

# Appendix 3

**Examples of the technique of the use of matrix as a management tool for decision-making.**

## An example of the use of the matrix

### Site A (hypotetical)

(see point 5.5 of the main texte)

Users	Habitats			Species			Other elements of conservation concerns but not listed in EC Directives				
	1110 sandbanks	1170 reefs	1180 leaking gasses	Cetaceans	Birds eating Fish	Birds eating Benthos	Phoca vitulina	Large fish	Large moluscs	Natural physical processes	selected species xx
<b>SPACE</b>											
windmills				?	?						
Harbours											
Art. islands											
Oil and gas exploration											
Oil and gas exploitation											
Shipping channels				?							
Pipelines/cables											
Military practice											
Tidal energy											
<b>FISHERIES</b>											
Bottom trawling										?	
Shell fishery/dredging											
Collection biogenic structures											
Pelagic fishery											
Seines, driftnet, line fisheries											
Set nets											
<b>MINING/DREDGING</b>											
Sand mining											
Gravel mining											
Channel dredging											

not relevant  
 no impact  
 easy regulation  
 zoning of activity  
 conflict -> regulation



Site B										
Users	Habitats		Species			Other elements of conservation concerns but not listed in EC Directives				
	reefs	leaking gasses	Cetaceans	Birds eating Fish	Birds eating Benthos	Phoca vitulina	Large fish	Large molluscs	Natural physical processes	Some other selected species
<b>SPACE</b>										
windmills				?						
Harbours										
Art. islands										
Oil and gas expl										
Shipping channels										
Pipelines/cables										
Military practice										
Tidal energy										
<b>POLLUTION</b>										
Oil										
Chemical										
Eutrophication										
<b>FISHERIES</b>										
Bottom trawling								?		
Shell fishery/dredging										
Collection biogenic structures										
Collection manganese knolls etc										
Pelagic fishery										
Seines, driftnet, line fisheries										
Set nets										
Whaling										
<b>MINING/DREDGING</b>										
Sand mining										
Gravel mining										
Channel dredging										
<b>DISTURBANCE</b>										
Shipping										
Sesmic surveys.										
Pipelines										
Cables (magnetic fields)										

not relevant  
 no impact  
 easy regulation  
 zoning of activity  
 conflict -> regulation



## **Examples of possible outcomes after evaluation of the different impacts of human activities on the ecosystem of the sites “A” and “B”**

### **1. Wind parks**

Wind parks can be accommodated in SAC's based on bottom biotopes. The pylons and bottom protection (mostly stone) will have an impact on the sediment, but the area impacted is so small compared to the distance the turbines are from each other (600 -750 m) that the impact in the specific natural values could be regarded as non-significant. Installation of wind parks will need implementation of safety measures that will need regulation of other uses such as dredging or bottom disturbing fisheries.

For the bottom biotopes of Site «A» and Site «B» spatial regulations may be required in order to place the structures outside the hotspots. Therefore the squares are marked yellow.

Apart from the sediment the Site «A» is designated because of the occurrence of the guillemots in late summer, when adult males with their young swim there coming from XXX for moulting and growing up of the chicks. The birds are not able to fly in that period, so there is no danger for collisions with the turbines. However the turbines have a disturbing impact on the birds. Thereby reducing the value as a bird habitat. The disturbing impact on feeding and moulting guillemots is not known, and has to be studied before permission for establishing a park can be granted. The matrix squares dealing with impacts on species are grey or yellow (with some question marks)

In case a SAC such as Site «A» would contain small reefs (biogenic such as oyster, mussel or sabellaria reefs, or rocky outcrops or large stones (Ice age relics)), zoning regulations within the SAC can be applied in order to prevent impacts on these areas which are relatively small compared to the whole Site «A». Therefore the matrix square is yellow.

### **2. Oil and gas exploration**

For offshore platforms partly the same reasoning is adopted as for wind turbines. The space occupied is relatively small, so there is no significant impact on the bottom ecosystem. There may be disturbing impact on birds, but the number of platforms and the distance between them is not comparable to the much higher density of turbines. For migrating birds, among which there may be species listed in the Annexes of the directives, platforms may have a negative impact on some nights or with fog when birds are disoriented by light or flares. This impact will be prevented by mitigation measures.

For both Site «B» and Site «A», very strict safety regulations in order to prevent release of lipophilic substances (oil or detergents) to the sediment or water surface have to be implemented.

### **3. Oil pollution**

Oil slicks occur everywhere where shipping occurs or where wrecks are still lying at the bottom. Frequency, timing and location are almost unpredictable. For both Site «B» and Site «A» floating slicks will have little impact on the bottom community. Combating slicks with dispersing agents has to be prevented because these cause the oil to disperse into the water column where the small globules may be more toxic, or cause the oil to coagulate and sink to the bottom.

