Flood Hazard and Flood Risk Maps in the River Basin District of Catalonia

2nd Flood Risk Management Cycle

Reinforcing civil protection capabilities into multi-hazard risk assessment under climate change - RECIPE

Barcelona, February 20th 2020

Agència Catalana de l'Aigua

Generalitat de Catalunya
Departament de Territori i Sostenibilitat

Summary

1. Floods Directive
2. Preliminary assessment of flood risk
3. Flood Hazard and Flood Risk Maps
4. Analysis of recent flooding events (DANA and Gloria) based on the Flood Hazard Maps
5. Climate Change and Flooding

DIRECTIVE 2007/60/EC

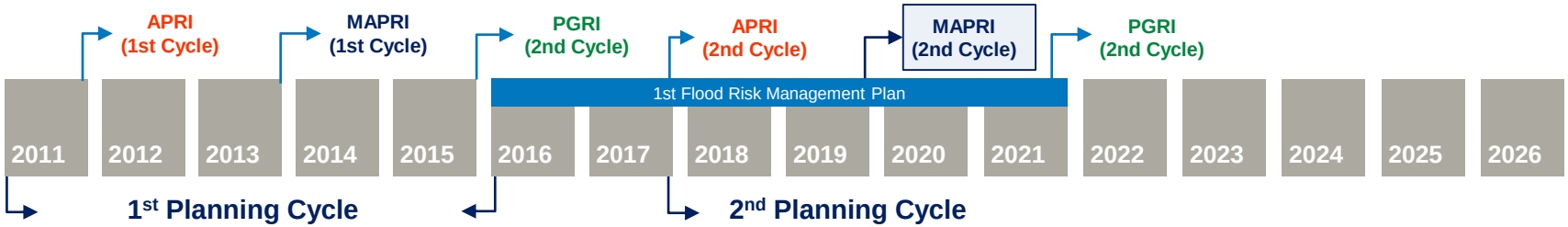
Assessment and Management of Flood Risks

(review and update every 6 years)

Preliminary assessment of flood risk (APRI) Identification of areas where potential significant flood risk exists or might be considered likely to occur (ARPSI)

Flood Hazard and Flood Risk Maps (MAPRI) for those areas identified as potentially at risk

Flood Risk Management Plan (PGRI) that includes different measures for the reduction of the potential adverse consequences of flooding



Multi-sectoral Plan

Developed in collaboration with different responsible authorities from the local, to the regional and national levels: Civil Protection Authorities, Municipalities, Directorate General for the Sustainability of the Coast al Areas and the Sea

2nd Planning Cycle – APRI 2018

Review and update – Preliminary assessment of flood risk

1st Cycle

15	ARPSI (river overflow)
72	river reaches with significant flood risk (TRI)
447	km TRI
80%	of potential damages in case of flooding

