



The Impact of Wind Power Development on Birds Experience from Egypt 1st November 2012



Presentation Outline

I. Findings of Previous studies (2006 – 2009)

II. Environmental & Social Impact Assessment at the Gulf of Suez Spring and Autumn (2010)

1. Study area and methods

2. Impact assessment

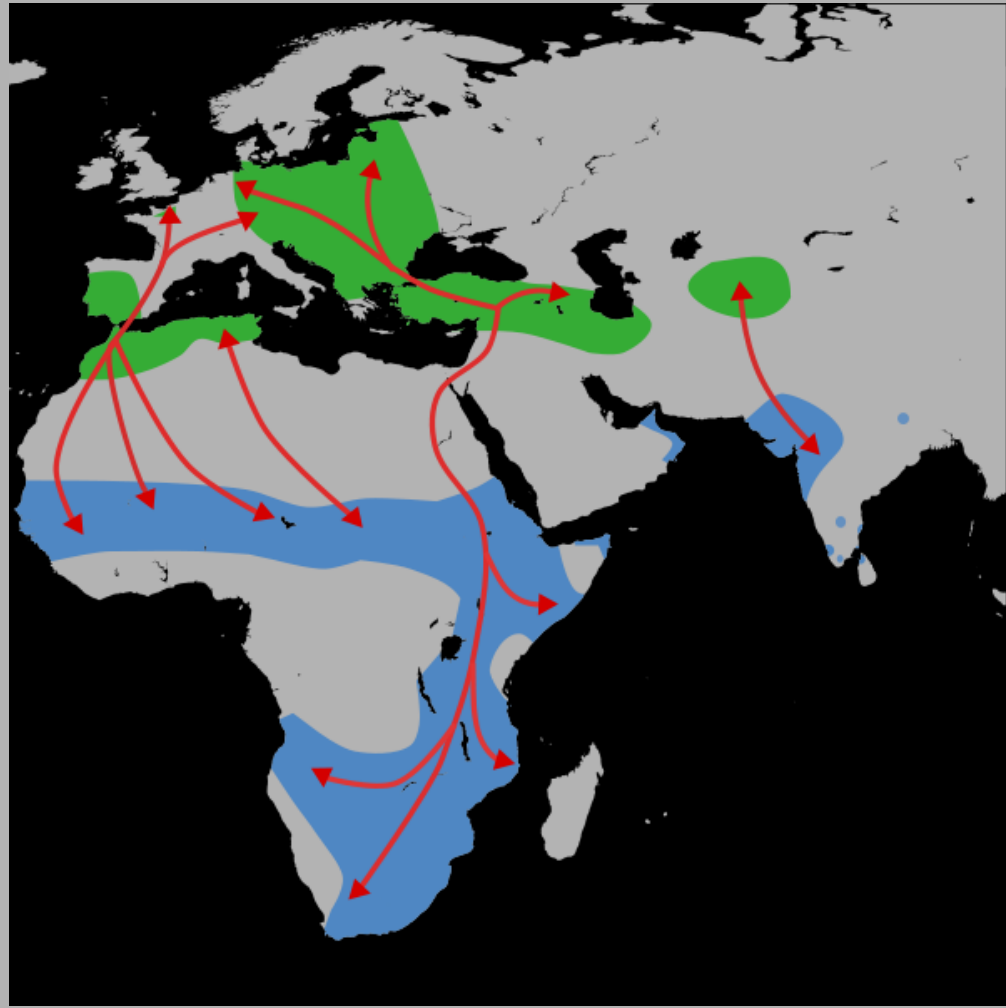
3. Finding solutions: Recommendations & mitigation measures



Overview of Major birds Flyways

- A flyway is a major route for birds on migration, and for long-distance migrants, flyways generally span over continents.

- Middle East flyway is the most important one for number of species, Gulf Suez is a very important part of the Middle East fly way.



