مؤسسة جسر قطر - البحرين
Qatar - Bahrain Causeway Foundation

QBC - Consortium

QATAR BAHRAIN CAUSEWAY

VINCI CONSTRUCTION GRANDS PROJETS

HOCHTIEF CONSTRUCTION AG

QDVC

MEDCO MIDDLE EAST DREDGING COMPANY شركة الشرق الأوسط للجرف

PROJECT OVERVIEW

- Dual Carriageway + twin track Rail corridor
- 25,4 km Bridges
- 14,7 km Embankments
- 2 Navigation Channels; 1 flow channel
- Interchanges, Tolling, & Border Facilities

ORGANISATION

STATE of QATAR

KINGDOM of BAHRAIN

QATAR BAHRAIN CAUSEWAY FOUNDATION

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QATAR BAHRAIN CAUSEWAY CONSORTIUM

QBC Consortium

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QBC JV for Civil Works

QATAR BAHRAIN CAUSEWAY JV

MEDCO

CIVIL WORKS	MARINE WORKS
• Vinci Construction • Hochtief AG • CCC • QDVC	• Middle East Dredging Co.

(*) QDVC q.s.c. is a subsidiary of Qatari Diar & Vinci Construction Grands Projets s.a.s

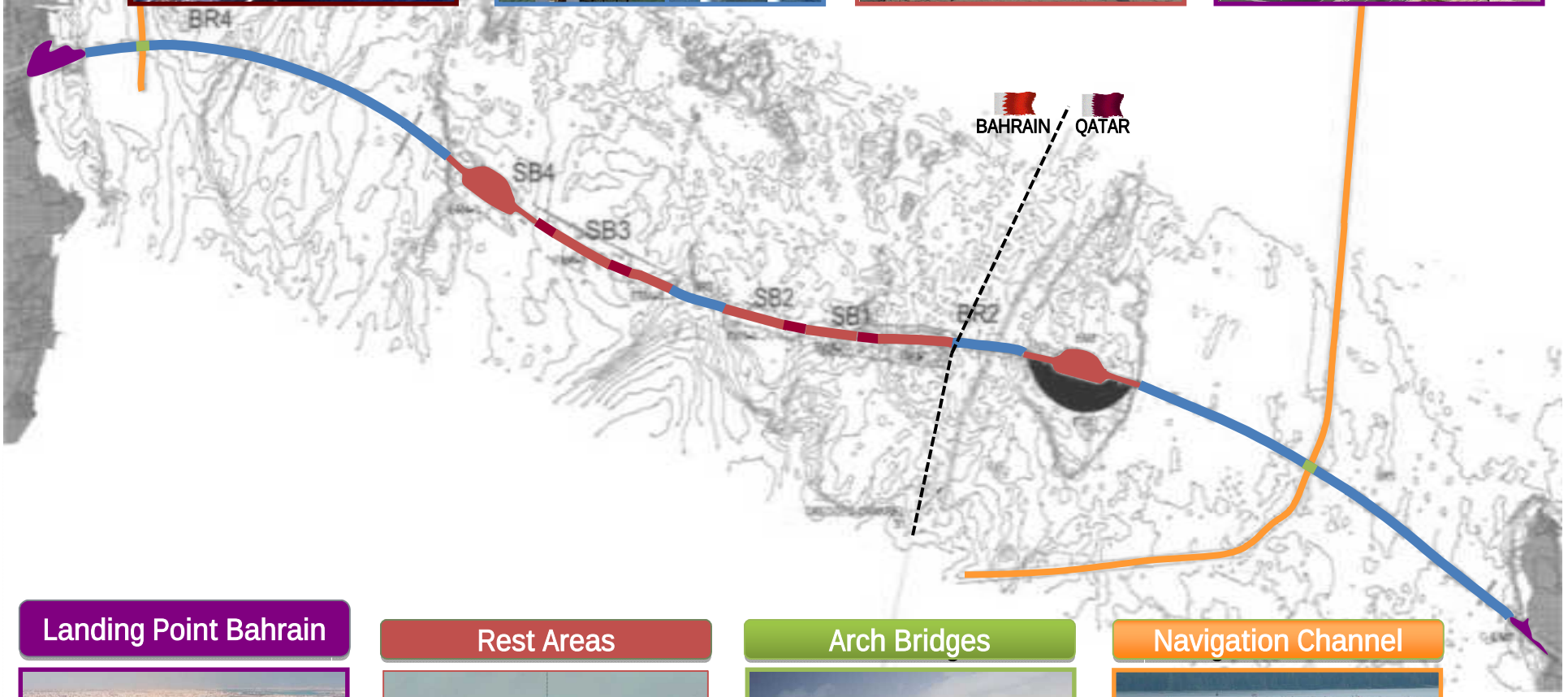
ROAD & RAIL

Short Span Bridges

Viaduct Bridges

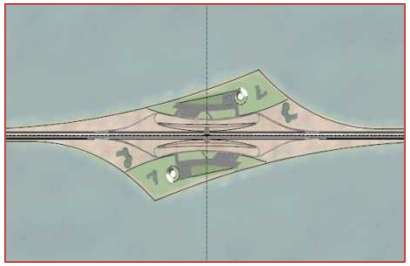
Embankments

Landing Point Qatar



Landing Point Bahrain

Rest Areas



Arch Bridges

Navigation Channel

SUMMARY

1) CARBON & CLIMATE
2) RENEWABLE ENERGY
3) WATER MANAGEMENT
4) BIODIVERSITY, ENVIRONMENT

CARBON & CLIMATE

1) CARS / CO2 COMPENSATION CAMPAIGN (1/1)

Road transport being most carbon intensive QBCC is promoting marine shipping.

Staff cars chosen by CO_2 emission;
CO_2 offset campaign.

CARBON & CLIMATE

2) "LOW CARBON" CONCRETE (1/4)

= Sustainable Material

100-200kg CO_2 produced / ton concrete

ECO_2 of concrete compares favorably with the ECO_2 of other material (e.g. timber, steel).

CARBON & CLIMATE

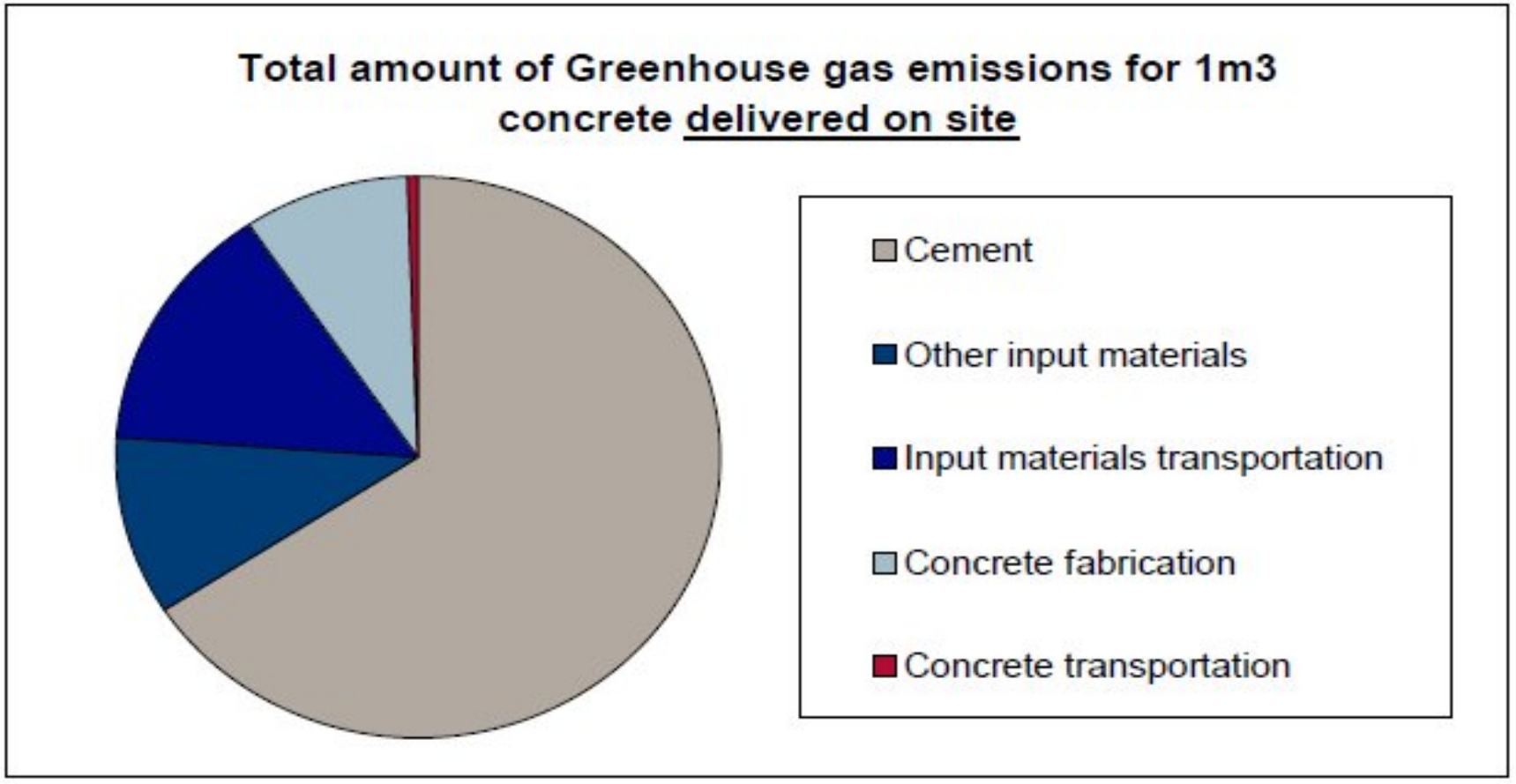
2) "LOW CARBON" CONCRETE (2/4)