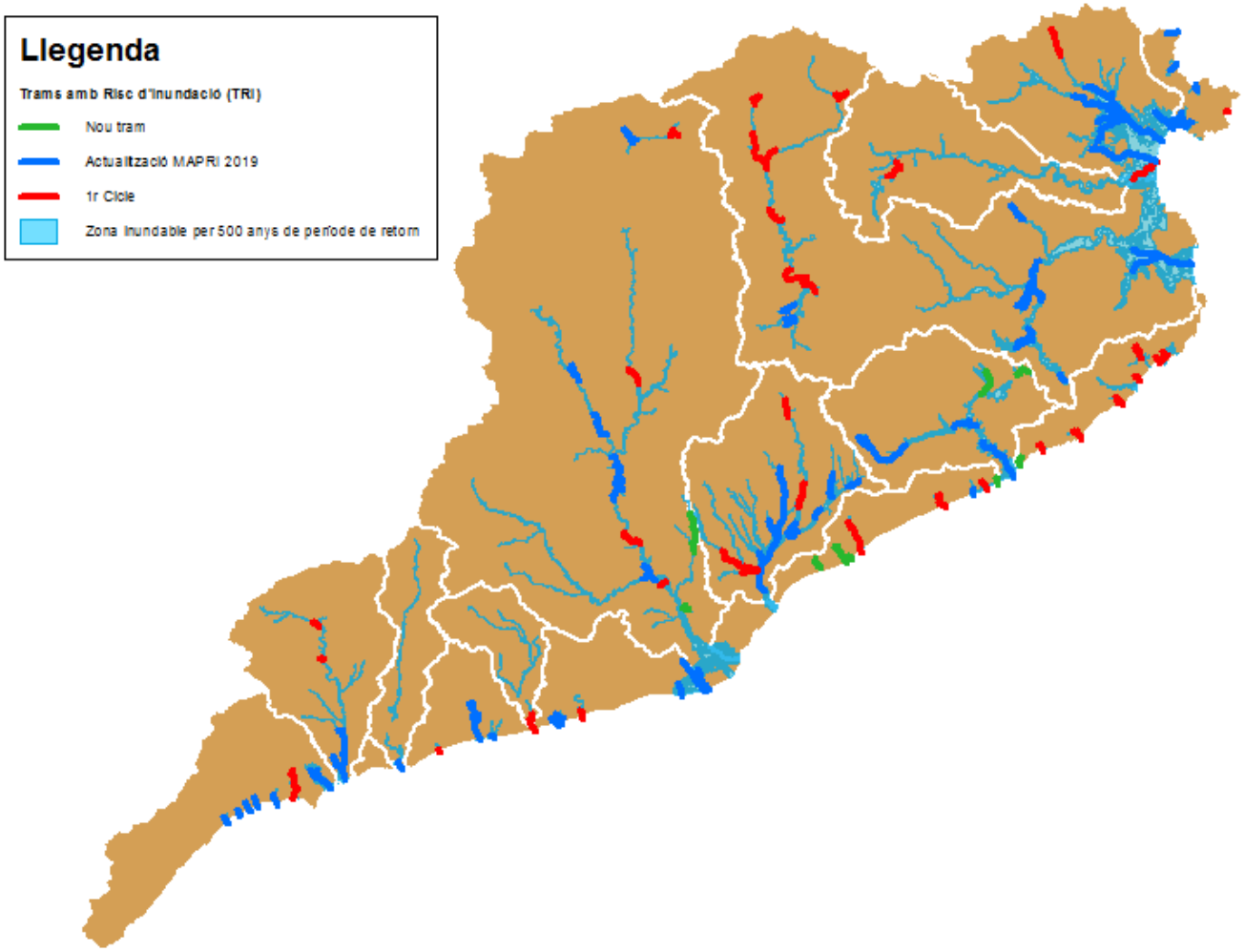
2nd Cycle

14	ARPSI (river overflow)
1	ARPSI (river/pluvial flooding)
1	ARPSI (pluvial flooding)
79	TRI
524	km TRI

2nd Planning Cycle – MAPRI 2019

Review and update – Flood Hazard and Flood Risk Maps

79 TRI



8 new TRI

Flood Risk assessed

524,2 km

Flood Risk updated 2nd Cycle

