



Desealing urban soils : Where ? How ? Introduction to the tools being developed within the DésiVille project (France)



C. Le Guern, T. Leduc, M. Musy, C. Bruhat, E. Dufrasnes, F. Prézeau, B. Clozel, A. Rodler, S. Tasca-Guernouti, B. Béchet, C. Recknagel, A. Monnot, A. Lefranc

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Soils as a resource

- **Limit artificialisation rate**
- 'No Net Land Take' by 2050
- French law : Climate and Resilience (08/2021)
- **Desealing**
 - 1 of disartificialisation levers
 - 1st step towards renaturation



Issues of desealing

- Water cycle
 - Resources
 - Flooding risks
- Biodiversity
 - Nature based solution
=> renaturation
- Climate
 - Adaptation to climate change
 - Urban heat islands => freshness islands
- Well being

Desealing: Definition and feedback



Partially restore the old soil profile and an effective link with the natural subsoil (UE, 2012)

- by removing sealed layers (e.g. asphalt or concrete)
- by loosening the underlying soil
- by removing foreign matter and restructuring the soil profile

Contributes to the restoration of soil functions (infiltration capacity, carbon storage, biodiversity, etc.)

Rem: Deconstruction, depollution if necessary, rehabilitation of functional soils, (+/- renaturation)

- Large desealing operations
 - EUROPE (Berlin, Italy)
 - North America (USA, Canada)
 - France
- Opportunities : development
- Rare territorial strategies
 - Berlin (D)
 - Angoulême, Narbonne (F), Renens (CH)
 - No stabilised methodology





Where and how should we deseal ? Need of **decision aid tools**

- **Methodological guide** for mapping the **potential of desealing** by integrating the benefits and constraints

Urban territory + quarter scale



Urban Planning



- **Catalog of solutions** with evaluation of impacts and recommendations



Redevelopment

Base of the approach



Sealing

Desealing

Mud and dust

Travel

Urban heat island



Pollution of rainwater

Fresh islands

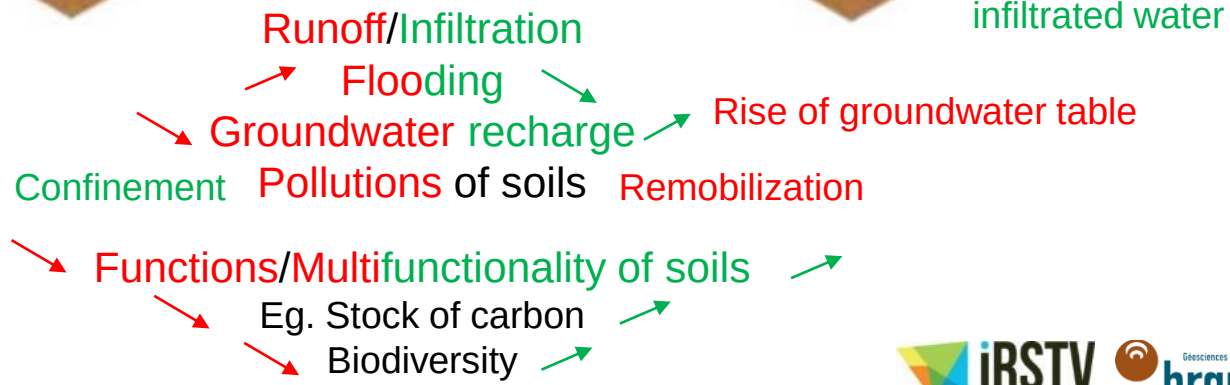


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Dessin SUEZ Consulting

Benefits and constraints of (de)sealing

Findings and assumptions



Gathering existing studies

Main relevant studies

- Berlin (D)
- Narbonne (F)
- Renens (CH)

Comparison of criteria

- Common : Soil infiltration
- Not common but interesting
 - Contamination
 - Soil property (public/private)

Any study to share ?

