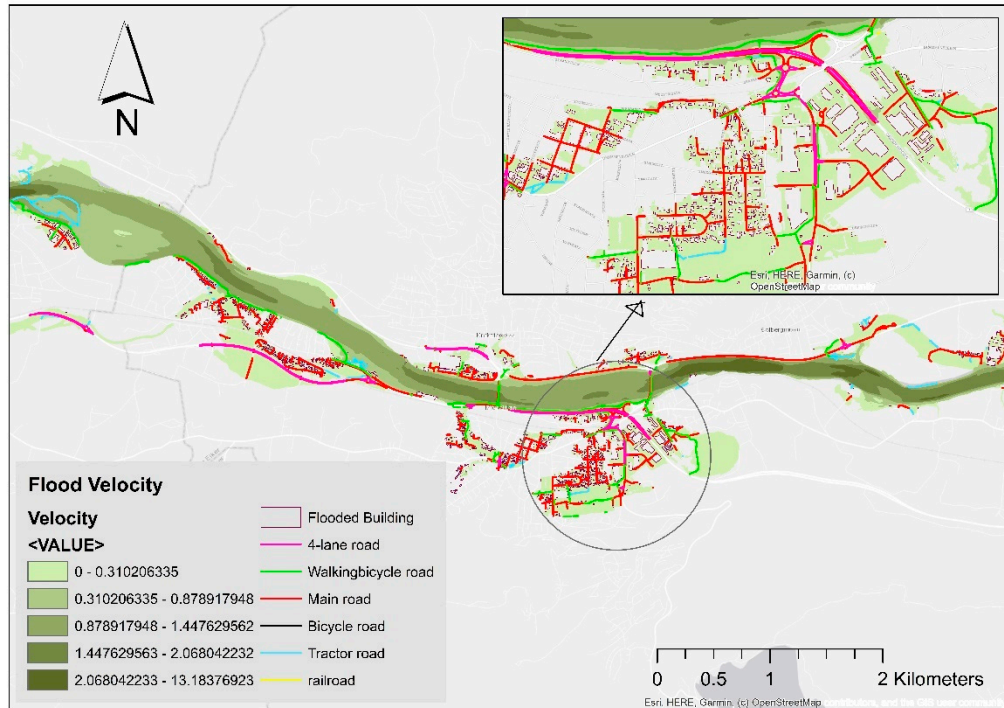


Figure S5 Flood velocities resulted from 100-year flood under current climate.

500 year

Flood intensity

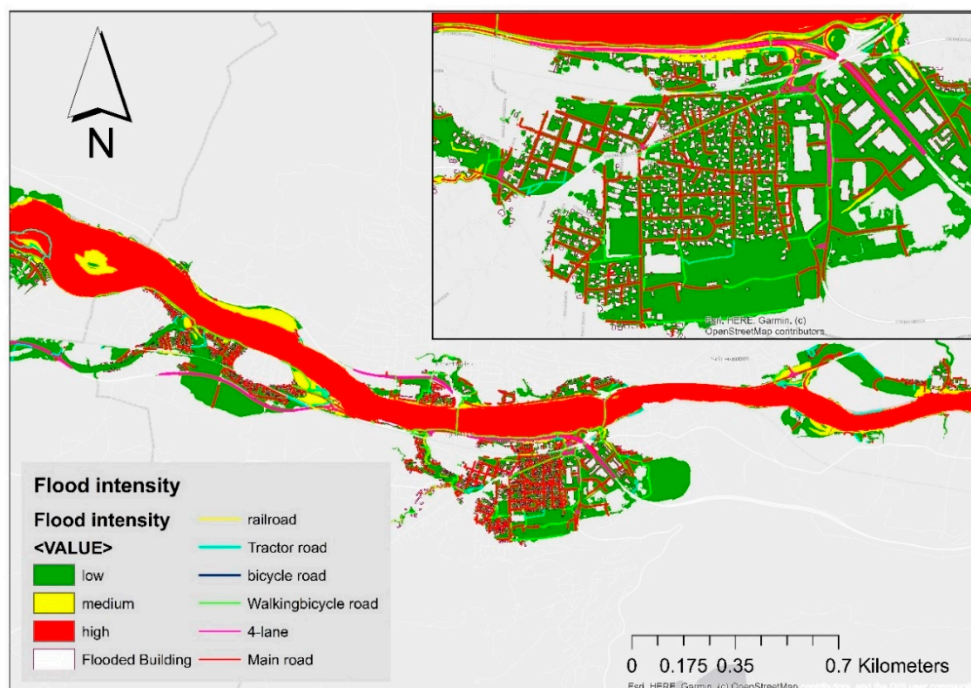




Figure S6 Flood intensity in the model area for the 500-year flood scenario under current climate.

