

Environmental Monitoring Provisions

Case study: the OMIFCO Project



UNEP Workshop, Hamburg, November 2002

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Solutions agreed to mitigate and compensate potential environmental impacts

 risk of significant environmental impact was high

 no detailed mitigation or compensation measures were included in the EIA



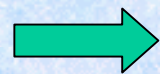
- appropriate technical solutions to be found for each remaining issue with the Sponsors and the Contractors
- adequate monitoring provisions to be included in the loan agreement and EPC Contract to ensure implementation of these solutions and compliance with the ECAs requirements

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Ammonia Emission

- Only one viable alternative: new technology (UF injection) to scrub ammonia emission from the granulation unit
- Experimental data: a maximum level of 0.4 kg of ammonia / ton of urea produced (about 60 mg/Nm³) is normally achievable but requires fine tuning
- Contractor very reluctant to guarantee with this technology a level of ammonia emission more stringent than the Omani regulations (160 mg/Nm³ - WB: 50 mg/Nm³ - UE BAT: 50 mg/Nm³)



EPC Contractor to guarantee a maximum level of 0.4 kg/t urea, but:

- in case this level is not achieved and not deemed achievable in the situation by an Independent Environmental Engineer (IEE), the EPC contractor responsibility to be released
- in case this level is not achieved, Sponsors commit to implement the mitigation measures proposed by the IEE in a cost-effectiveness approach

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Potential impact on the natural habitats - Sur Industrial Estate



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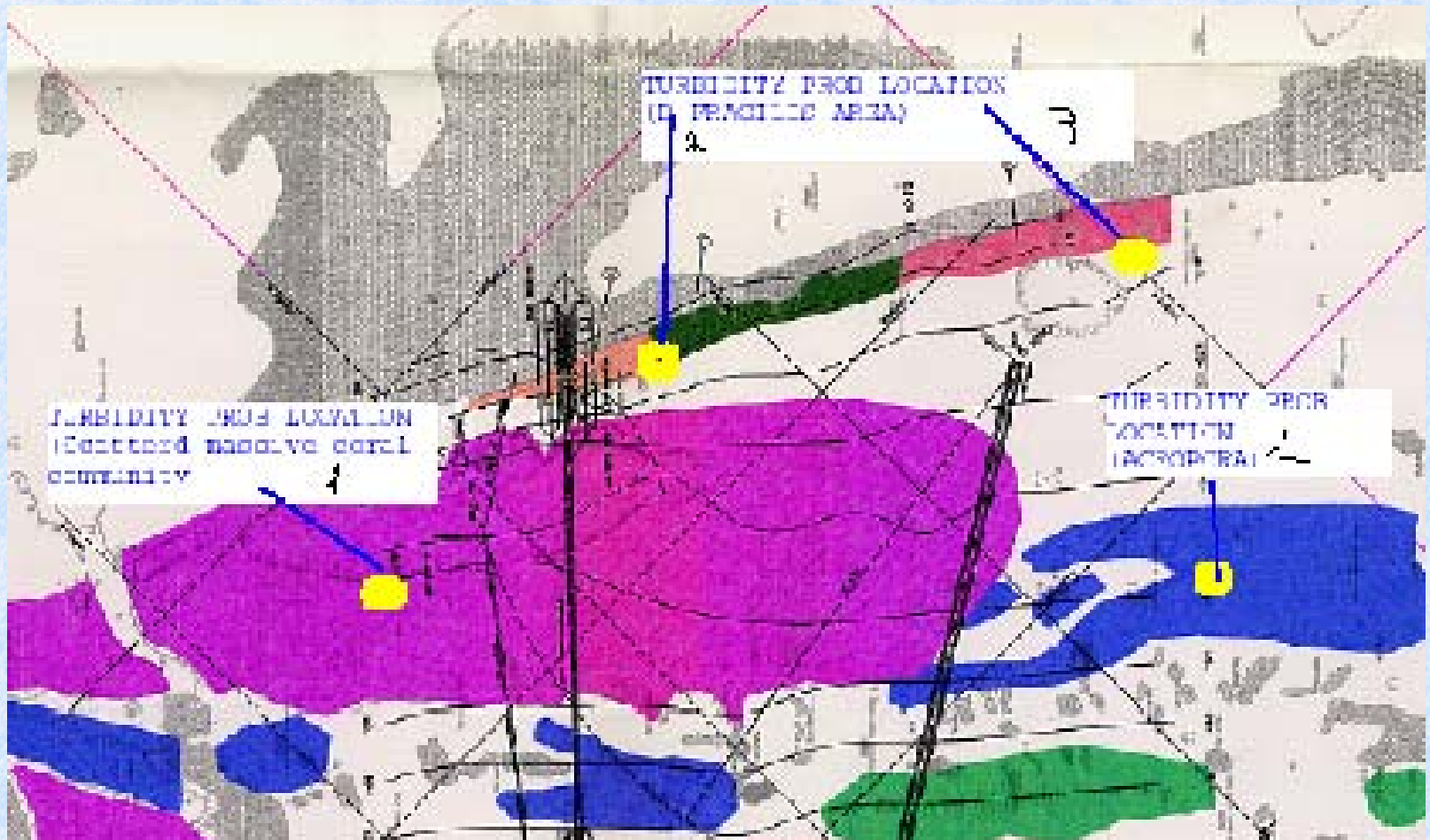
Potential impact on the natural habitats - OMIFCO Site



