



UNITED NATIONS ENVIRONMENT PROGRAMME
Review meeting of the draft regional plan on marine
litter management
Barcelona, 17th May 2013



INTEGRATED PLANNING AND MANAGEMENT OF URBAN DRAINAGE AND WASTEWATER TREATMENT SYSTEMS TO PREVENT LITTER SPILLED TO RECEIVING WATERS

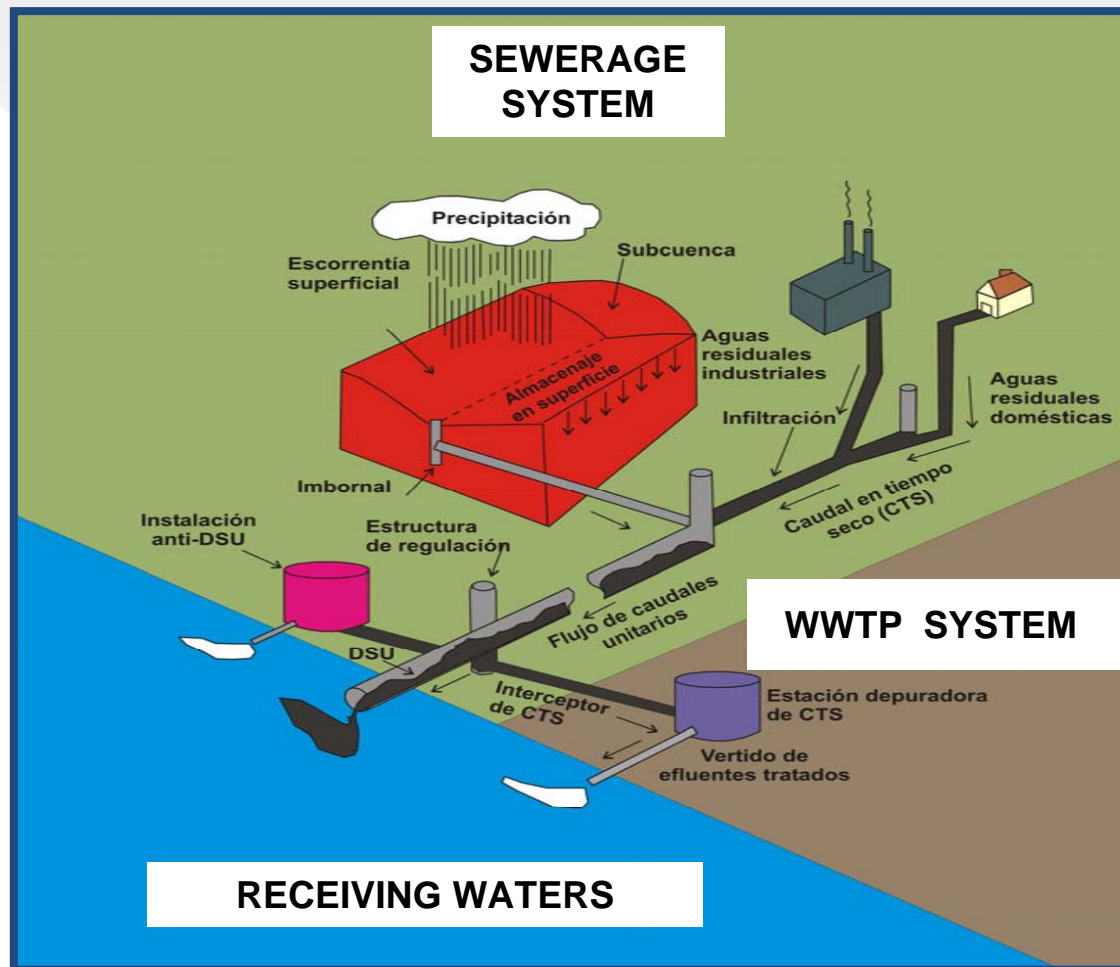


Pere Malgrat
Technical Director



Introduction

Integrated Combined urban drainage systems



Introduction

Typical problems of urban drainage systems



MANAGEMENT PHILOSOPHY BASED ON:

- Precise and exhaustive knowledge of system
- Integral planning
- Complet and coordinated Management in real time (if necessary)
- Environmental and sustainable approach

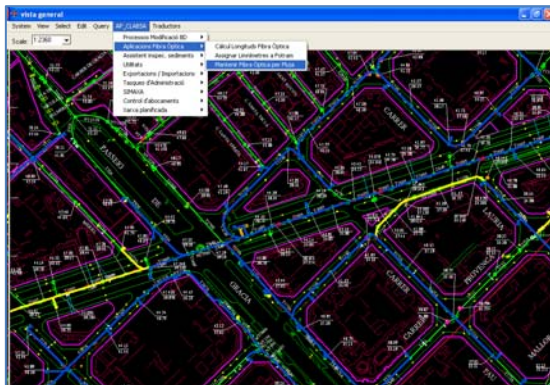


Master Drainage Plan

Advanced management of urban drainage

The **main instruments** for the development of a modern management are:

- Master **Drainage Plan** (MDP)
- **Technological Systems** for aid-decision implementation:
 - Territorial Information System (based on GIS)
 - Mathematical Modelling System
 - Real Time Control System



GIS



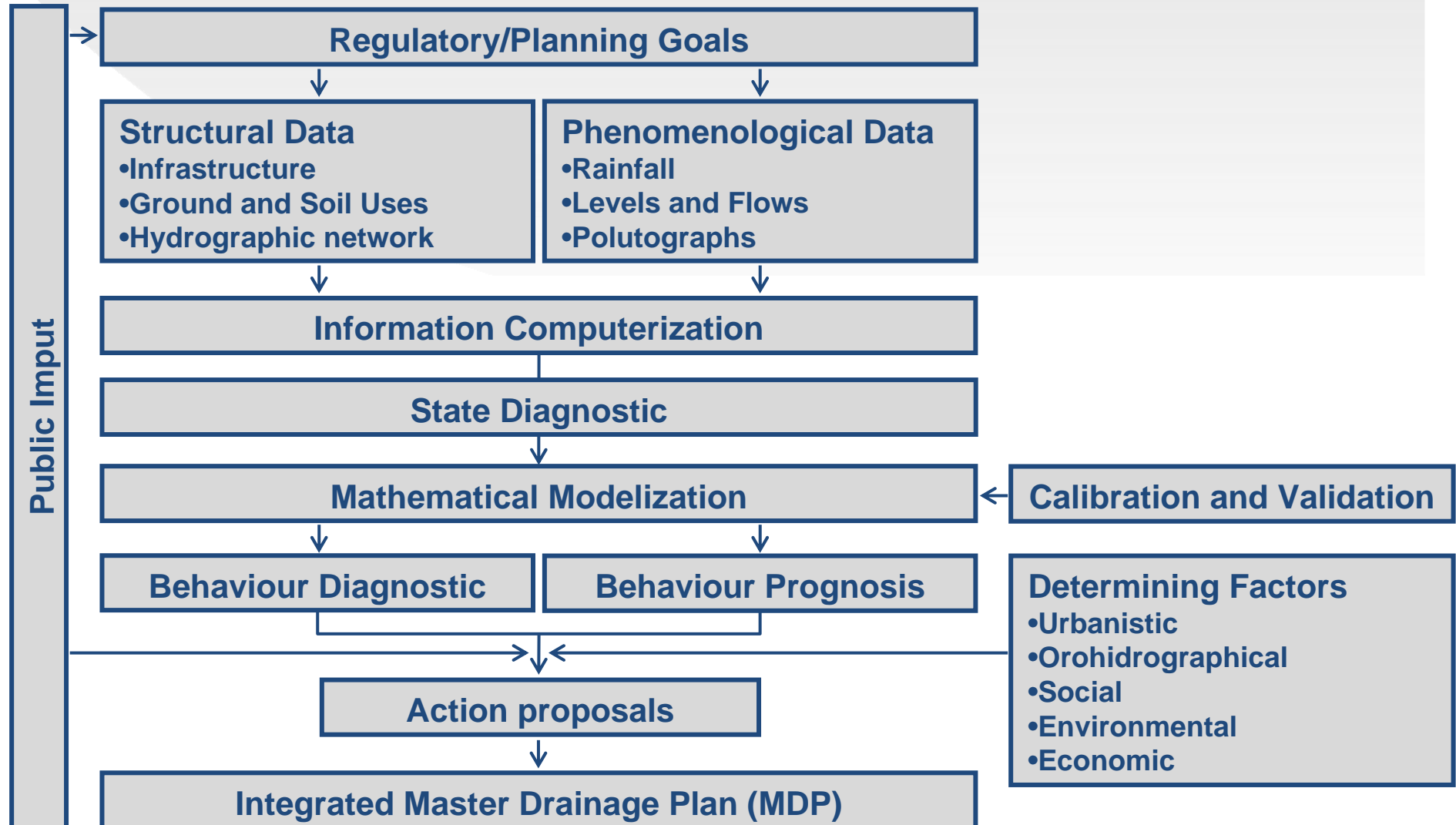
Real Time Control centre

TRANSFORM THE URBAN DRAINAGE NETWORK MANAGEMENT TO MAKE IT MORE EFFICIENT AND TO:

- Avoid sanitary problems
- Prevent floodings
- Reduce combined sewer overflows to receiving
waters in wet weather