Flood depth

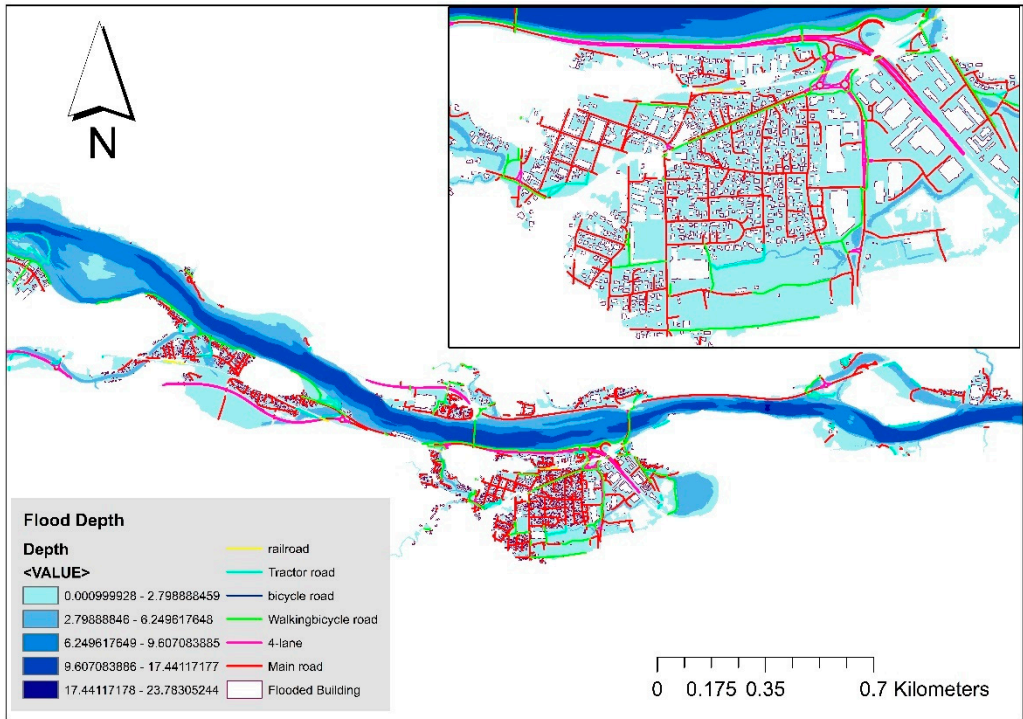


Figure S1 Water depth resulted from 500-year flood under current climate.