524,2 km

Municipalities in TRI

160

Flood Hazard assessed

1.962,3 km

Updated 2nd Cycle

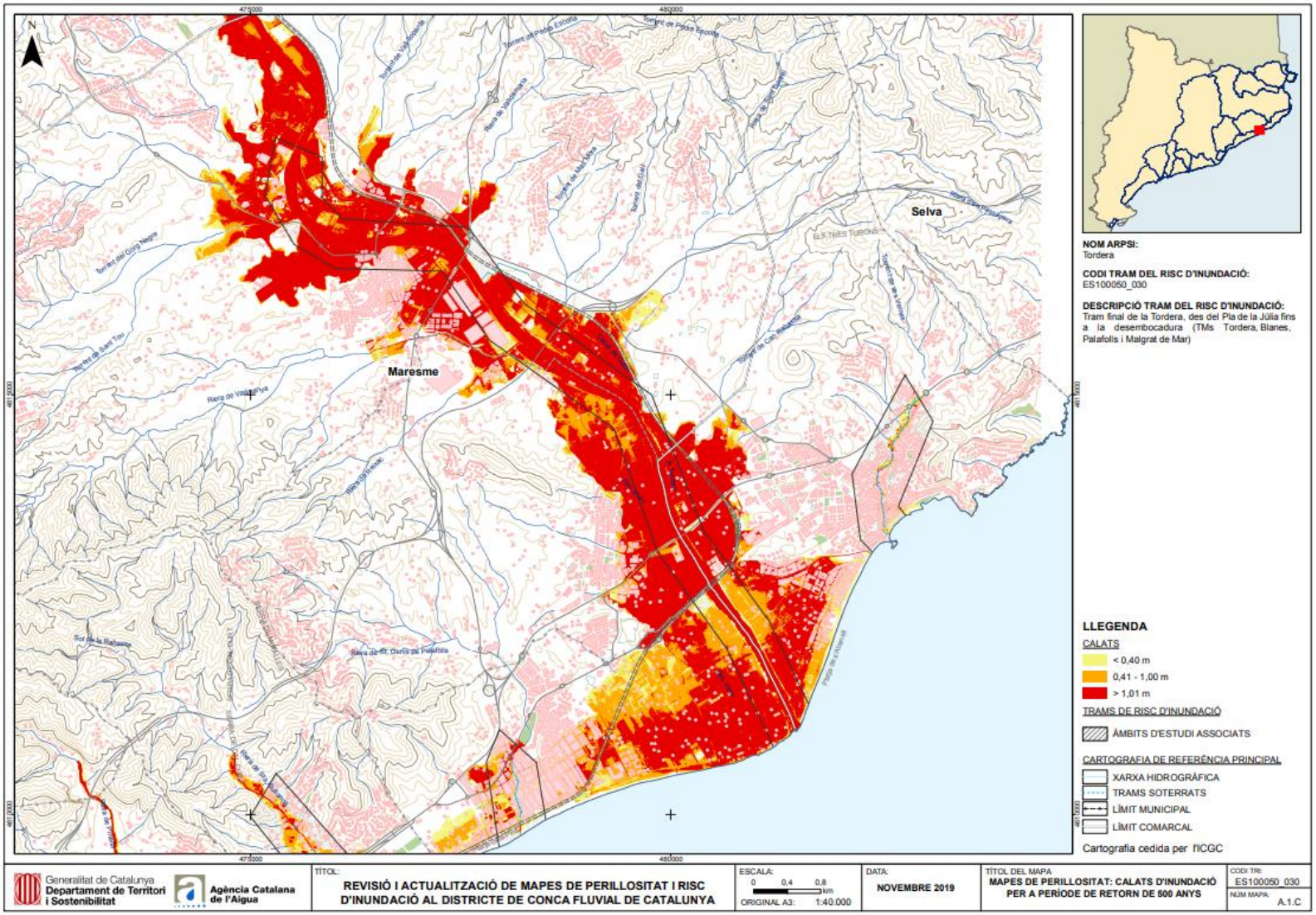
616,3 km

Municipalities in flood prone areas

416

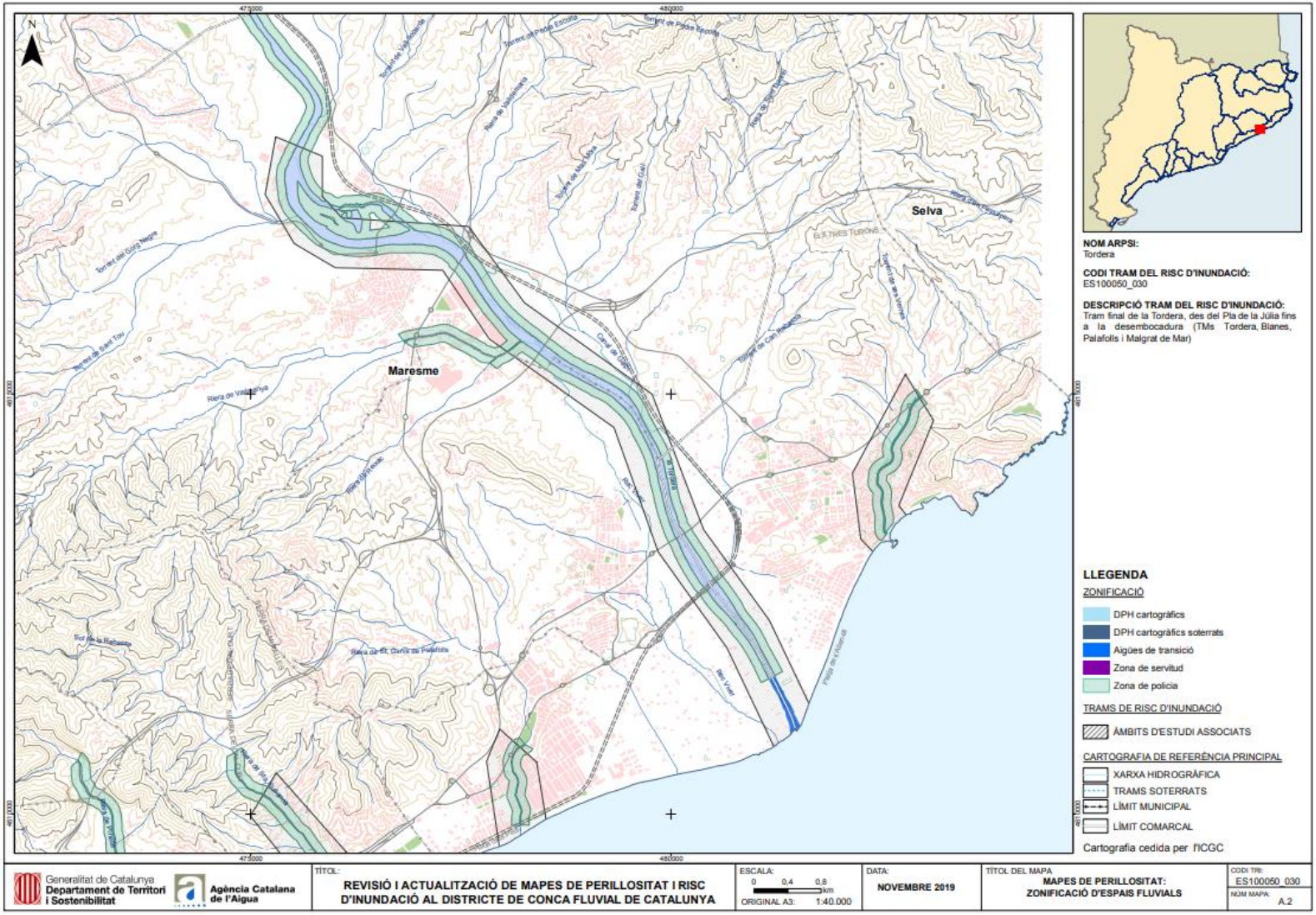
2nd Planning Cycle – HAZARD MAPS

Flood Hazard (10, 100 and 500 years return period)