GHG of 1m^3 concrete highly dependent on the Cement used ➔

Cement:	75%
Other input material:	3%
Input materials transportation:	17%
Concrete fabrication:	6%
Fresh concrete transportation:	1%
Site concrete losses:	3%

CARBON & CLIMATE

2) "LOW CARBON" CONCRETE (3/4)



CARBON & CLIMATE

2) "LOW CARBON" CONCRETE (4/4)

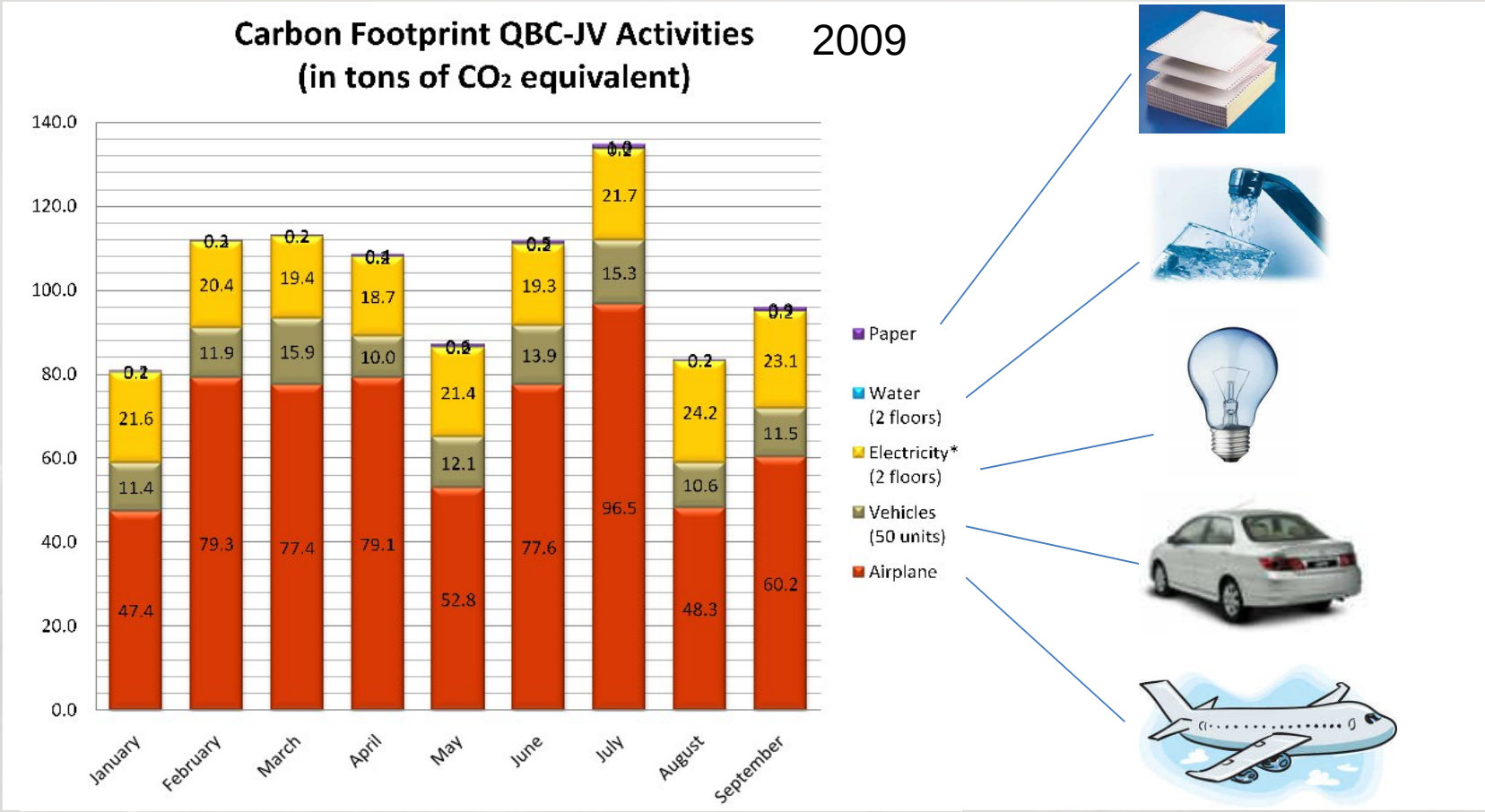
CEM III concrete: 30% less GHG than with CEM I saving 1088 tons of CO_2 for each 10.000 to of concrete.