Flood Extent

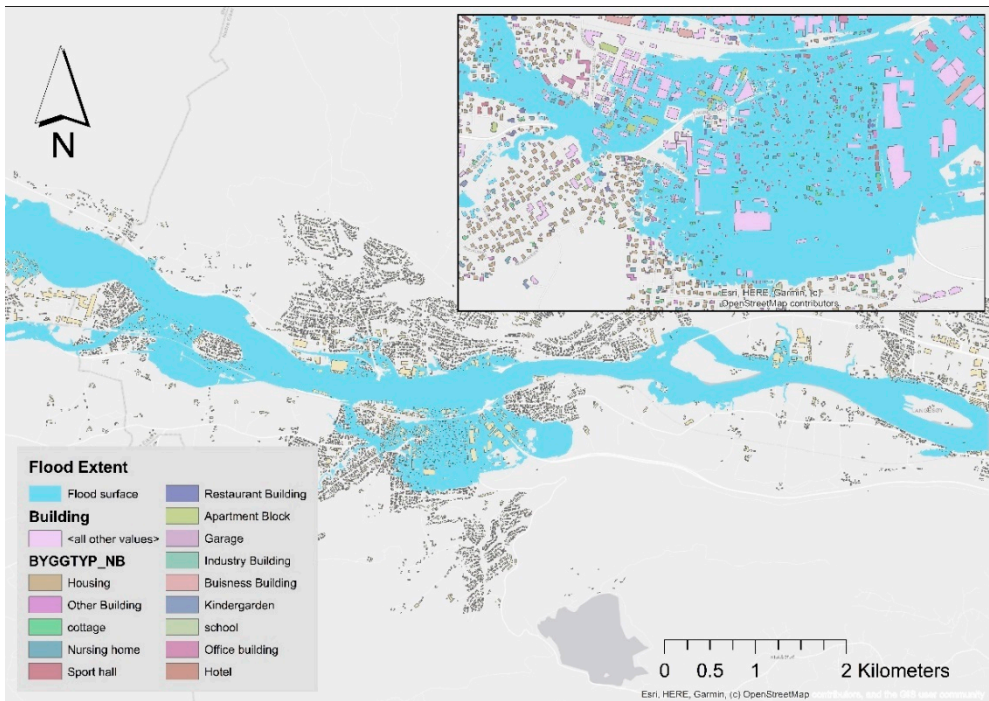


Figure S8 Flood inundation map of 500-year lood under current climate. the colours in the above figures show different types of buildings and flooded surface in the study area.

Flood velocity

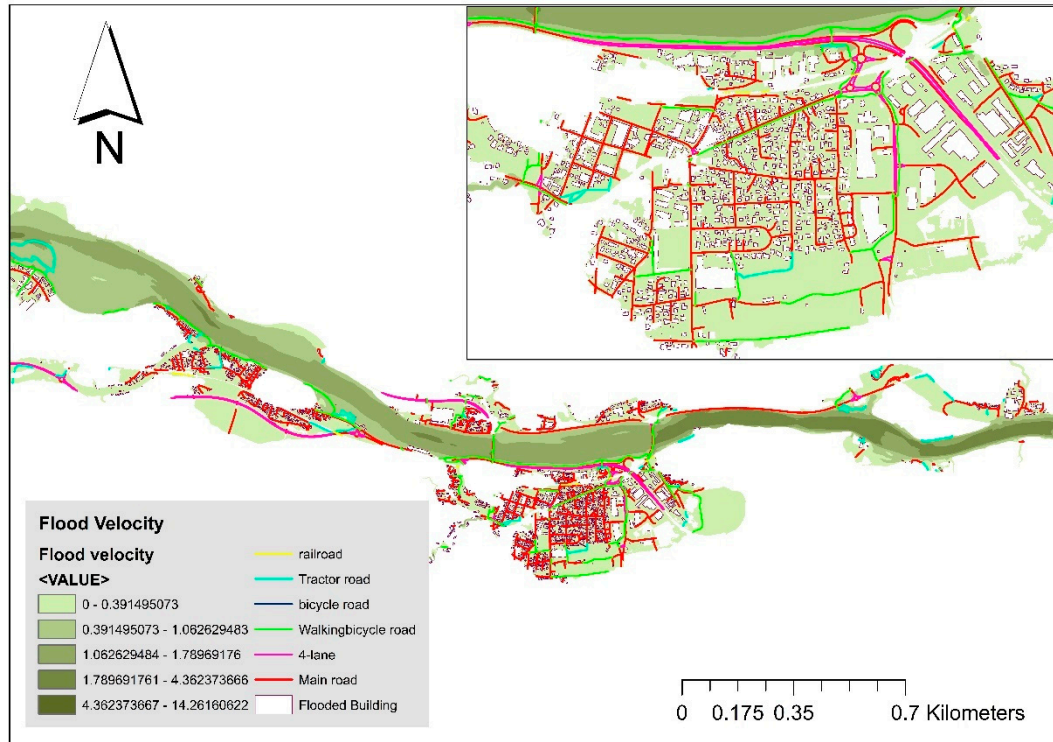


Figure S9 Flood velocities resulted from 500-year flood under current climate.