General Idea of Bird Migration in the Gulf of Suez Area



autumn

spring

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**First systematic
ornithological
investigation
in 2006 and 2007**

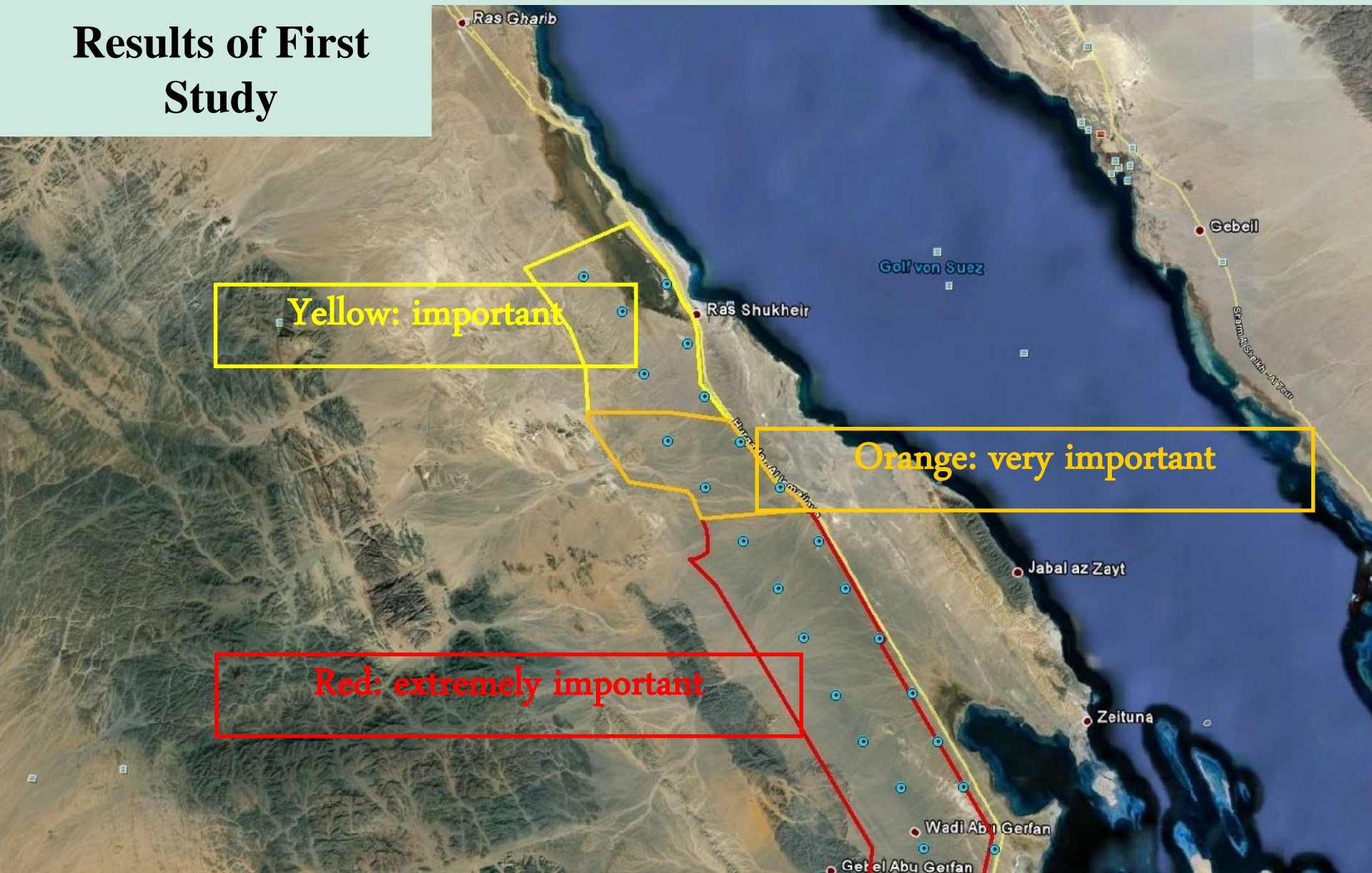
**-Study Area: 650
sqkm**

**- 26 observation
sites:**


South - North



Results of First Study