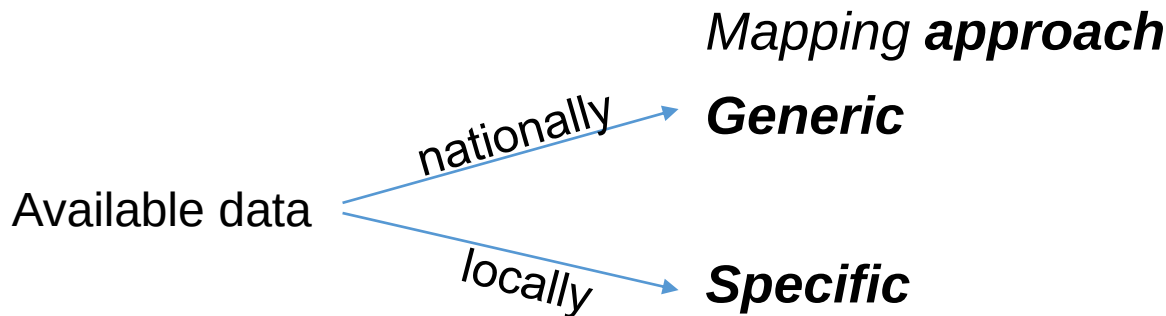
Guide: Methodological consolidation



State of the art
List of thematics
Associated criteria
Multicriteria analysis

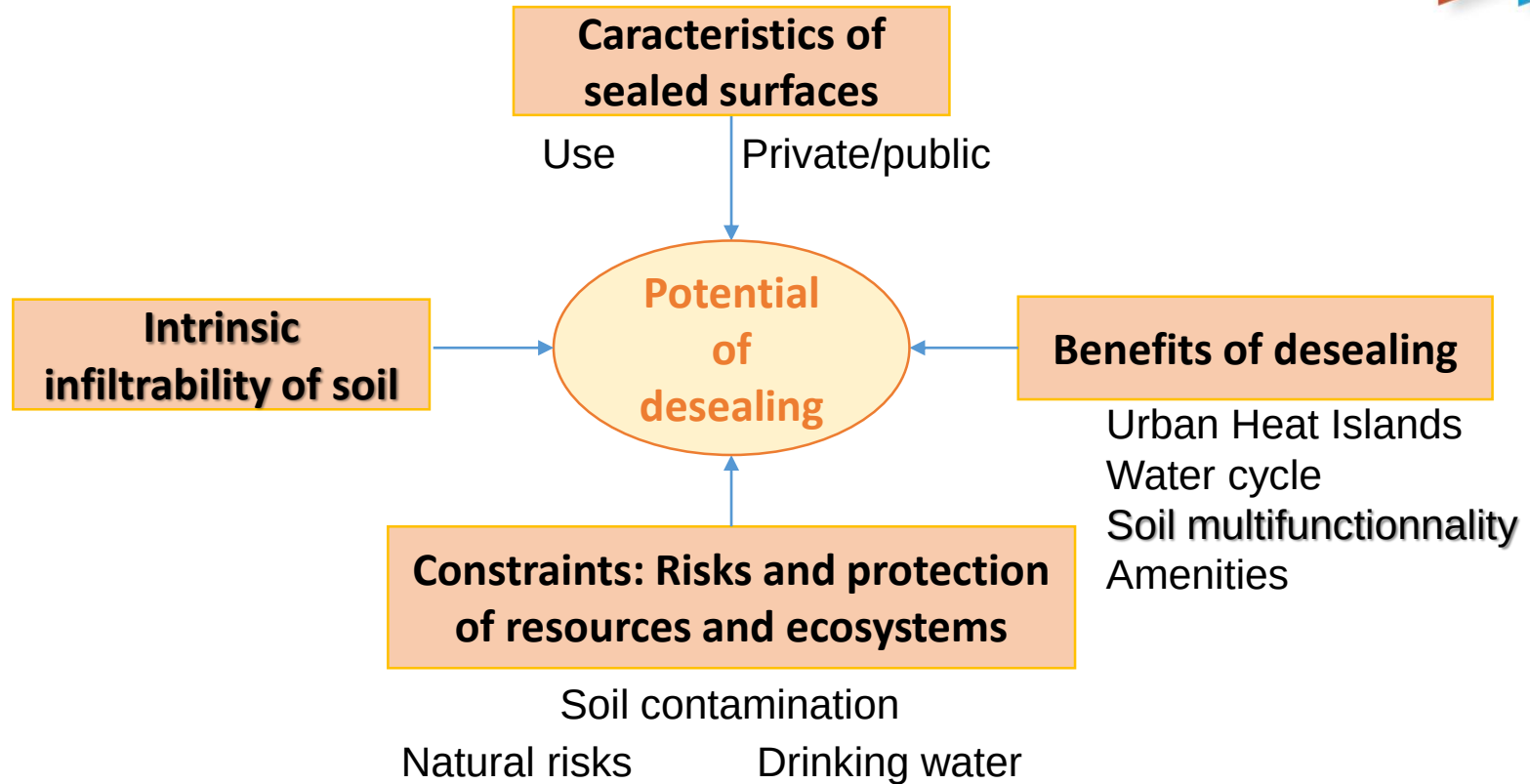