Improvements through additives like GGBS

Operation phases: 90% of the energy consumption (just 10% lies with the ECO_2)

CARBON & CLIMATE

3) CO2 MONITORING (1/1)



CARBON & CLIMATE

4) COMPOSTING (1/1)

Reduction of GHG emissions;

As resource of nutrients + organic matter;

Reduction of waste transports, treatment.

ENERGY

1) SOLAR ENERGY (1/2)

Transformation of sunlight energy to thermal energy for partial construction needs and later operation

ENERGY

1) SOLAR ENERGY (2/2)

Heat transfer fluid circulates through receivers,
Steam turbine / generator used to produce electricity.

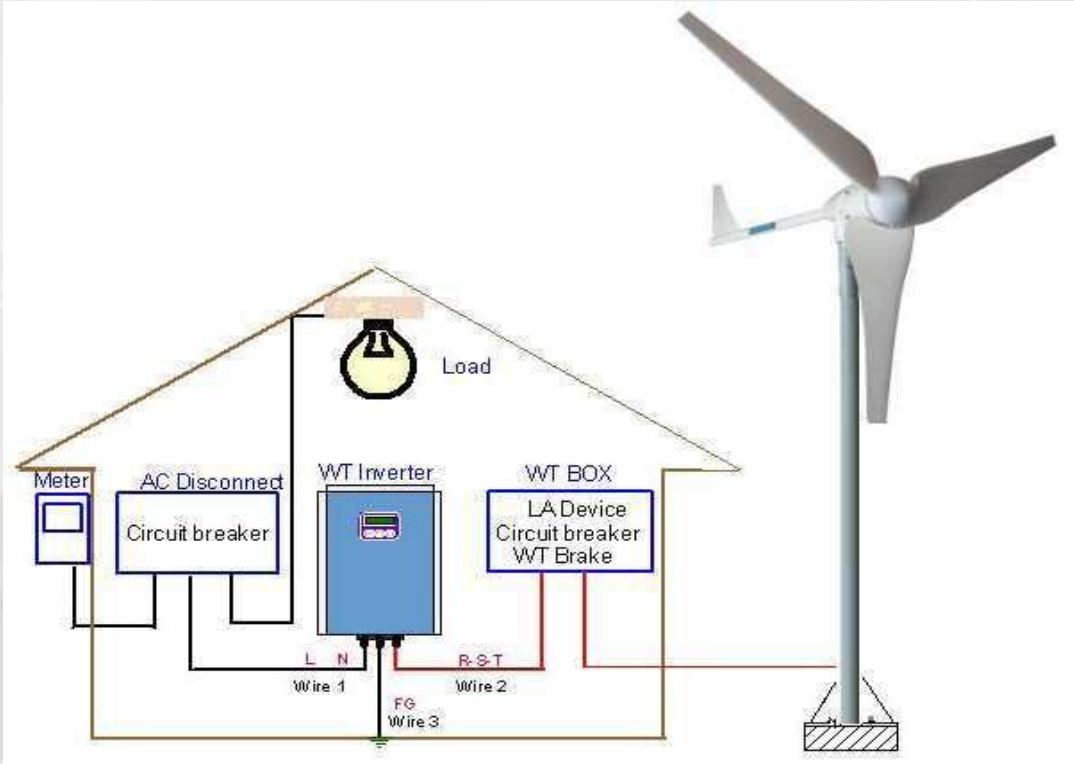
Thermal efficiency: 75%
Net solar electric efficiency: 26%

ENERGY

2) WIND ENERGY (1/1)

Early Project phase: Small wind turbines, 2,5 m rotor dia.

