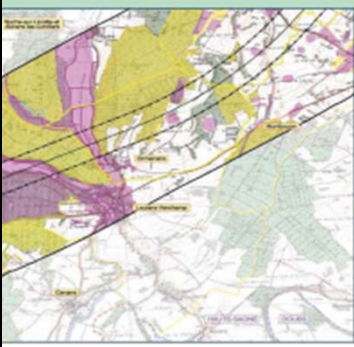


ECO-DESIGN AND ECO CONSTRUCTION APPLIED TO LINEAR INFRASTRUCTURES

IAIA 2016 - Nagoya



CONTENTS

- 1 DEFINITIONS
- 2 1ST EXAMPLE: EAST WEST EXPRESS LINK IN PARIS
- 3 2ND EXAMPLE: NEW ROAD ON THE COAST IN LA REUNION ISLAND (INDIAN OCEAN)



WHAT ARE ECO DESIGN AND ECO CONSTRUCTION ?



Eco-design : incorporation of environmental protection into product design (goods or services).

Eco-construction of linear infrastructures means incorporating environmental protection measures into the construction phase of a project. Eco-construction is therefore merely one phase in the project life cycle and an integral part of eco-design.

- 2 examples: *EOLE* and *NRL*



ECODESIGN AND ECOCONSTRUCTION

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—EOLE: EAST WEST EXPRESS LINK —



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EOLE PROJECT

Continuation of the RE



LE TRACÉ DU PROJET DE HAUSMANN-SAINT-LAZARE À MANTES-LA-JOLIE



Underground section



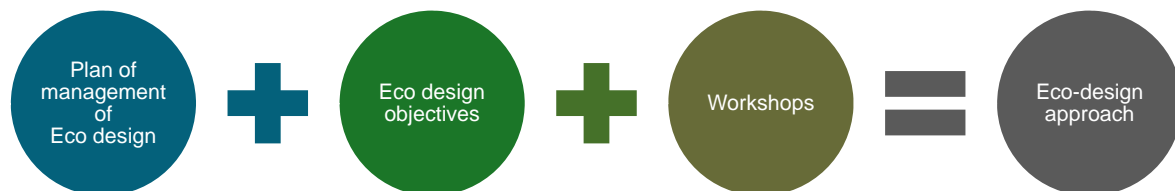
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CLIENT REQUEST

- Request clearly identified in the call for tender:

" The holder [...] will bring an approach of eco-design. The objective is to improve the ecological quality of the project by reducing its negative impacts throughout its life cycle while keeping its quality of use (the same performance and/or the same efficiency) "



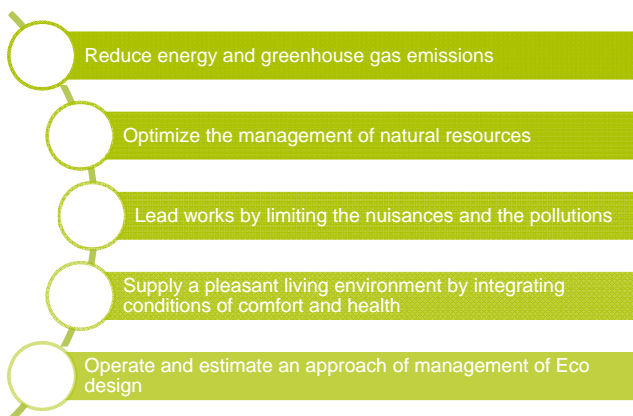
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AN APPROACH INVOLVED IN THE DESIGN



5 objectives



5 workshops

- A - Air quality
- B - Geothermal science, geotechnical and thermal
- C - Excavation, water, phase realization
- D - Station, comfort, health and quality of spaces
- E - Management of Eco Design



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3 EXAMPLES OF ECO DESIGN ACTIONS



Set up heat exchangers in diaphragm wall of the 'Porte Maillot' Station



Set up a charcoal filter to get particles in confined spaces into the stations



Maximize excavation materials transport by waterway



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NEW COASTAL ROAD



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A VERY SPECIAL PROJECT IN AN EXCEPTIONAL ENVIRONMENT

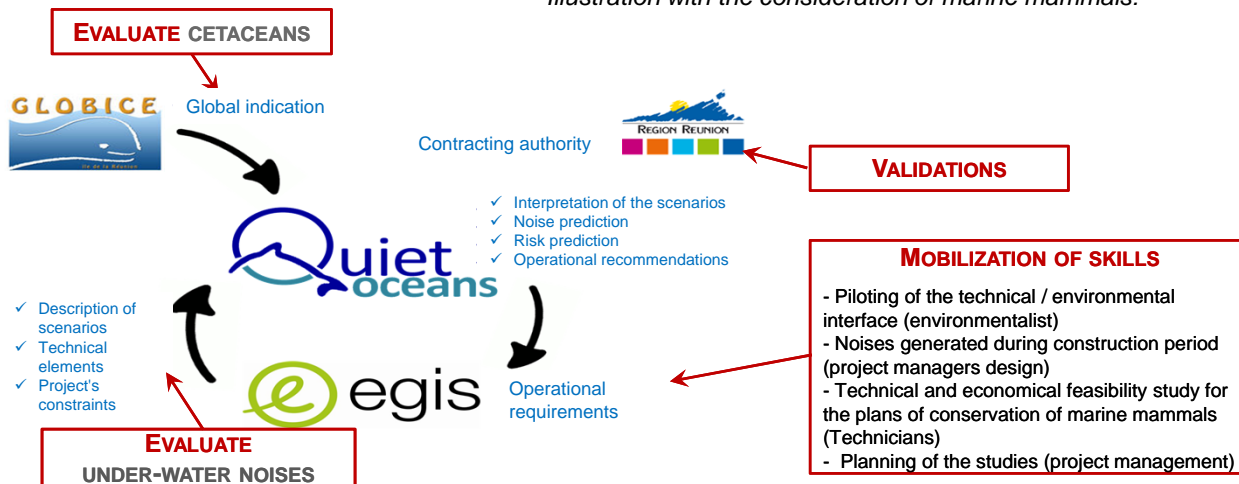


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HOW TO ORGANIZE AN ECO-DESIGNED PROJECT?