1000 year

Flood intensity

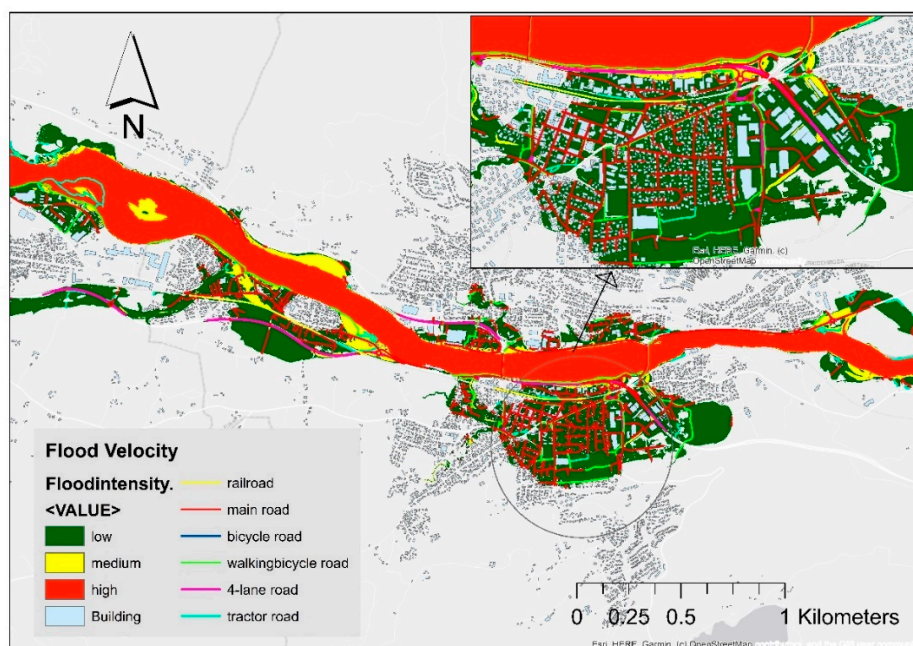




Figure S10 Flood intensity in the model area for the 1000-year flood scenario under current climate.

## Flood depth

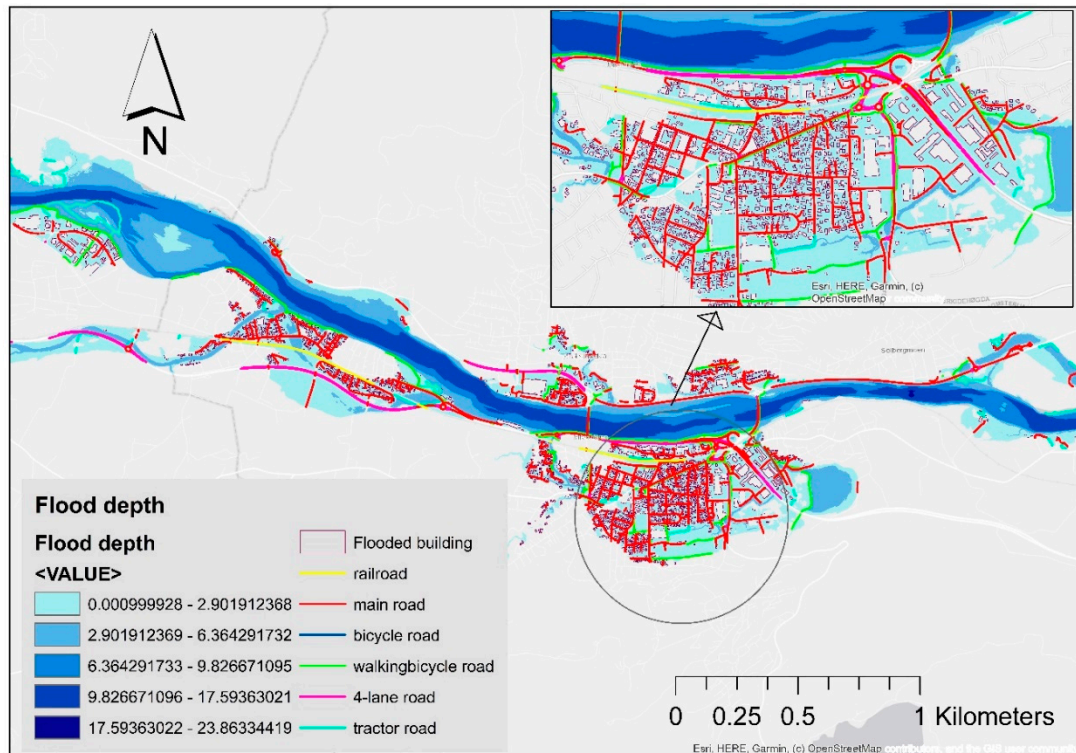


Figure S11 Water depth resulted from 1000- year flood under current climate.