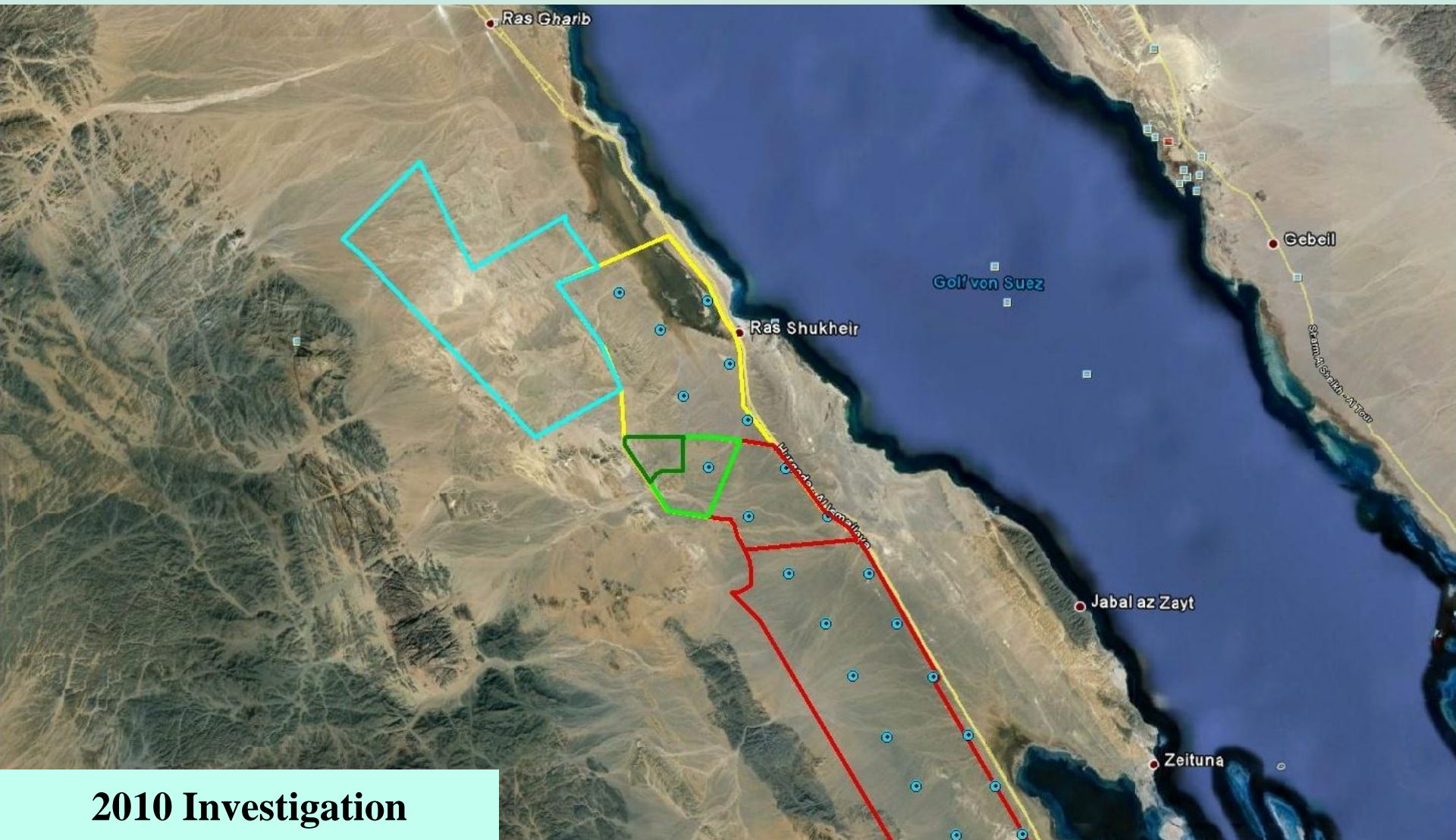
II. Environmental & Social Impact Assessment at the Gulf of Suez Spring and Autumn (2010)



The Gulf of Suez is located along the main routine for bird migration through Egypt. Given the potential for wind energy projects to pose some risks to these birds, the project site has had to be relocated in order to avoid such risks.