**Co-construction with
operational actors**

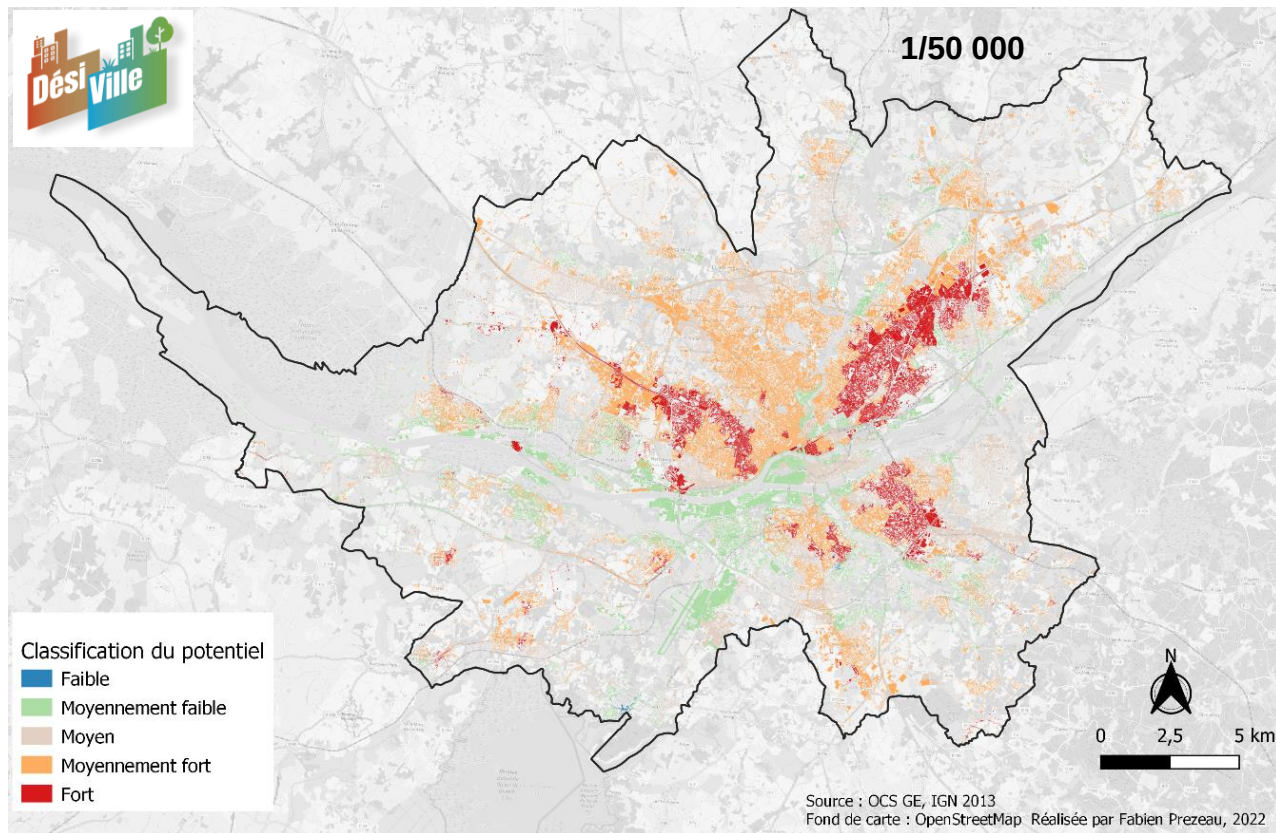


Territorial +
local
scales

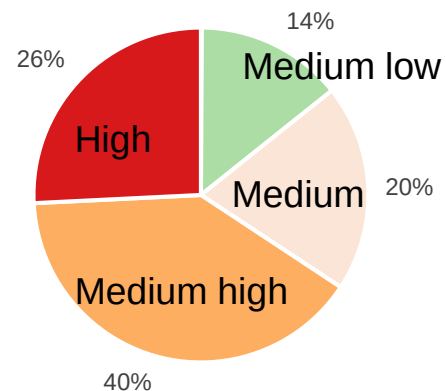
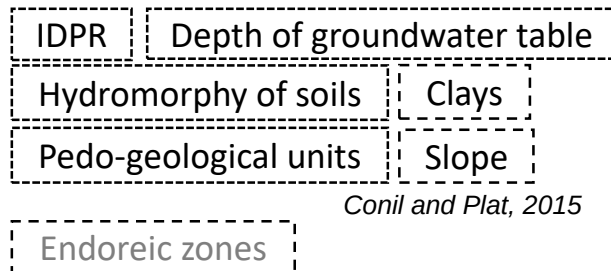
First case study : Nantes Métropole (F)

