

Horns Rev 2

Time Schedule, Contract Strategy and Choice of Technology



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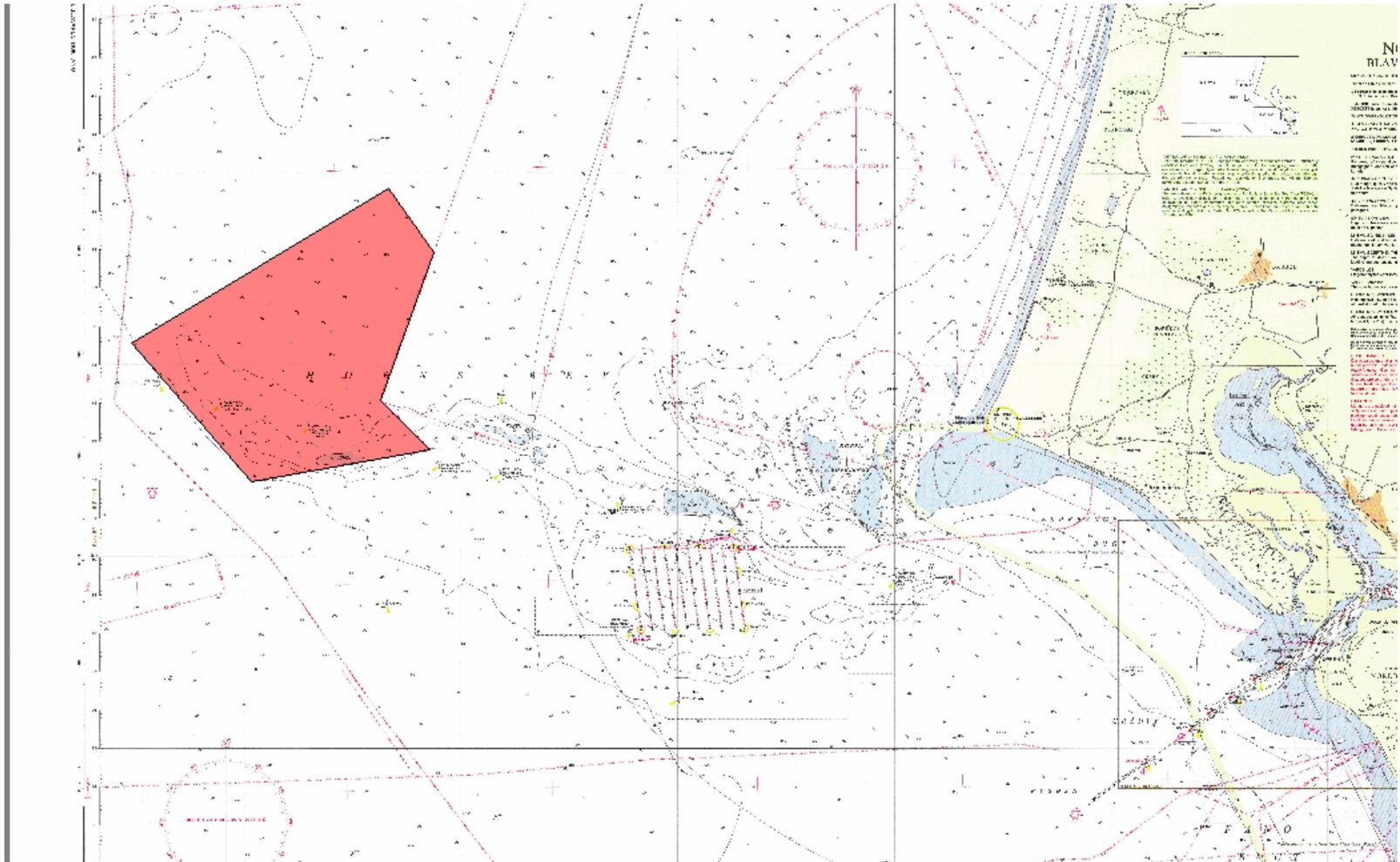
Energi E2 has been awarded concession to build Horns Rev 2 Commissioning in 2009