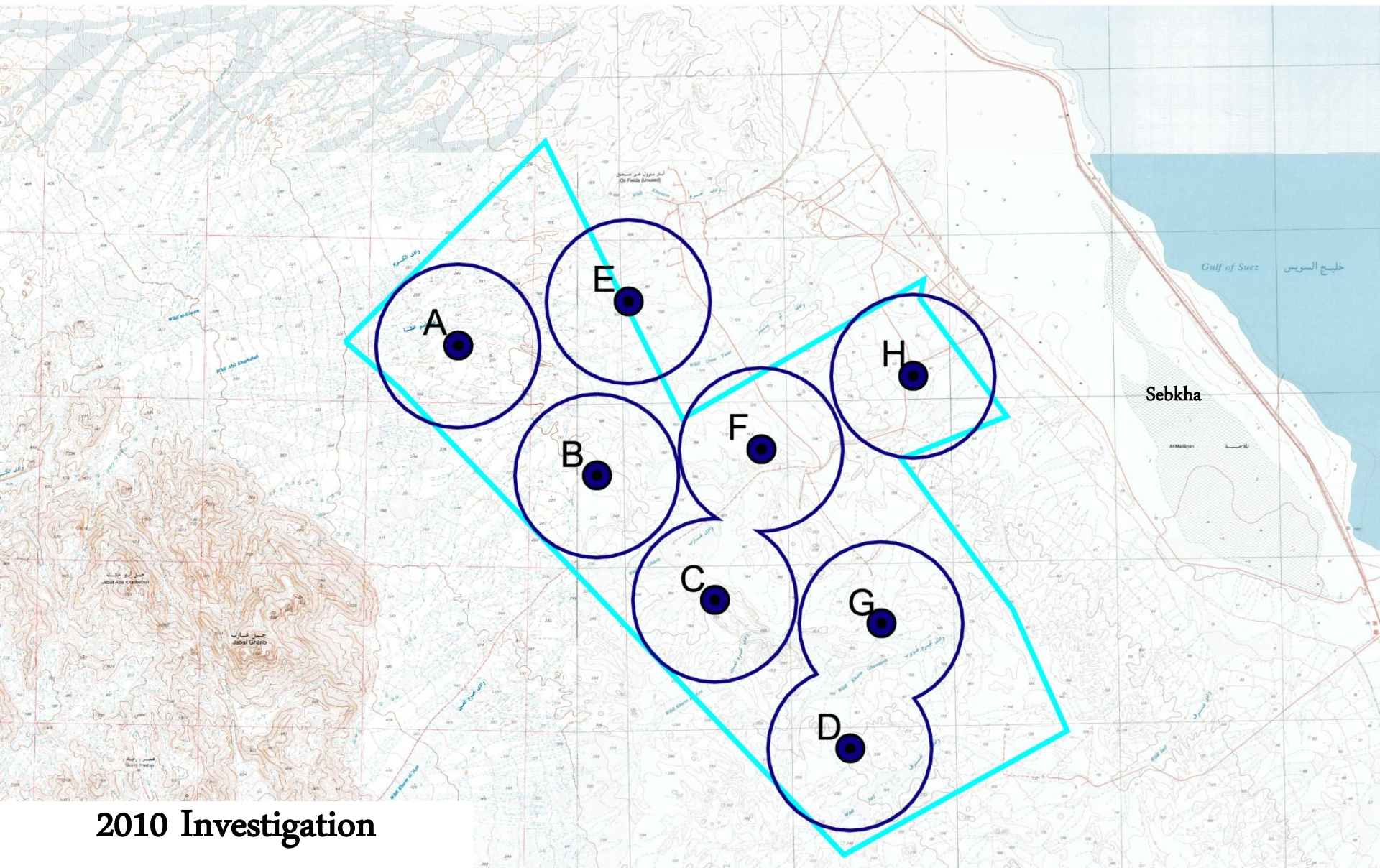
The site change is obviously causing delay to the implementation of the wind farm.