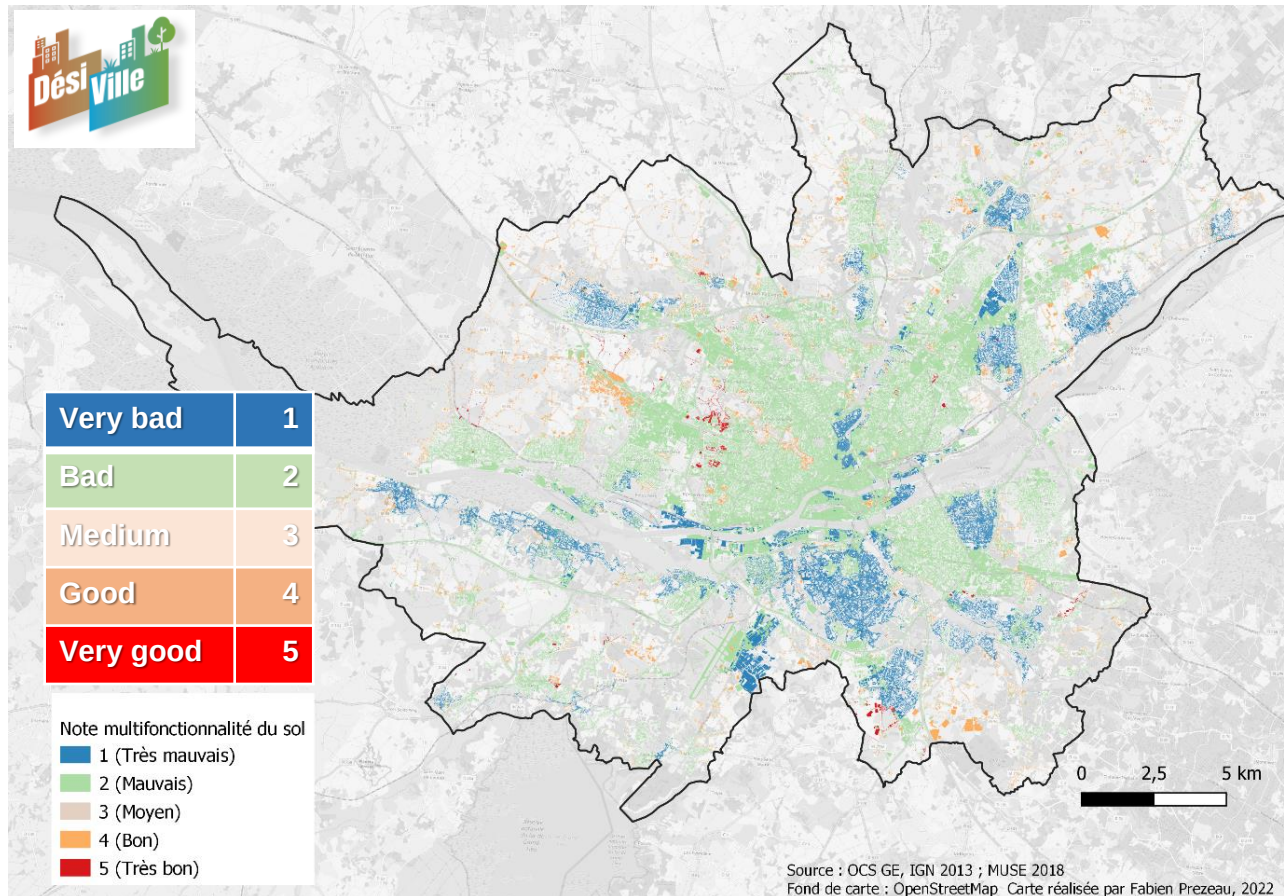


Potential to infiltrate rainwater



Specific approach