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Potential impact on the marine environment: corals (I)



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Potential impact on the marine environment: corals (II)

During construction

Rare and sensitive corals likely to be affected by the increase of turbidity

- ➡ Sensitivity thresholds to be determined
- ➡ Turbidity monitoring system to be implemented by the EPC Contractor
- ➡ Commitment of the Sponsors / EPC Contractor to suspend marine works in case the turbidity increases above the sensitivity thresholds

During operation of the plant

Rare and sensitive corals likely to be affected by the increase of temperature due to the discharge into the sea of the cooling water

- ➡ Modeling to determine the best design of the cooling water outfall (increase of temperature $< 1^{\circ}\text{C}$ on corals)
- ➡ Commitment to implement this design and compliance monitoring

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Potential impact on fauna

Marine turtles

- ➡ Supplementary studies to be performed
- ➡ Result of these studies to be reviewed by the EII
- ➡ Mitigation measures identified in these studies to be implemented by the Sponsors

Mountain gazelles

- ➡ Impact very likely (Sur Industrial Estate): no appropriate mitigation measure
- ➡ Compensation measure: commitment to support the implementation of a Natural Reserve for Mountain gazelles in the Sur province

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Other issues

Resettlement of Al Ghalilha inhabitants

- Not directly related to the project: decision of local authorities to implement the Sur Industrial Estate

➡ No specific commitment from the Sponsors: supplementary information provided through local authorities and site-visit

NO_x concentration in ambient air

➡ Commitment to implement mitigation measures if necessary after the more detailed modeling to comply with the WHO guidelines

Risk of ammonia leak in the cooling water

➡ Commitment to continuously monitor the cooling water pH and to implement immediate actions in case of a leak

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Monitoring Principles

- **Options regarding Contractors environmental obligations**

➡ Contractor obligations can be included in:

- the supplier policy,
- the EPC Contract,
- a special purpose document.

- **Options regarding Project Company environmental obligations**

➡ Project Company obligations can be included in:

- the buyers credit policy,
- the Financial Documentation: Common Term Agreement et Intercreditor Agreement v/ Loan Agreement ,
- a special purpose document.

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Monitoring Principles

- **Many Sponsors / Contractor commitments to be implemented during the pre-construction phase, construction phase and operation phase**
 - ➡ need to be included in an documentation
 - ➡ a third-party monitoring is required
- **ECAs need to be in a position to react adequately in case of non compliance**
 - ➡ the EIE to warn Lenders in case of non compliance
 - ➡ the EIE to propose, where possible, some mitigation measures to be implemented by the Sponsors (in a cost-effectiveness approach)
 - ➡ the Lenders to decide, in cooperation with the Sponsors, what measures to be implemented in case of non compliance

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Monitoring Principles

- **Environmental Term Sheet**

➡ summary of all environmental solutions agreed between the parties

- **EPC Contract**

➡ all Contractors environmental obligations included in the EPC Contract

- **Common Term Agreement**

➡ all Project Company environmental obligations included in the Common Term Agreement

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Monitoring Principles

- **Intercreditor Agreement**

- ➔ Qualification of an environmental event of default

- ➔ Definition of the voting majorities in case of environmental event of default

- **ECAs policy**

- ➔ the Commercial banks obligations regarding environmental matters

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Monitoring Principles

- **EIE Involvement**

- ➔ Selection done by the lenders and agreed by the Project Company

- ➔ TOR's done by the lenders and agreed by the Project Company

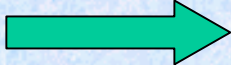
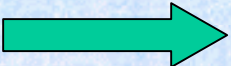
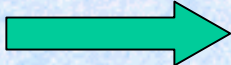
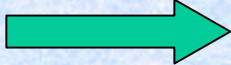
- **Mission of the EIE**

- ➔ advise the lenders regarding environmental matters

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Appropriate solutions eventually agreed, but....

-  time-consuming process
-  requires a high level of involvement of the Sponsors in the process
-  requires a close cooperation between ECAs and the financial / environmental teams
-  Sponsors or Contractor have no direct responsibility on some site-specific impacts (resettlement, gazelles, ...)