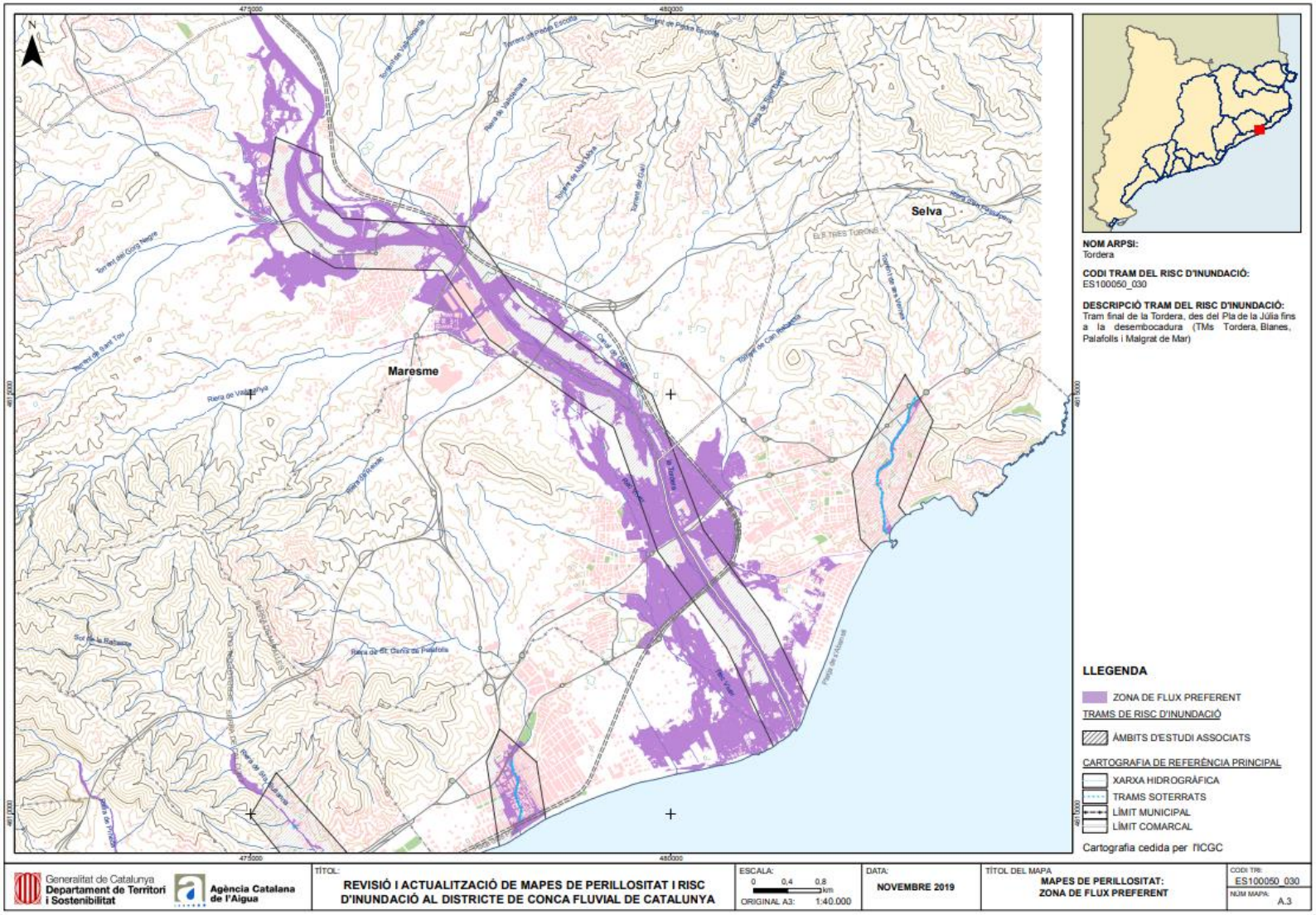
2nd Planning Cycle – HAZARD MAPS

River Area Zoning



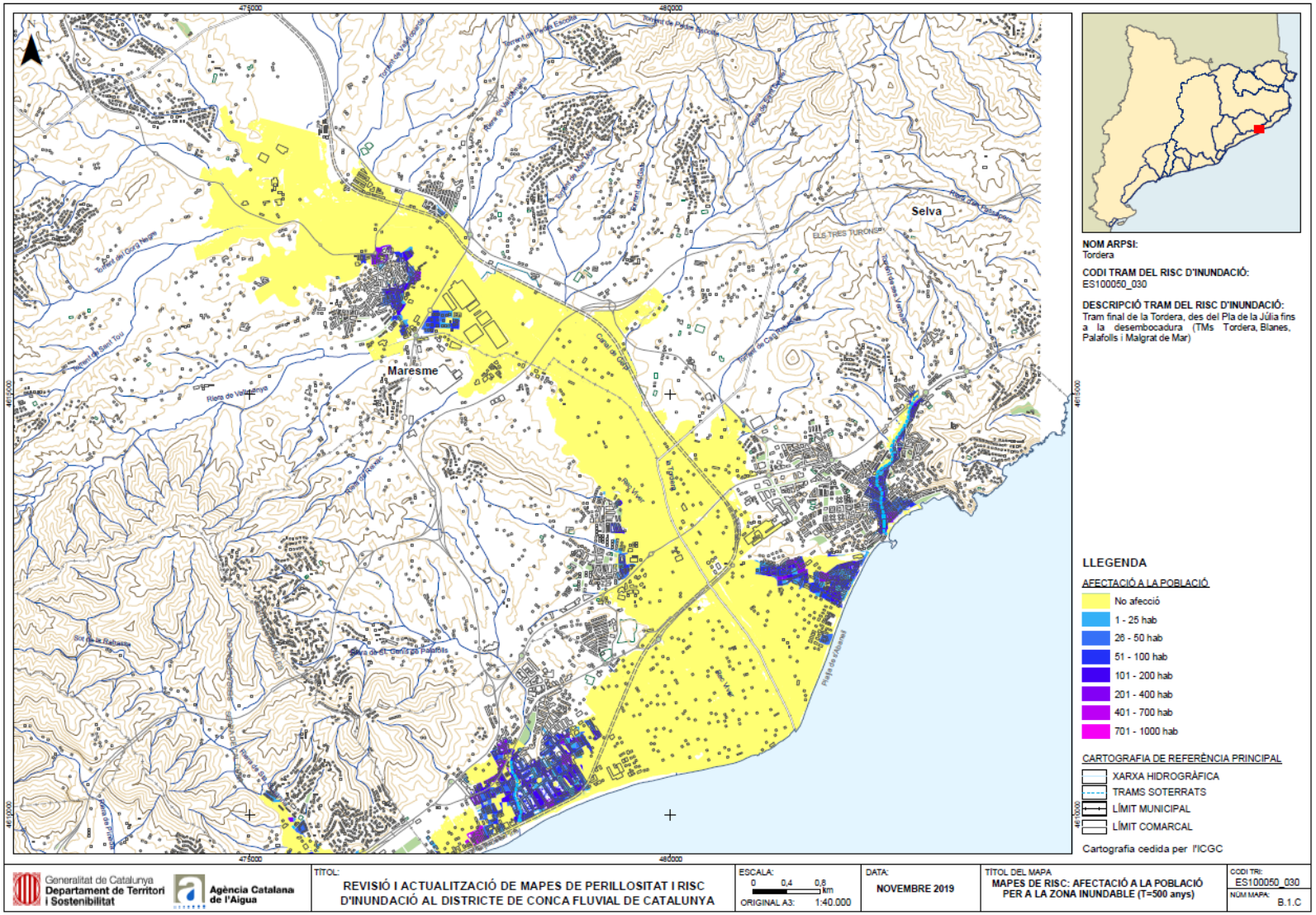
2nd Planning Cycle – HAZARD MAPS

Main Flow Conveyance Area



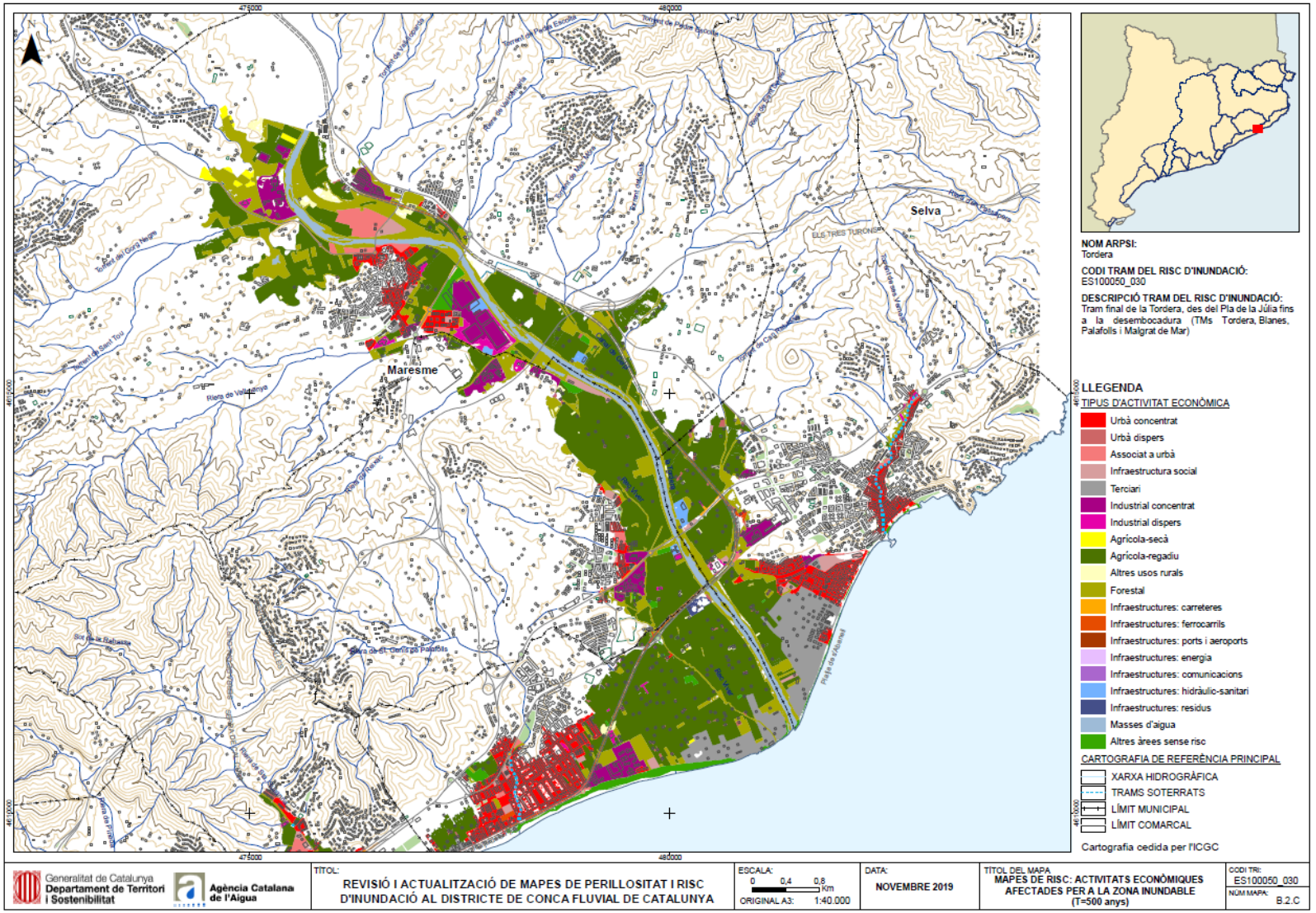