Specific approach

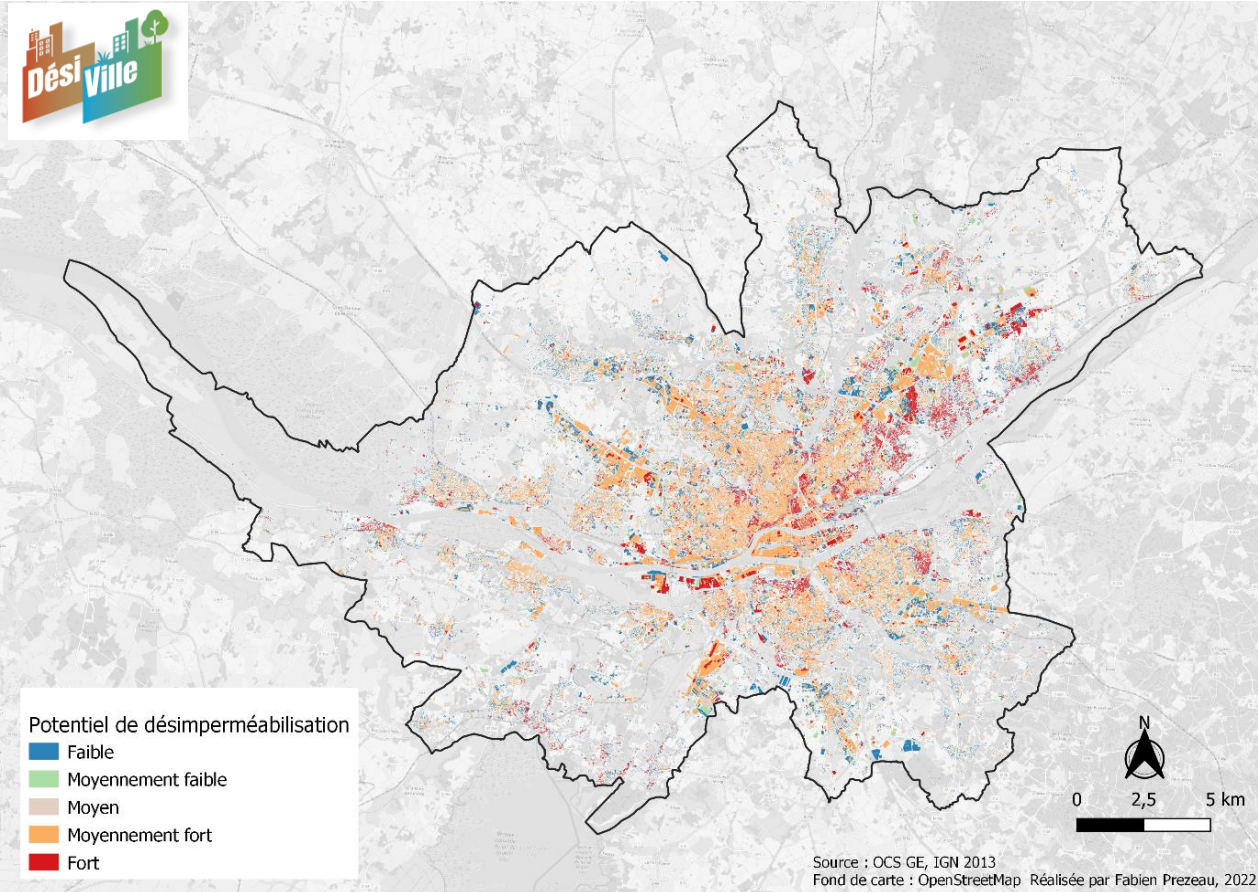
Adaptation of
the methodology
for rural zones