As stand alone remote electrical power supply

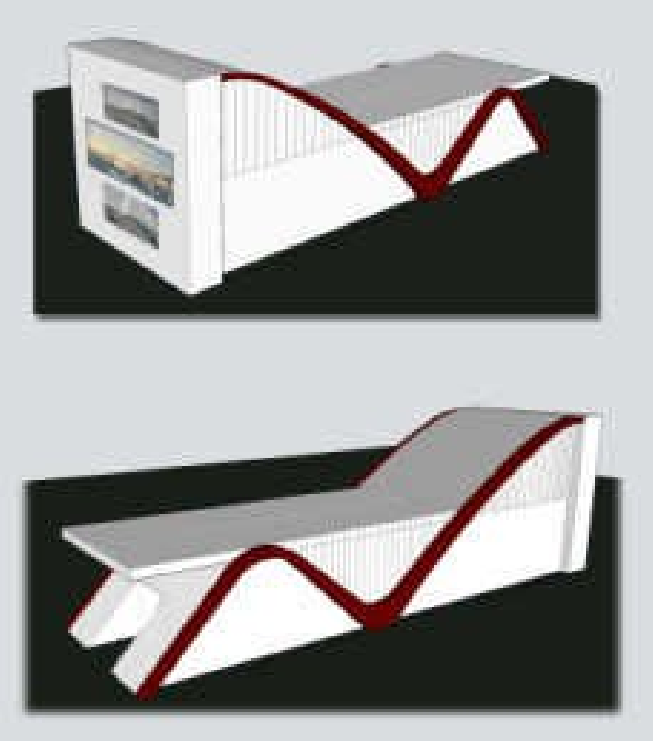


ENERGY

3) GREEN BUILDING (1/1)

Visitor centers: QSAS or LEED cert.

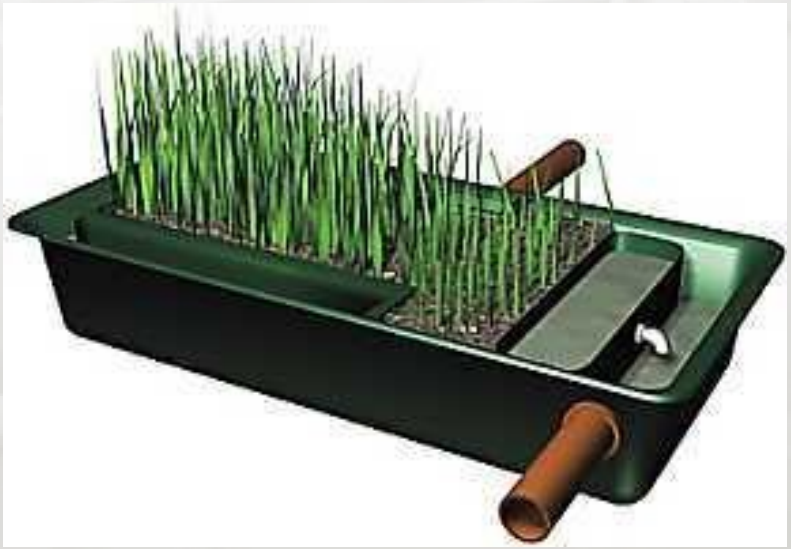
- Passive cooling features
- Vegetated open space,
- CO_2 monitoring,
- Daylight to 90% of staff,
- Alternative transportation:
  - car pooling,
  - energy,
  - efficient vehicles.



WATER MANAGEMENT

1) GREEN WASTE WATER TREATMENT (1/1)

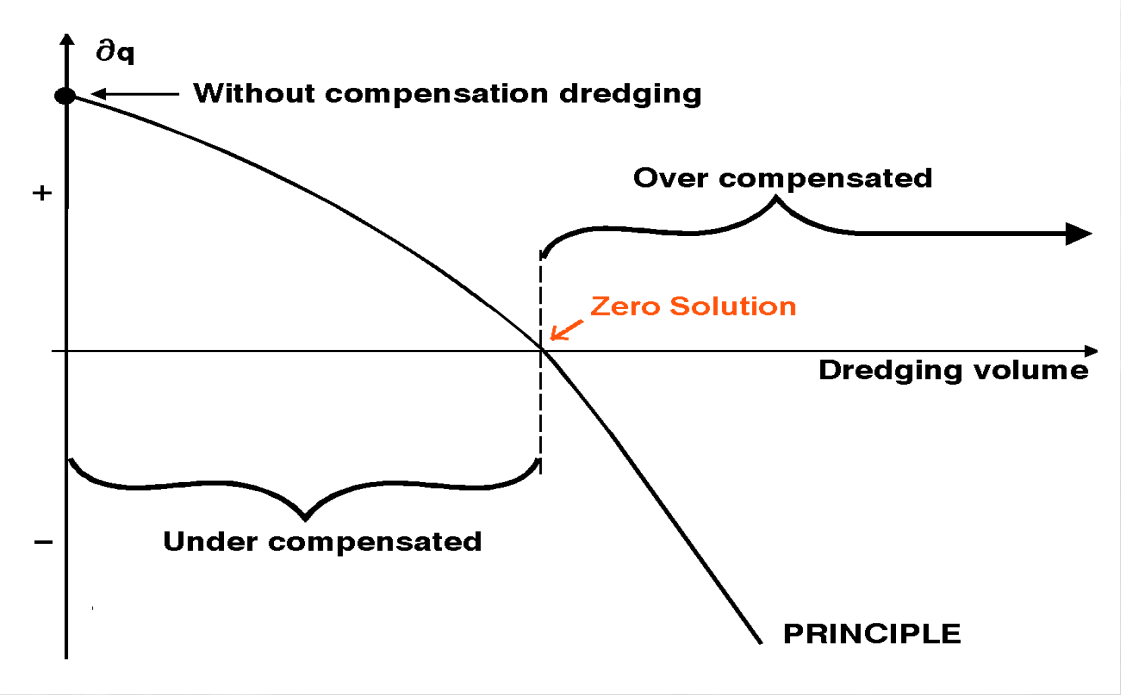
Reed beds cleaning by microorganisms consuming the sewage (nutrients) for plant growth, resulting in a clean effluent.
Zero or even negative CO2 balance.