Master Drainage Plan

Methodology Master Drainage Plan

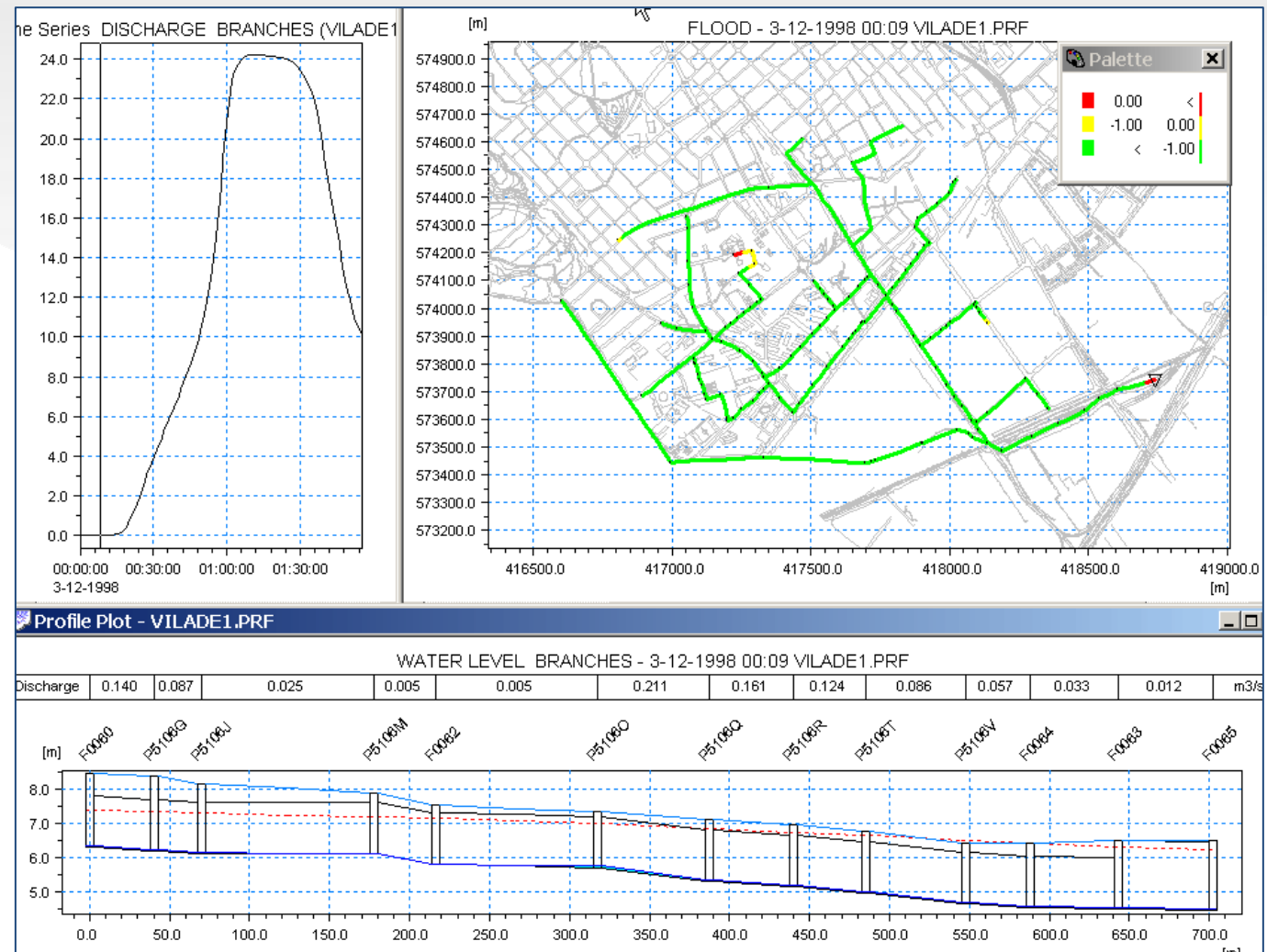


Master Drainage Plan

Master Drainage Plan Computer modeling

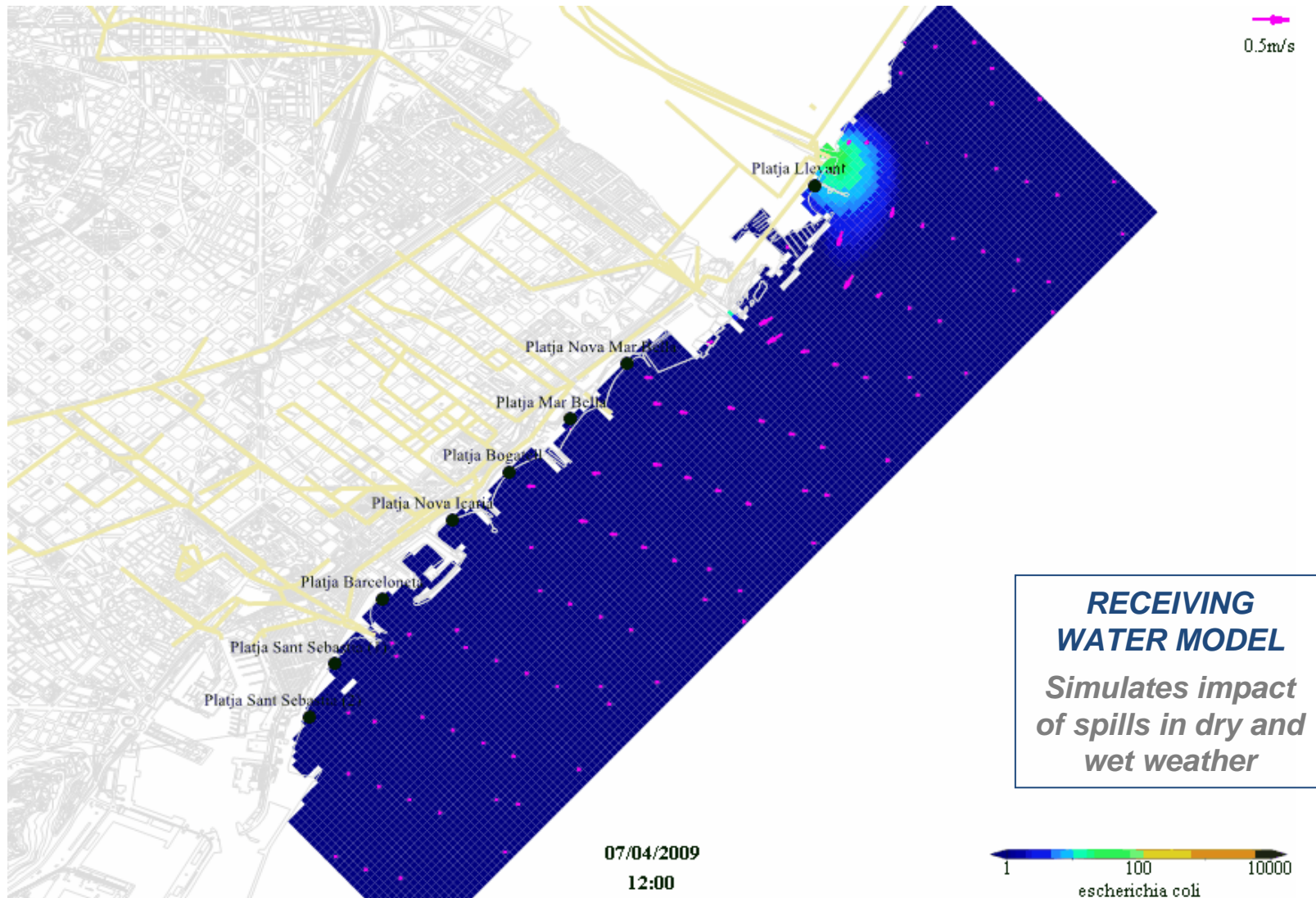
NETWORK MODEL

*Simulates the
behaviour and
capacity of the
network*



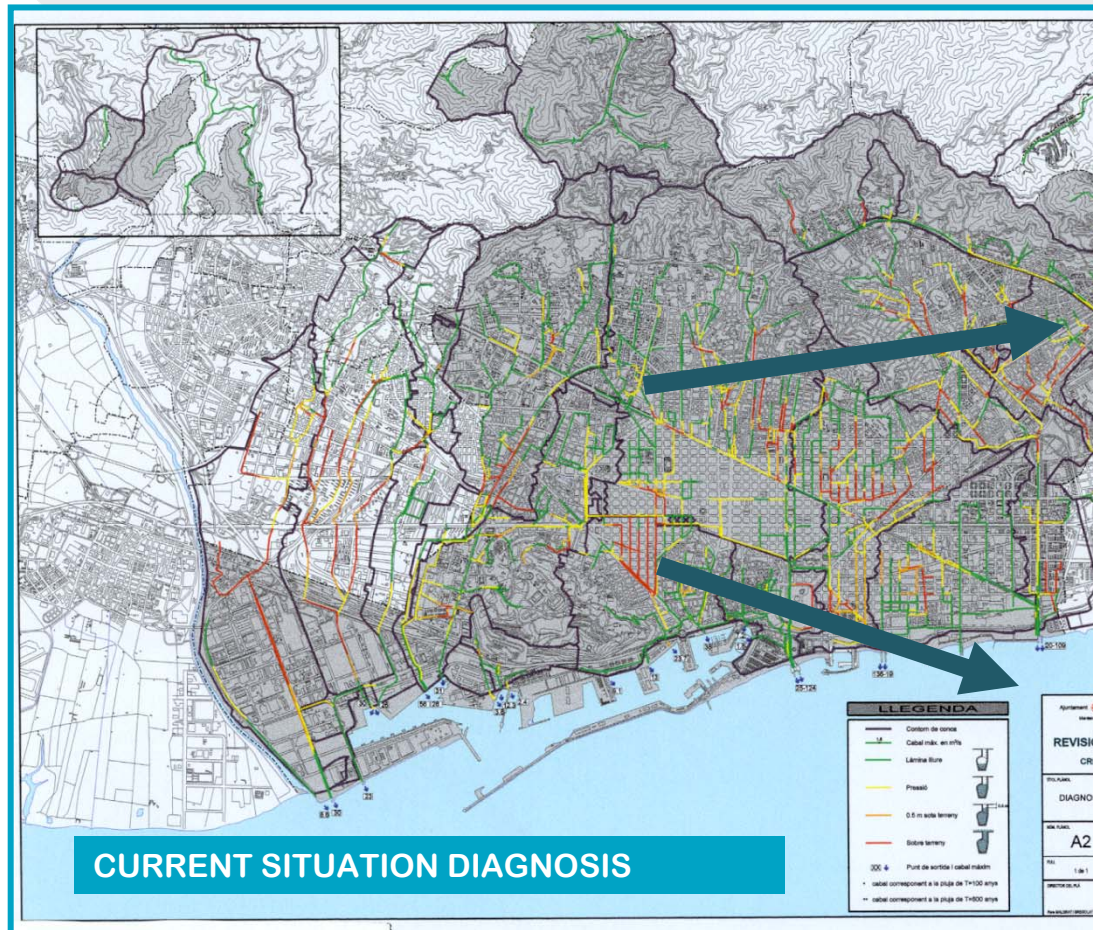
Master Drainage Plan

Master Drainage Plan Computer modeling



Master Drainage Plan

Master Drainage Plan Diagnosis and design process



Integrated Master Drainage Plan (MDP) actions proposal

MDP ACTIONS PROPOSAL

Network upstream	SUDS
	Cleaning of public spaces
Inputs to the network	Inlet