2010 Investigation

- Study area about 200 sqkm
- Red Sea Mountains only a few km to the West

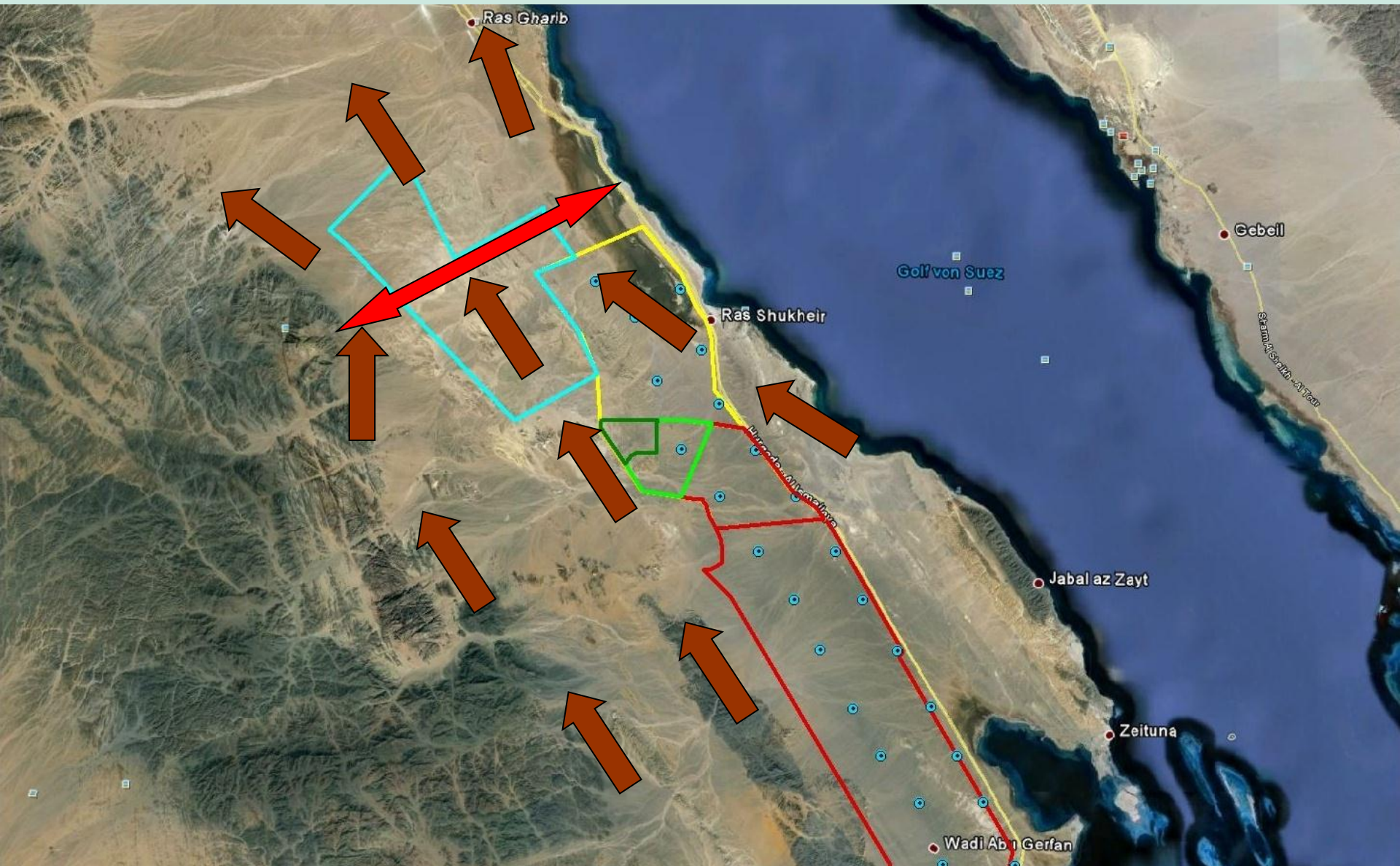


2010 Investigation

- 8 Observation Sites: A – H
- About 100 H Of Observation At Each Site In Autumn & In Spring



Remarkable numbers of migrating birds avoided the Red Sea crossing and migrated further NW.



The distance between the higher Red Sea Mountains and the coastline comparable low: might lead to a concentration of migrating birds.