BIODIVERSITY, ENVIRONMENT

1) ZERO SOLUTION (1/5)

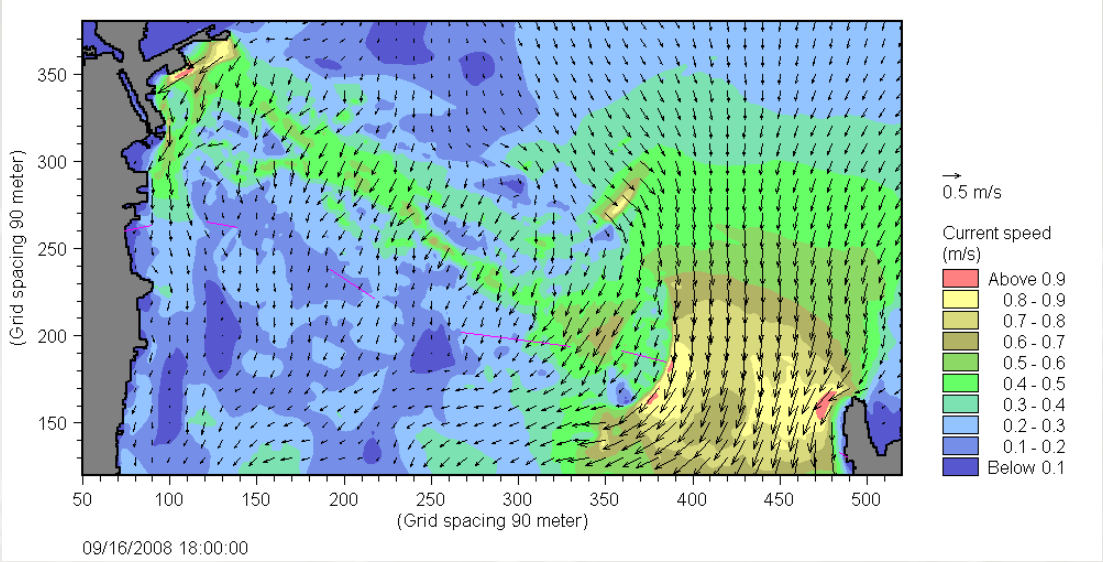
Compensation of flow reduction: channel enhancements



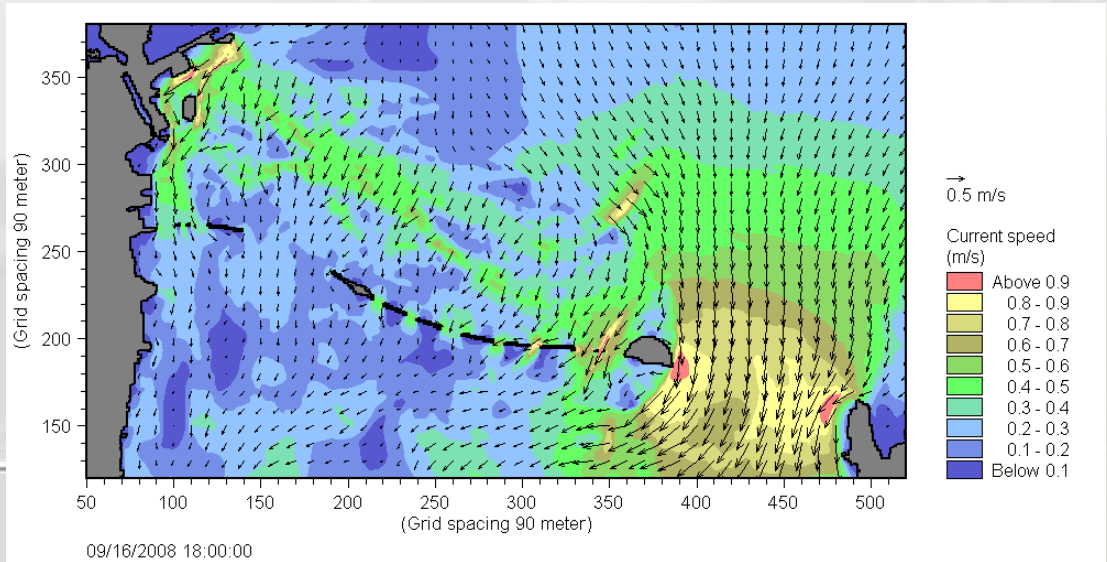
BIODIVERSITY, ENVIRONMENT

1) ZERO SOLUTION (2/5)