Extension to urban zone
Capacity of infiltration
Carbon Storage
Biodiversity

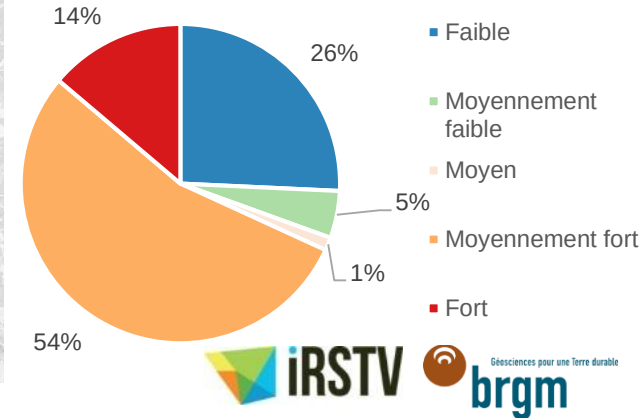
crossed
with sealed soils

Désealing potential



Specific approach

Thematic	Resolution	Format	Weight
Sealed surfaces	1/5 000	vecteur	1
Infiltration potential	1/50 000	vecteur	1
Risks and resources	1/50 000	vecteur	1
Benefits	1/50 000 to 1/100 000	vecteur	1



Catalog of desealing solutions



Small to larger scale

Existing guides/catalogs

- N4C
- Water infiltration solutions
- Rainwater management solutions

**Any
suggestion?**

Grey infrastructures

Porous asphalt

Mix ground-stone

Permeable cobblestone/cells

Infiltration trench / well

Nature Based Solutions

- Valleys/pits
- Rain garden
- Street trees
- Vegetated strips
- Flooding plains
- Marshes and riparian forest
- Urban green spaces



Criteria of evaluation

- Implementation
- Rain water management
- Soil multifonctionnalité
- Pollution of water and soils
- Biodiversity
- Climate change: adaptation and attenuation
- Amenities
- Socio-economic aspects

Scoring

- Objectives of the solution
- Co-benefits *in progress*
- Not concerned
- Negative impacts

=> Synthetic table

Gestion de l'eau pluviale	Infiltration
	Rétention
	Transport du surplus
Moyenne	
Multifonctionnalité des sols	Cycle de l'eau naturel (stockage et infiltration)
	Cycle naturel du carbone
	Cycle Nutriments
	Support de végétation
	Biodiversité des sols
Moyenne	
Mise en œuvre	Echelle de fonctionnement
	Flexibilité
	Contraintes de dimensionnement/mise en œuvre
	Contraintes de fonctionnement/gestion
Moyenne	

Description

- General
- Functioning
- Technical aspects
- Standards

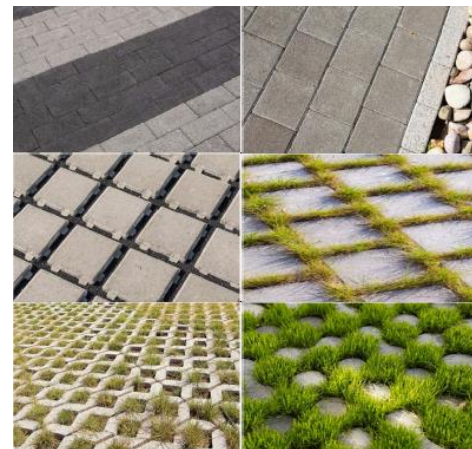
Keys for sizing

- Water cycle
- Scale
- Regulation
- Materials/life cycle
- Economic aspects : implementation/maintenance
- Involved actors

Points of attention

- Pollution
- Groundwater flooding
- Maintenance

Recommendations



CERIG



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Conclusions and perspectives



Mapping the potential of desealing

- Still looking for existing studies to feed the guide
- Proposal of a generic/specific methodology at territorial/local scales
- Many criteria
- Poor scale of some data
- **Catalogue of solutions**
 - Grey and green ones
 - Any reference advised?
 - Any suggestion on format?
 - Report
 - Decision tree
 - Interactive



Source : LIFE15 ENV/IT/000225
ACTION A1.3 REPORT



Sous le bitume...

Crédit photo : V. Baudouin, BRGM

A French objective within DésiVille

Wider perspectives possible by joining a European consortium

Thanks for your attention !
Any question ?

Contact :

c.leguern@brgm.fr



Photo : C. Le Guern
Œuvre de Jean Julien 'the desealer'