General Remark

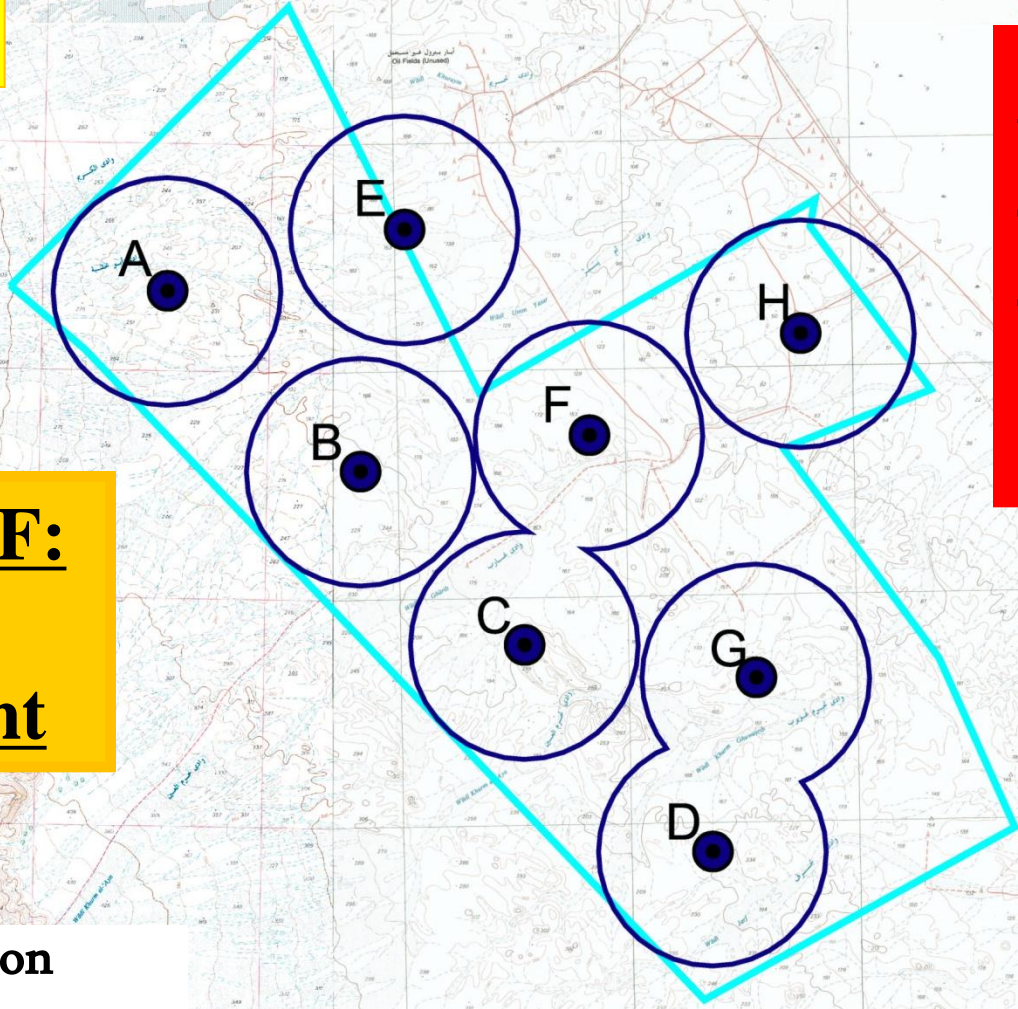
The red area (Extremely Important flyway for the migrating birds) that was not recommended in the previous studies could be reconsidered after demonstrating the results of the recent study, as birds migrating flyways could be hardly monitored or expected.

Site A&B:
Important

Site C to F:
Very
important

Site G & H:
Extremely
important:
Impact not
acceptable!