	Sand Trap
Sewer network	Collector
	Detention tank
	Pollution Separator
	Gate
	Pumping Station
	Cleaning
	Litter retention device in overflow facilities
Wastewater treatment plants	Real time operation
	Coordination of operation
Receiving waters	Litter cleaning ship
	Litter boom
	Net bag
	Bed cleaning

○ Anti-litter actions

Examples of anti-litter actions



SUDS



Litter booms



Stormwater tanks



Net bags

Examples of anti-litter actions



Scum baffles



Sieves



Disc screens



Bar screens



Rotary screens



Screw screens

Cost of Master Drainage Plan (MDP)

Extremely variable (depending on density of population and existing problems of the network):

- Redaction of a MDP: 3€/hab (average)
 - Cartographic inventory: 1,0-2,5 €/hab (1,5 average)
 - Modelization and drafting of the plan: 0,9-2,0 €/hab (1,5 average)
- Investment in the network: 200-1.300 €/hab (1000 €/hab average in Mediterranean countries)

So: ONLY 0,3% of the total investment in urban drainage systems is for the MDP

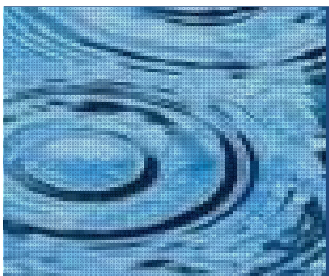
The image shows a close-up of water ripples on a blue surface, creating a textured, circular pattern. This image is part of a header banner that also includes a solid dark blue section and a light grey section.

Conclusion

Conclusion

Integrated and Advanced Planning and Management of Urban Drainage and Wastewater Treatment Systems is the best way to fight against marine litter coming from urban areas, using the Integrated Master Drainage Plan as the main instrument, helped by technological systems as GIS, simulation models and in some cases real time control.

In Mediterranean cities there are several good examples in Barcelona, Tarragona, Alicante or Oran.



THANK YOU FOR YOUR ATTENTION

pere@clabsa.es
www.clabsa.es
www.aqualogy.net