2nd Planning Cycle – RISK MAPS

Population affected by flooding (10, 100 and 500 years return period)



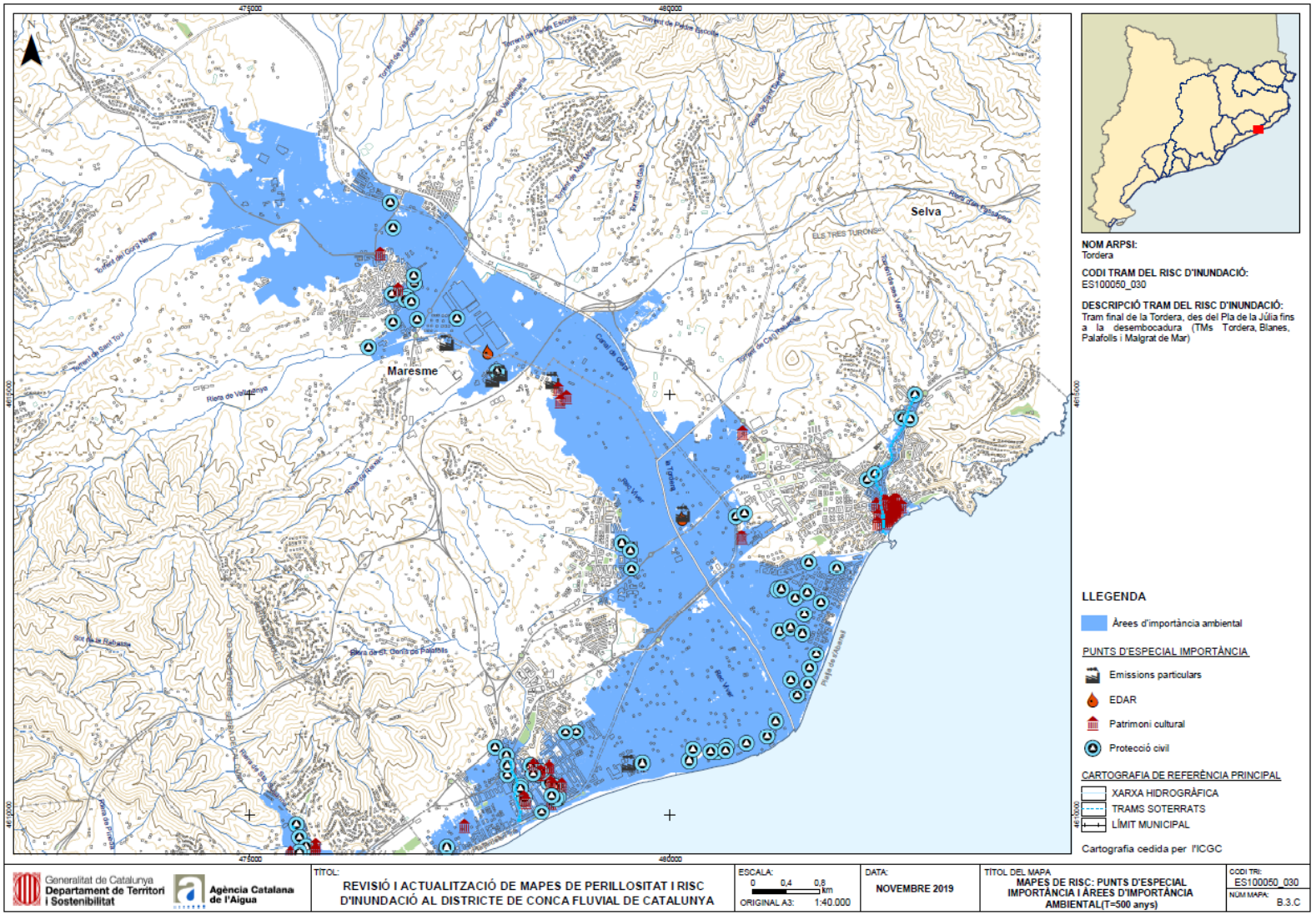
2nd Planning Cycle – RISK MAPS

Economic activities affected by flooding (10, 100 and 500 years return period)