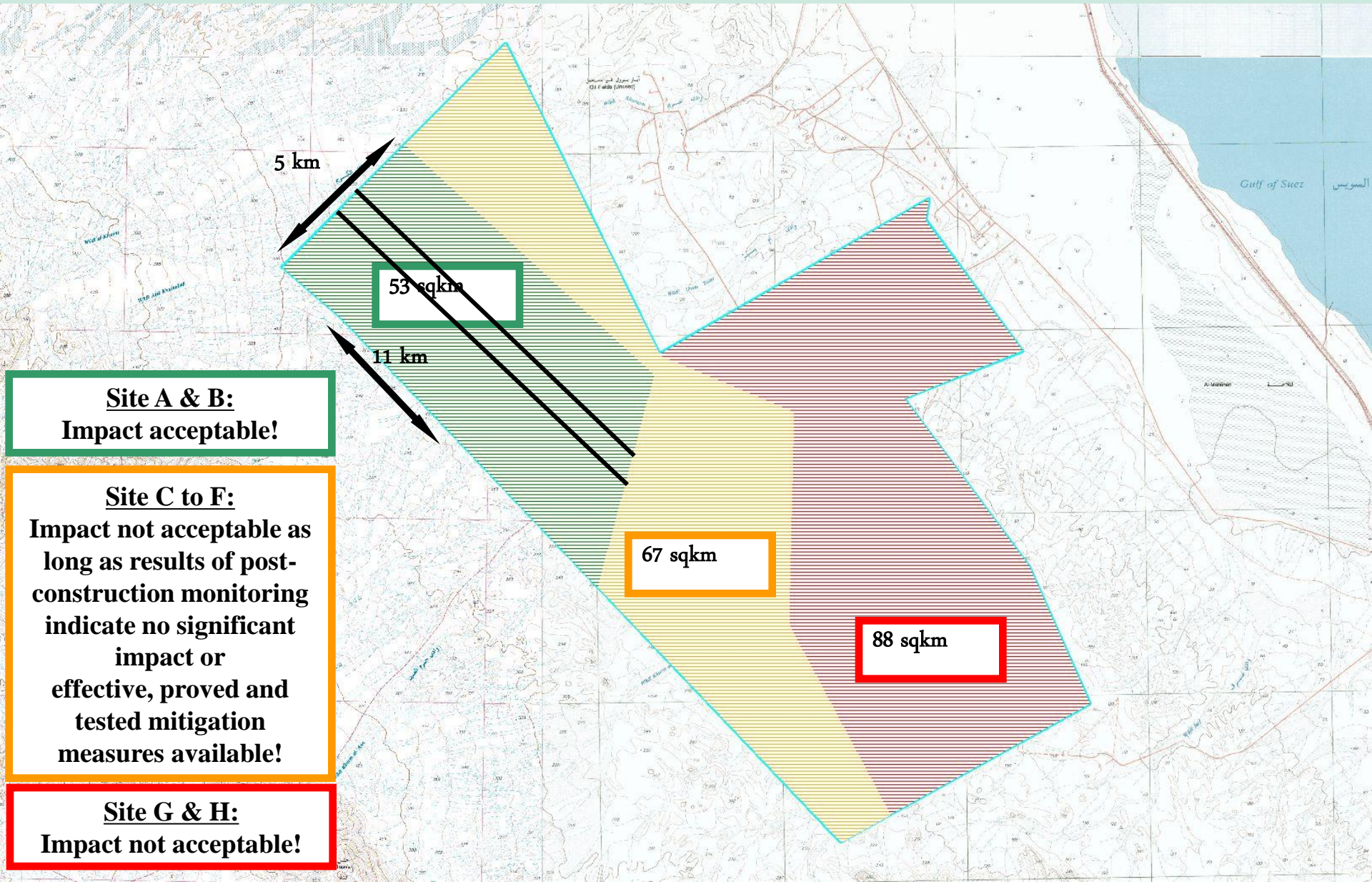
2010 Investigation



- 8 Observation Sites: A – H

- About 100 H Of Observation At Each Site In Autumn & In Spring

Impact Assessment: Recommendations



Site A & B:
Impact acceptable!

Site C to F:
Impact not acceptable as long as results of post-construction monitoring indicate no significant impact or effective, proved and tested mitigation measures available!