## Flood Extent

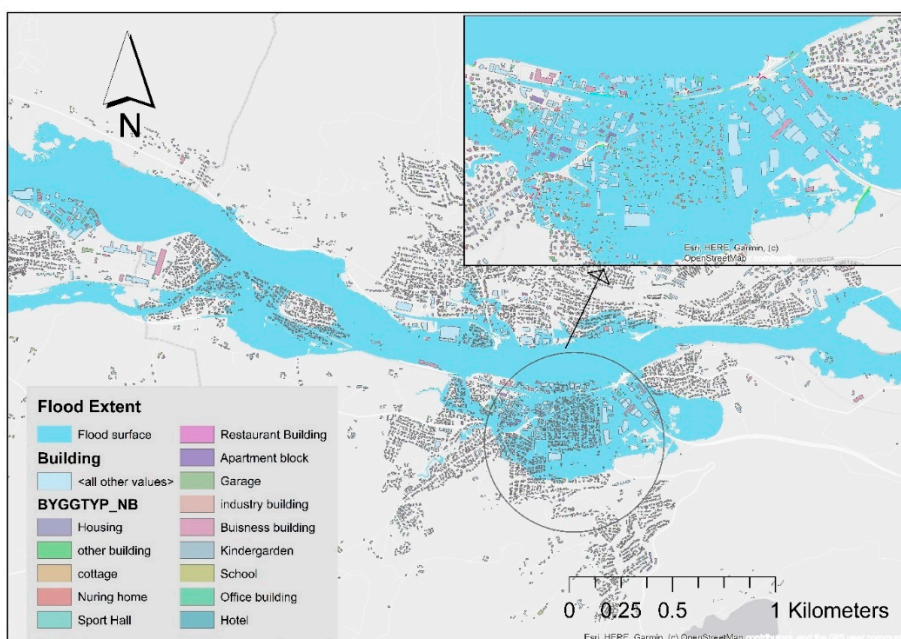


Figure S12 Flood inundation map of 1000-year load under current climate. the colours in the above figures show different types of buildings and flooded surface in the study area.

Flood velocity

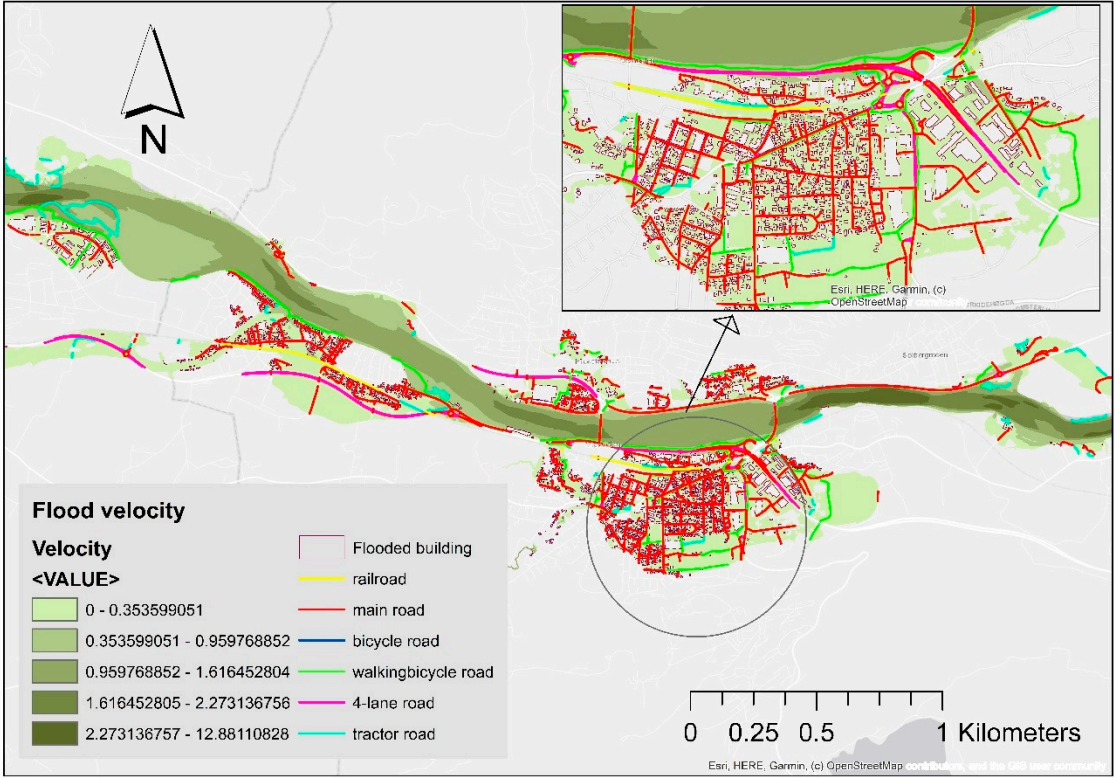


Figure S13 Flood velocities resulted from 1000-year flood under current climate.

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

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