Current speeds **without** the Causeway



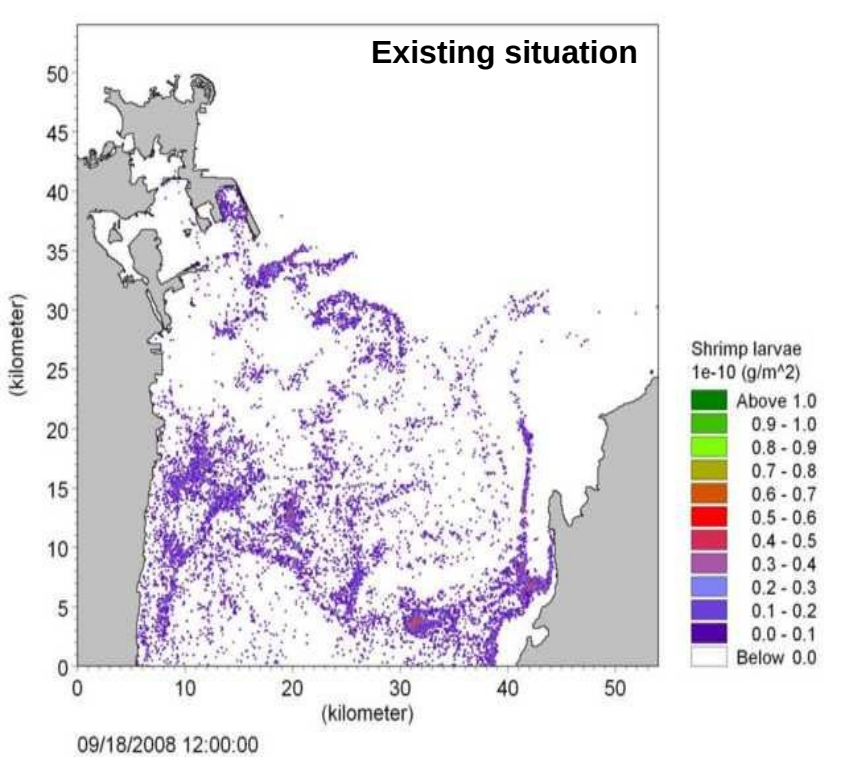
with the Causeway

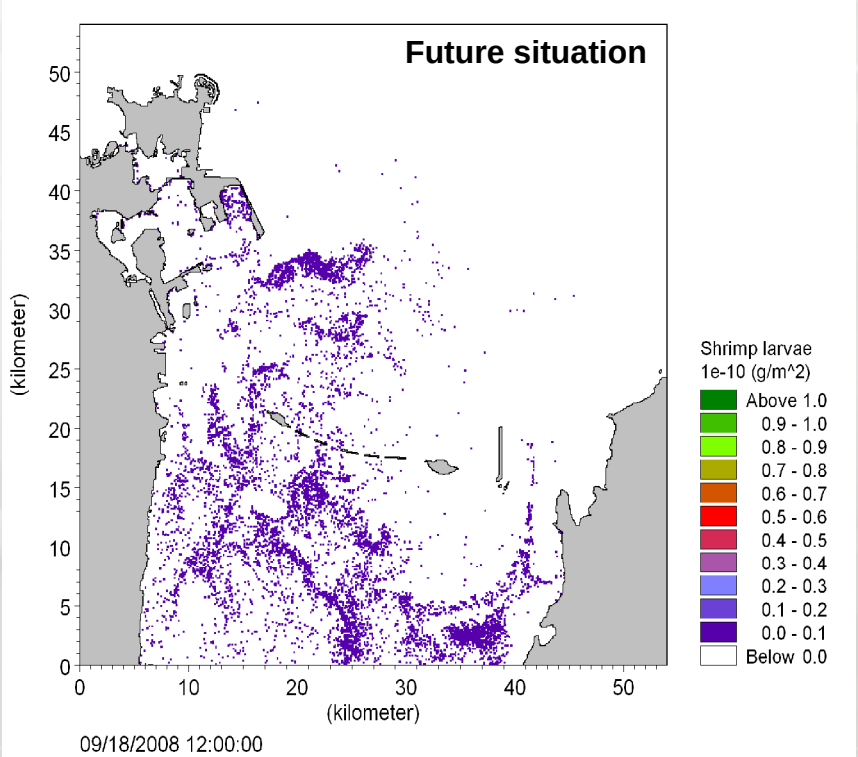


BIODIVERSITY, ENVIRONMENT

1) ZERO SOLUTION (3/5)