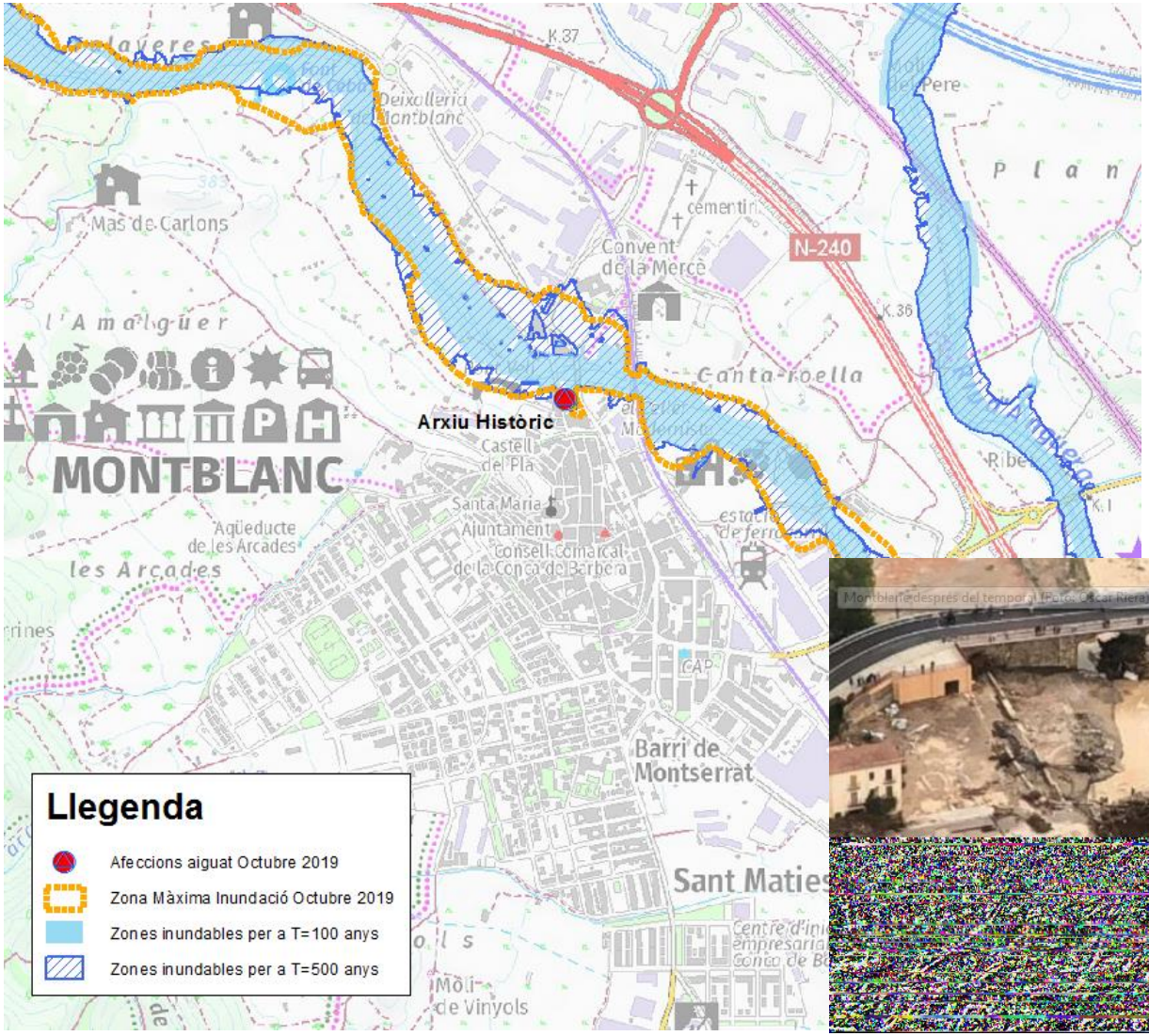
2nd Planning Cycle – RISK MAPS

Elements of particular interest (10, 100 and 500 years return period)