Because the Site «A» has a specific value for floating and foraging birds it should be prevented that oil slicks reach the area, especially in the period between July and November, when high densities of guillemot and razorbill are present. Combatment plans should be implemented and equipment and specialized manpower ready for action. Matrix squares related to oil pollution are all red

### **4. Beam trawl fisheries**

Beam trawl fishery is detrimental for bottom dwelling organisms and therefore not compatible with SAC's that are implemented because of these organisms or bottom habitats. This type of fishery should not occur in a SAC. For fishermen this means loss of fishing ground, but not necessarily measurable loss of catch. Most commercial fish species are rather mobile and migrate over such distances that at some stage they will be caught outside the SAC. It has been calculated that closure of areas up to several ICES quadrants (each approximately 55 x 55 km) in the Dutch EEZ will not result in significant lower catches for the Dutch fisheries sector. Because regulatory actions for fishery in the open sea are the responsibility of the EU, international agreements will be necessary.

### **5. Gravel mining**

Gravel does not occur in the Site «A». If small patches had occurred, prevention of mining would be sensible because the gain for the sector would be minimal.

In the Site «B» gravel mining is proposed. Because the gravel is the reason for SAC implementation, this activity should not be allowed. There are no direct financial losses for the sector because there is no extraction yet, but it will prevent future opportunities.

## An example of the use of the matrix

Site name: xx. Code: nn

Users	Habitats									Species					Other elements of conservation concerns but not listed in EC Directives			
	mudflats	saegrasses	sandbanks	reefs	leaking gasses	marine caves	Shallowinlets	estuaries	lagoons	Cetaceans	Turtles	Birds eating Fish	Birds eating Benthos	Eco-engineers	Large fish	Large moluscs	Natural physical processes	Kselected species
<b>SPACE</b>																		
windmills	blue	yellow	blue	yellow					?		?	yellow			blue	blue	grey	blue
Harbours	red	red	red	red	red	grey	red	red	red	grey		yellow	grey		blue	blue	red	blue
Art. islands	red	red	red	red	red	red	red	red	red	red	red	red	red	red	red	red	red	red
Oil and gas expl	yellow	yellow	yellow	yellow	yellow	yellow	yellow	yellow	yellow	green		green	green	yellow	green	green	green	green
Shipping channels	grey	red	grey	red	yellow	blue	yellow	yellow	yellow	?		green	red	yellow	green	green	grey	green
Pipelines/cables	yellow	red	yellow	yellow	yellow	yellow	yellow	yellow	yellow	green		green	red	yellow	blue	blue	blue	blue
Military practice	green	green	green	red	blue	red	yellow	yellow	yellow	yellow	grey	blue	blue	blue	blue	blue	blue	blue
Tidal energy	grey	red	grey	red	red	red	red	red	red	yellow	grey	grey	green	grey	green	green	red	green
<b>POLLUTION</b>																		
Oil	red	red	red	red	grey	grey	red	red	red	red	grey	red	red	red	grey	grey	grey	grey
Chemical	red	red	red	red	red	red	red	red	red	red	red	red	red	red	red	red	red	red
Eutrophication	red	red	red	red	red	red	red	red	red	red	red	red	red	red	red	red	red	red
<b>FISHERIES</b>																		
Bottom trawling	yellow	red	yellow	red	red	red	yellow	yellow	yellow	grey	grey	grey	grey	red	red	red	?	red
Shell fishery/dredging	yellow	red	yellow	red	red	red	yellow	yellow	yellow	grey	grey	grey	red	red	red	red	red	red
Collection biogenic structures	yellow	yellow	yellow	yellow	red	red	yellow	yellow	yellow	grey	grey	grey	grey	grey	grey	grey	grey	red
Collection manganese knolls etc	grey	grey	grey	grey	grey	grey	grey	grey	grey	grey	grey	grey	grey	grey	grey	grey	grey	grey
Pelagic fishery	grey	grey	grey	grey	grey	grey	grey	grey	grey	grey	grey	grey	grey	grey	grey	grey	grey	red
Seines, driftnet, line fisheries	grey	grey	grey	grey	grey	grey	grey	grey	grey	red	red	red	red	red	red	red	red	red
Set nets	grey	grey	grey	grey	grey	grey	grey	grey	grey	red	red	red	red	red	red	red	red	red
Whaling	grey	grey	grey	grey	grey	grey	grey	grey	grey	red	red	red	red	red	red	red	red	red
<b>MINING/DREDGING</b>																		
Sand mining	yellow	red	yellow	red	red	red	yellow	yellow	yellow	grey	grey	green	red	blue	grey	grey	blue	blue
Gravel mining	yellow	red	yellow	red	red	red	yellow	yellow	yellow	grey	grey	green	red	blue	grey	grey	blue	blue
Channel dredging	yellow	yellow	yellow	yellow	red	red	yellow	yellow	yellow	grey	grey	green	red	blue	grey	red	blue	blue
<b>DISTURBANCE</b>																		
Shipping	grey	grey	grey	grey	grey	grey	grey	grey	grey	green	grey	green	green	blue	blue	blue	blue	blue
Sesmic surveys.	grey	grey	grey	grey	grey	grey	grey	grey	grey	green	grey	green	green	blue	blue	blue	blue	blue
Pipelines	grey	grey	grey	grey	grey	grey	grey	grey	grey	green	grey	green	green	blue	blue	blue	blue	blue
Cables (magnetic fields)	grey	grey	grey	grey	grey	grey	grey	grey	grey	?	grey	grey	grey	blue	blue	blue	blue	blue

not relevant  
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