Modeling of shrimp larvae dispersion

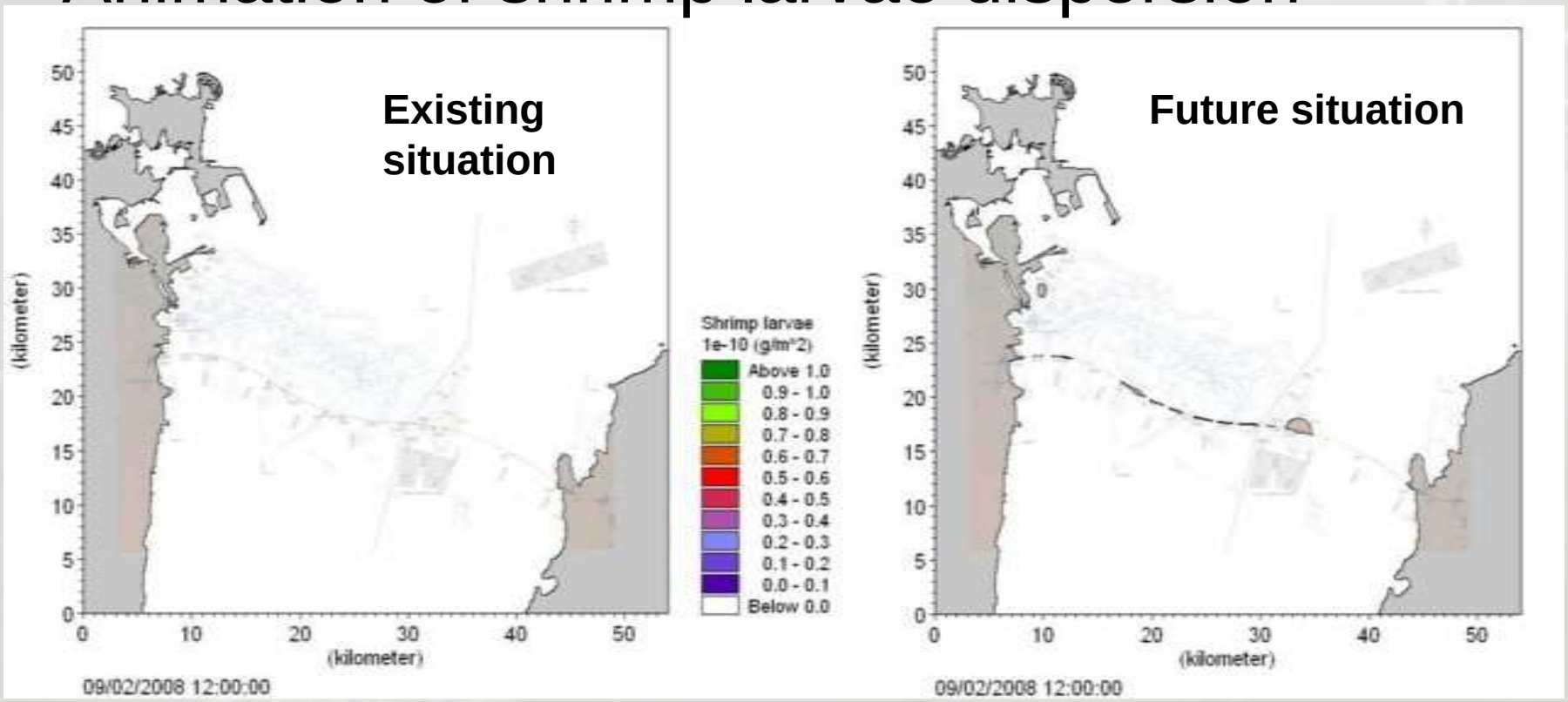




BIODIVERSITY, ENVIRONMENT

1) ZERO SOLUTION (4/5)

Animation of shrimp larvae dispersion



BIODIVERSITY, ENVIRONMENT

1) ZERO SOLUTION (5/5)

The establishment of the QBC will not have measurable effect on settling of shrimp larvae.

Area	Existing situation	Causeway established
North of the alignment	24% biomass	21% biomass
South of the alignment	76% biomass	79% biomass

DISCUSSION