DANA – 22nd October 2019

Francolí river in Montblanc



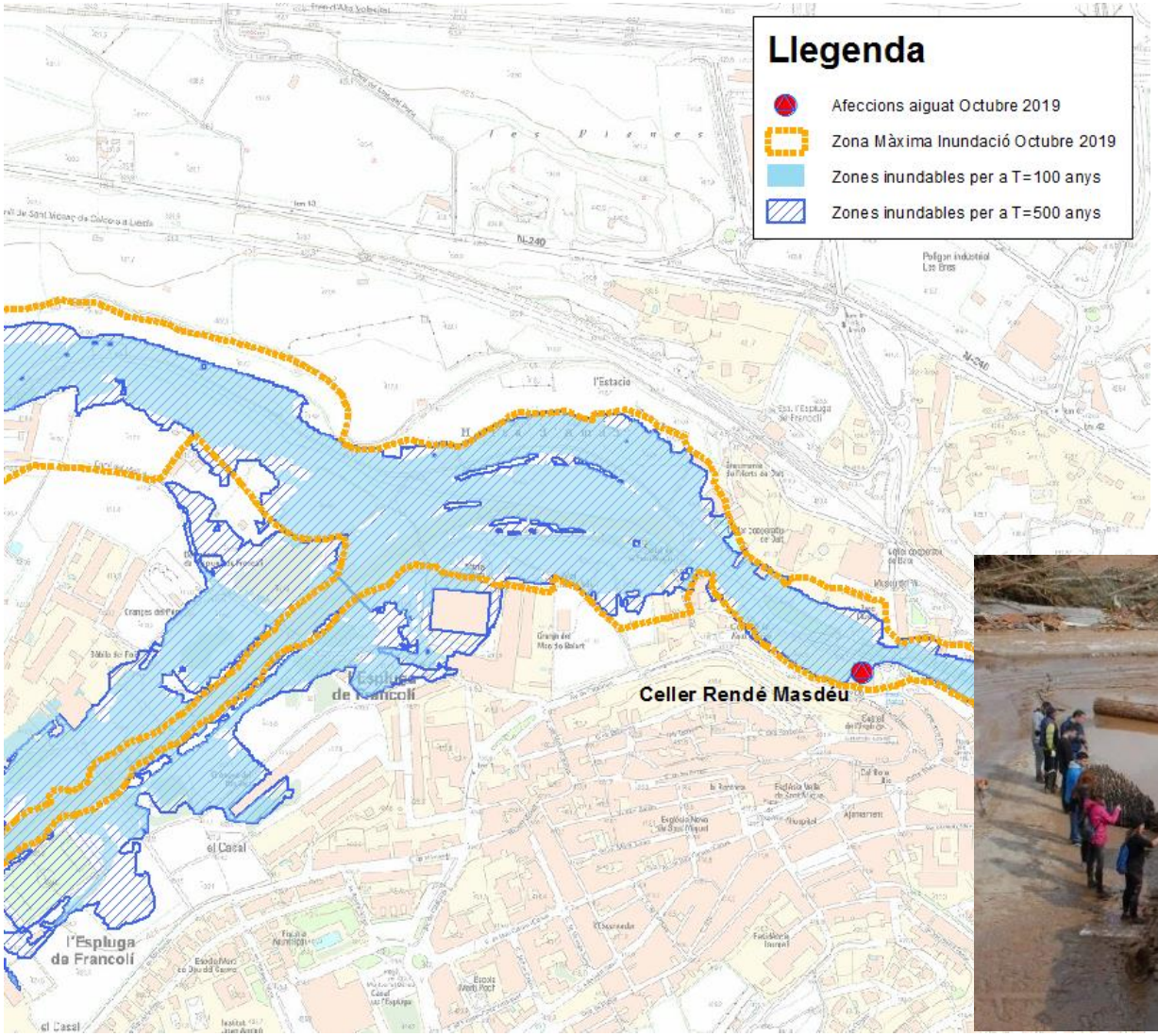
650 m³/s
gauged at Montblanc

464 m³/s
T = 100 years

882 m³/s
T = 500 years

DANA – 22nd October 2019

Francolí river in l'Espluga de Francolí



650 m³/s
gauged at Montblanc

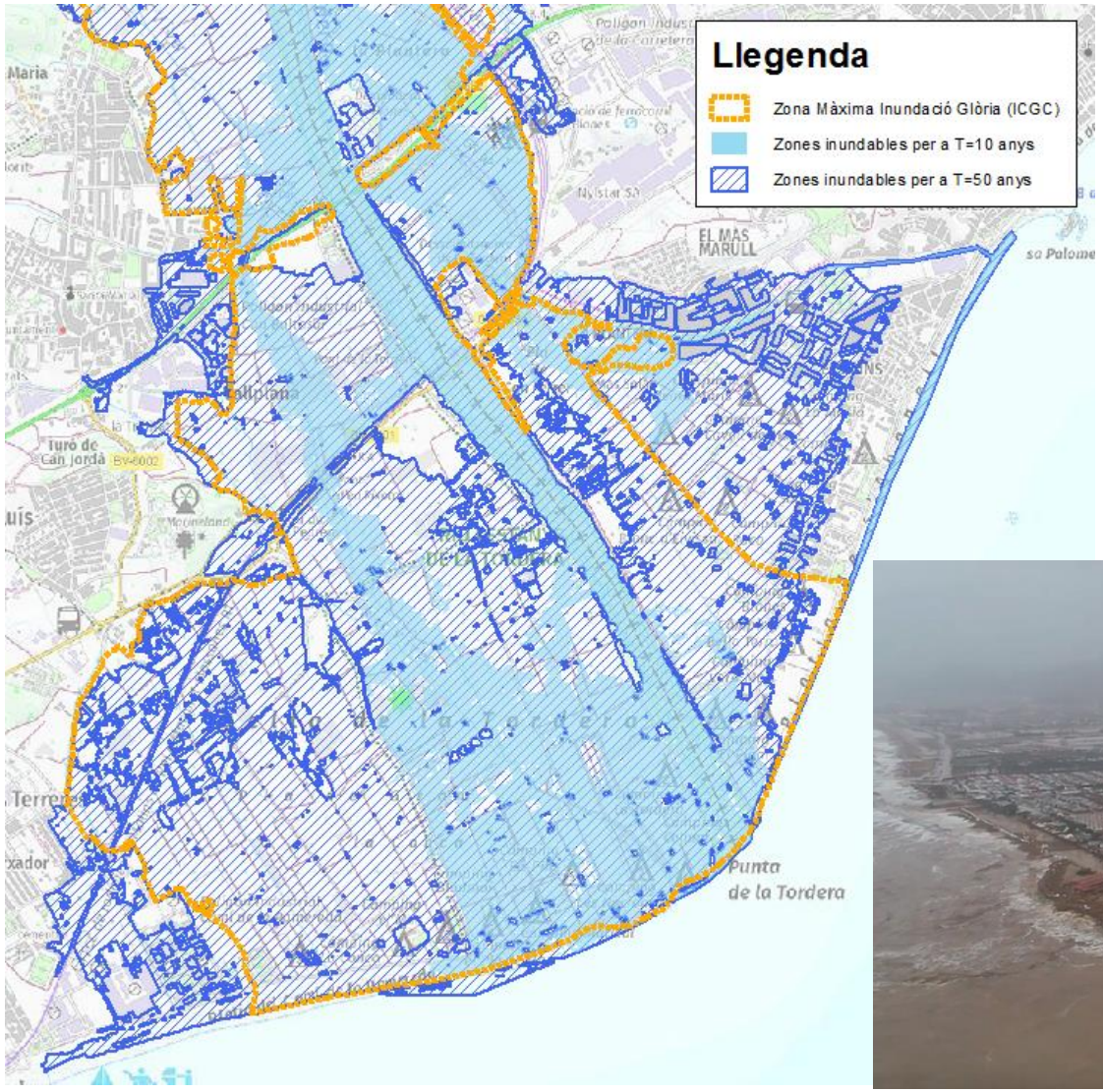
464 m³/s
T = 100 years

882 m³/s
T = 500 years


(Photo: Àngel Juanpere)