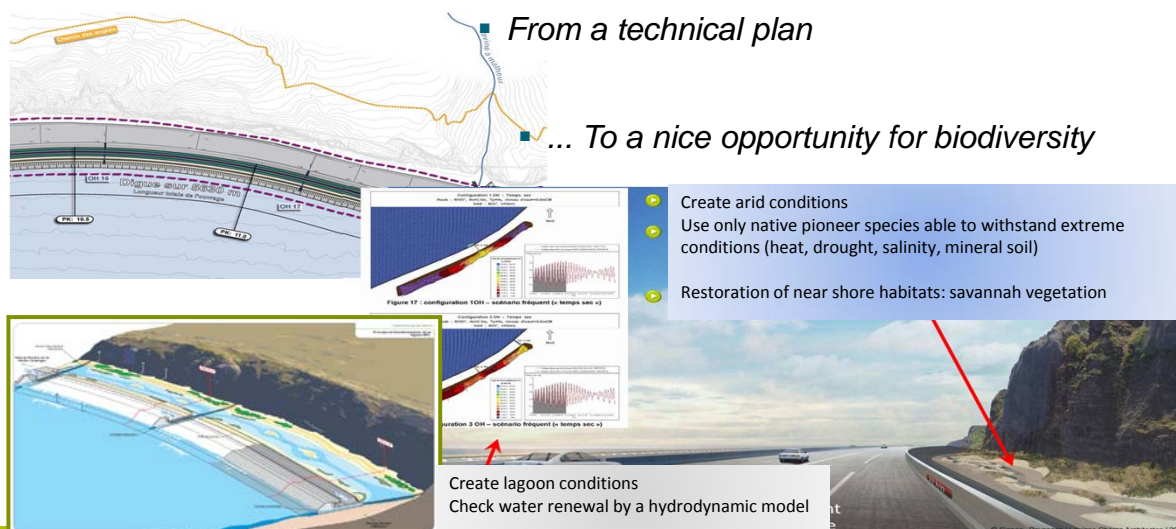
- Illustration with the consideration of marine mammals:



TRAP FOR COLLECTING FALLING ROCKS

From a technical plan

... To a nice opportunity for biodiversity



CONSIDERATION OF MARINE MAMMALS IN CONSTRUCTION METHODS

Bottom line

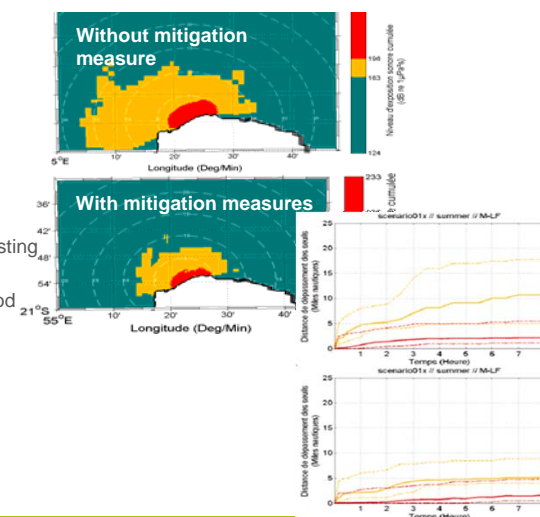
- Compliance with noise emission's objective

Requirements to have adequate means

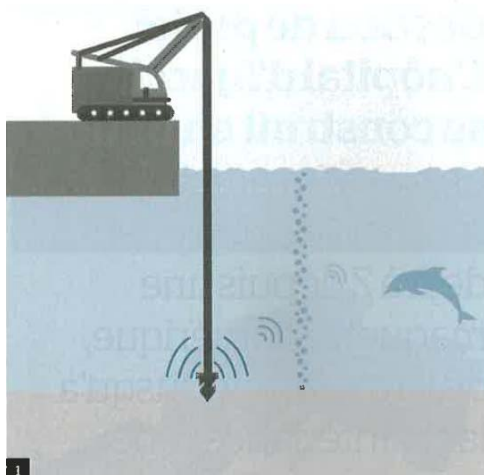
- Start noisy works after a (« ramp-up ») step
- Adapt the works methods to reduce disturbance (pile-driving, blasting rock, rock breaker)
- Organize and reduce daily construction period to have quiet period for marine mammals

Requirements to follow

- Control of under-water noise
- Detection of mammals during construction and real-time alert



NOISE BARRIER ADAPTED TO MARINE MAMMALS



CONCLUSION

Ecodesign and eco-construction applied on linear infrastructures

Require organization
and project
management

Must be accompanied
by an economic
approach

Prevent and reduce
environmental impacts,
but can also constitute
environmental
restoration opportunities



ECODESIGN AND ECOCONSTRUCTION

May, 13th 2016

— THANK YOU FOR YOUR ATTENTION —

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