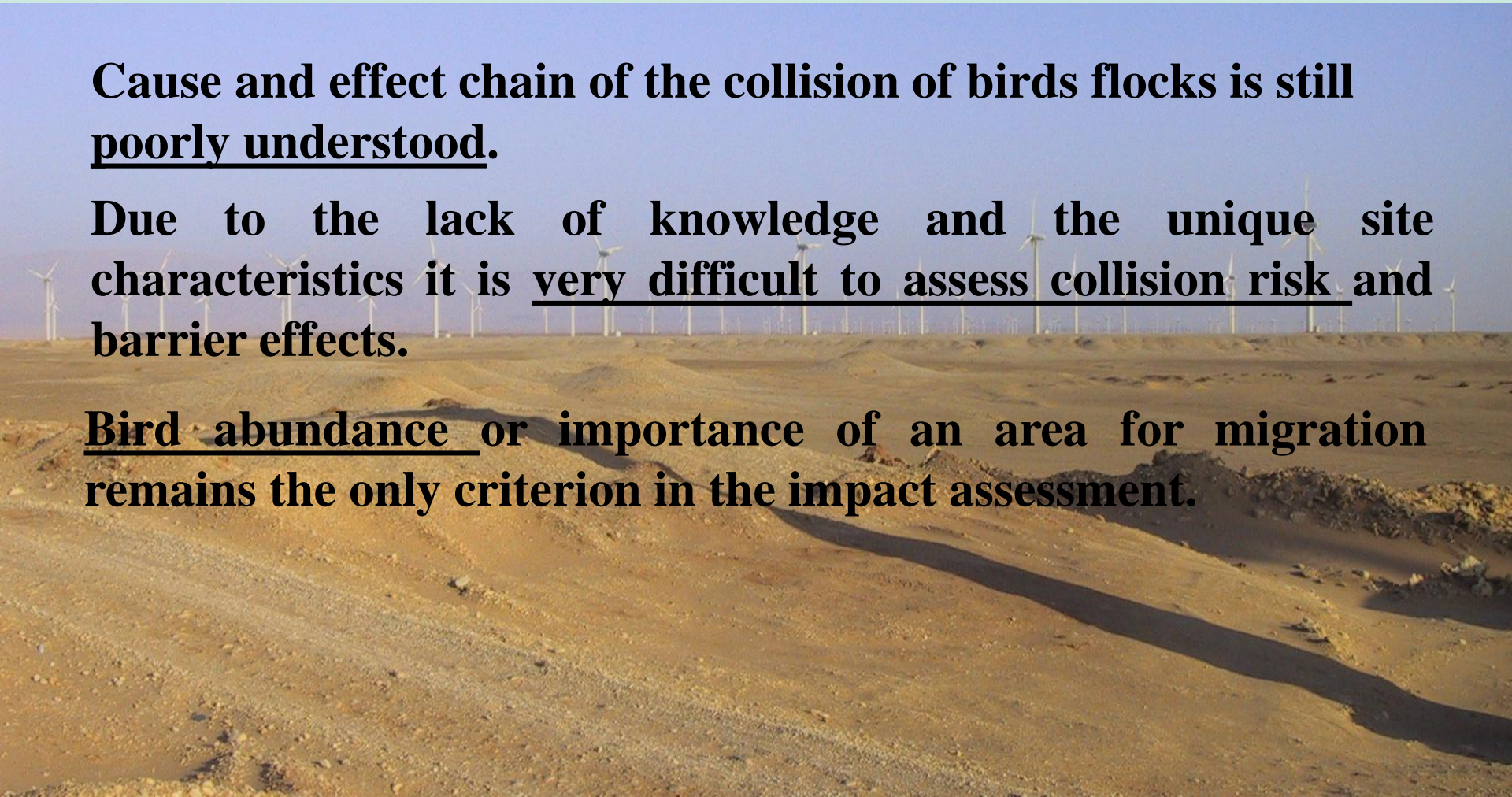
Site G & H:
Impact not acceptable!

Impact Assessment: Collision Risk And Barrier Effect

Cause and effect chain of the collision of birds flocks is still poorly understood.

Due to the lack of knowledge and the unique site characteristics it is very difficult to assess collision risk and barrier effects.

Bird abundance or importance of an area for migration remains the only criterion in the impact assessment.



Finding solutions: Mitigation measures

- **Maintain corridors parallel to main wind direction.**
- **Avoid small turbines closely packed together.**
- **Height of 125 m in combination with increased distances between WTGs as a consequence of larger rotor diameter seems to be acceptable**
- **Avoid lattice towers**
- **Avoid lighting of turbines**
- **Paint turbine blades**
- **Post-constriction monitoring programme**

**Finding solutions:
Temporary shutdown of turbines in spring**

Assumption:

Non-operational turbines have no significant effect on migrating birds (at least with regard to collision risk).

• **Scenario I (“worst case”):**

Shutdown of all turbines from March 1st to May 18th during daytime (*e.g.* 1 h after sunrise to 1 h before sunset)

Calculated energy loss : around 10 %

Finding solutions: Temporary shutdown of turbines in spring

Scenario II: (“shutdown on demand”)

**Shutdown of all turbines in times of high migratory activity
OR large flocks approaching the wind farm.**

Bird monitoring required (from March 1st to May 18th):

- Team of two ornithologists using a horizontal radar**
- Ornithologist should stay in close contact with engineers**
- Ornithologists define times of shutdown**

Calculated energy loss : around 2%

**Scenario II seems to be an effective mitigation measure:
as impact will be minimize for a significant amount of bird
and energy loss seems to be acceptable**

Summary

Migratory activity was much higher than expected in spring, while it was low in autumn.

Consequences (with regards to bird conservation):

- 1. No installation of wind farms in the eastern and south-eastern parts of the study area (88 sqkm)**
- 2. No installation of wind farms in the middle and southern parts (67 sqkm) as long as results of a post-construction monitoring indicate no significant impact or as long as effective, proved and tested mitigation measures (e.g. temporary shutdown) available**
- 3. Installation of wind farms in the north-western (53 sqkm) acceptable if technical avoidance and mitigation**

Thank You For Your Attention!