Storm Gloria – 20th to 23rd January 2020

Tordera Delta



600 m³/s
gauged at Fogars de la Selva

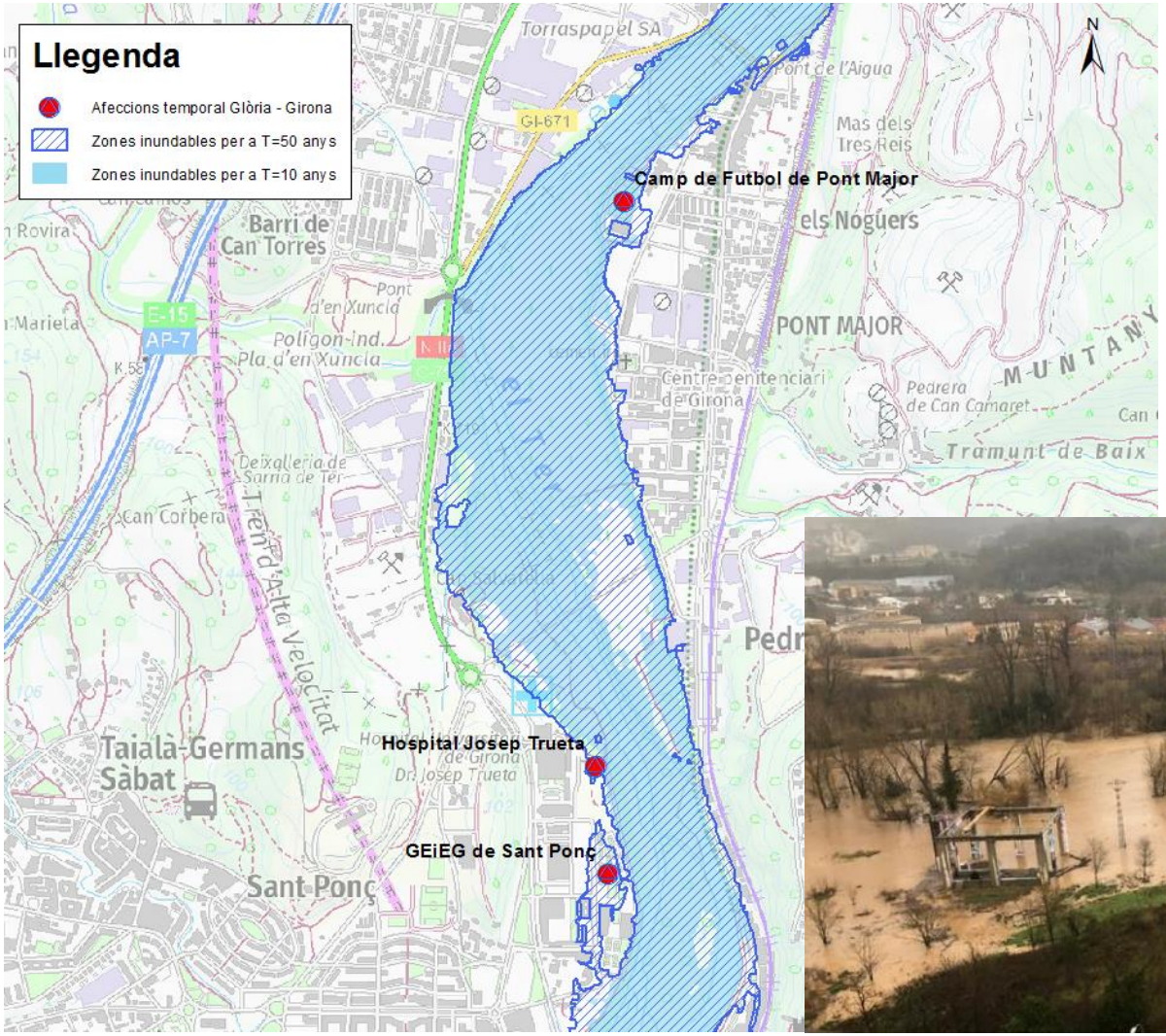
437 m³/s
T = 10 years

1225 m³/s
T = 50 years


(Photo: Cos d'Agents Rurals)

Storm Gloria – 20th to 23rd January 2020

Ter River in Girona



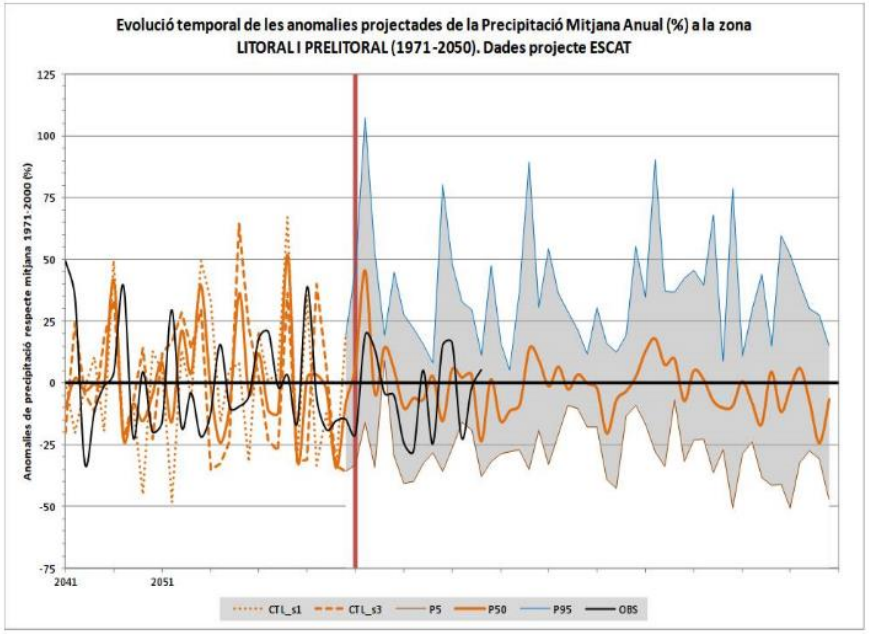
1200 m³/s
gauged at Girona

796,7 m³/s
T = 10 years

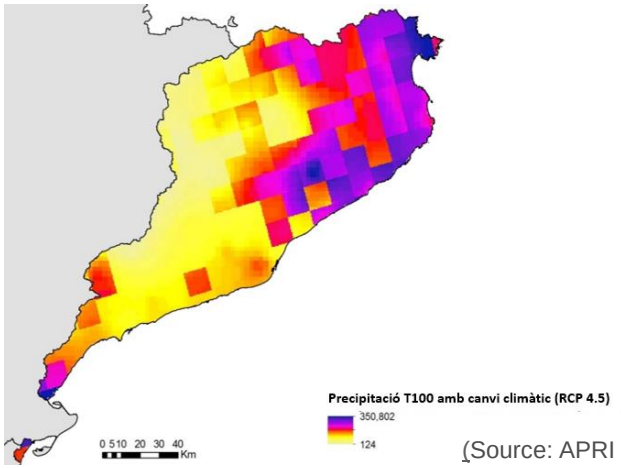
1473 m³/s
T = 50 years


(Photo: Àlex Cervera)

Climate Change and Flooding



(Source: https://www.meteo.cat/wpweb/climatologia/el-clima-dema/projeccions-de-precipitacio-1971-2050/)



(Source: APRI 2018)

High uncertainty about the impact of climate change on **precipitation**, specially in the **Mediterranean areas**

Many **factors impacting flow discharge** that contribute to increase uncertainty (e.g. **land use**)

Climate change will certainly change the **probability of exceedance** of floods

To enhance forecasting tools to predict flow discharge and flood impact

Gràcies per la vostra atenció

Agència Catalana de l'Aigua

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