- Concession awarded following a public tender
- Award criterion: lowest price for first 50,000 hours
- Grid connection made by and paid by grid company
- No uncertainty regarding grid connection
- No planning delay
- Society only pays market price

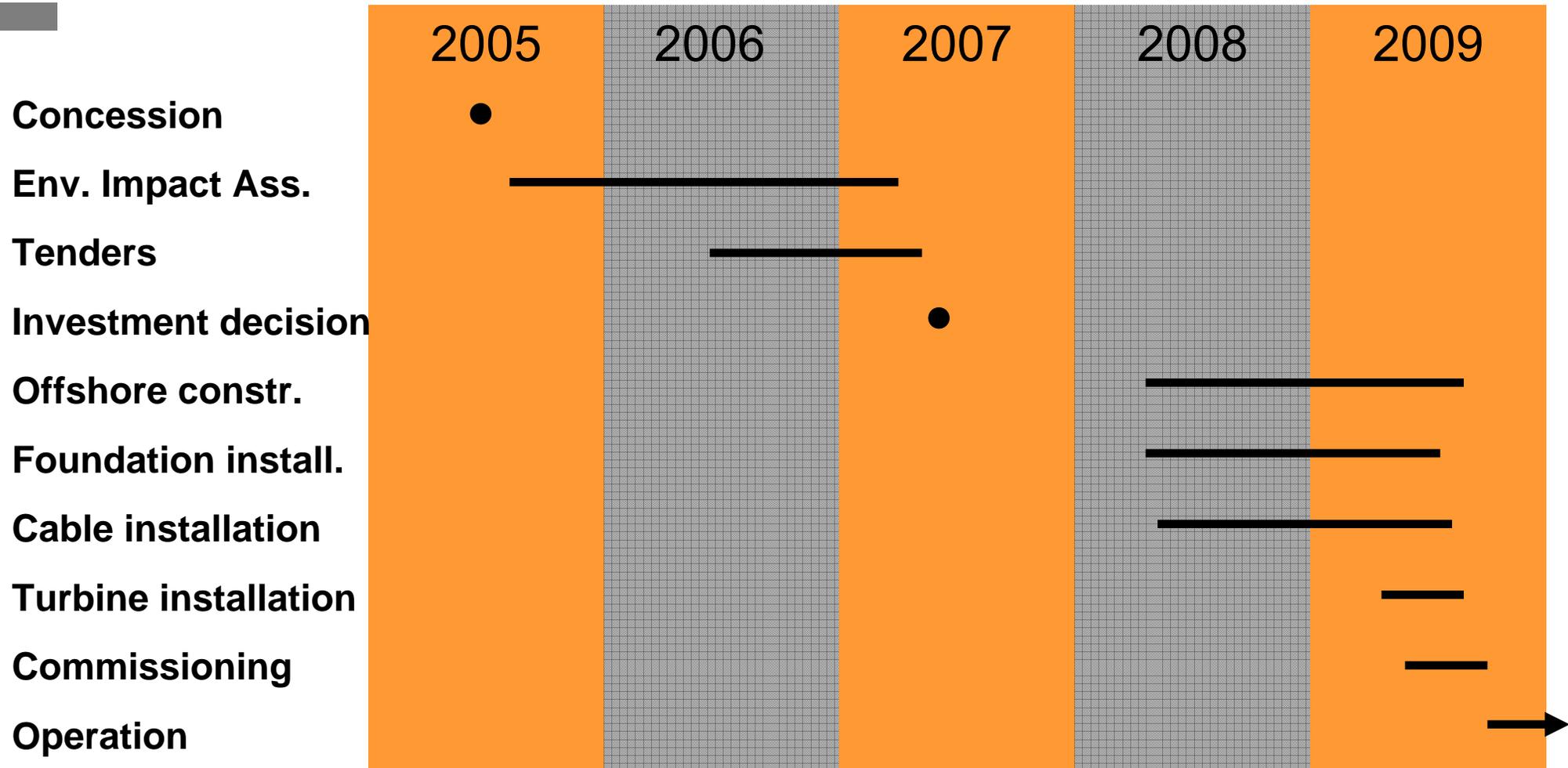
Horns Rev 2 based on experience from 165 MW Nysted Offshore Wind Farm



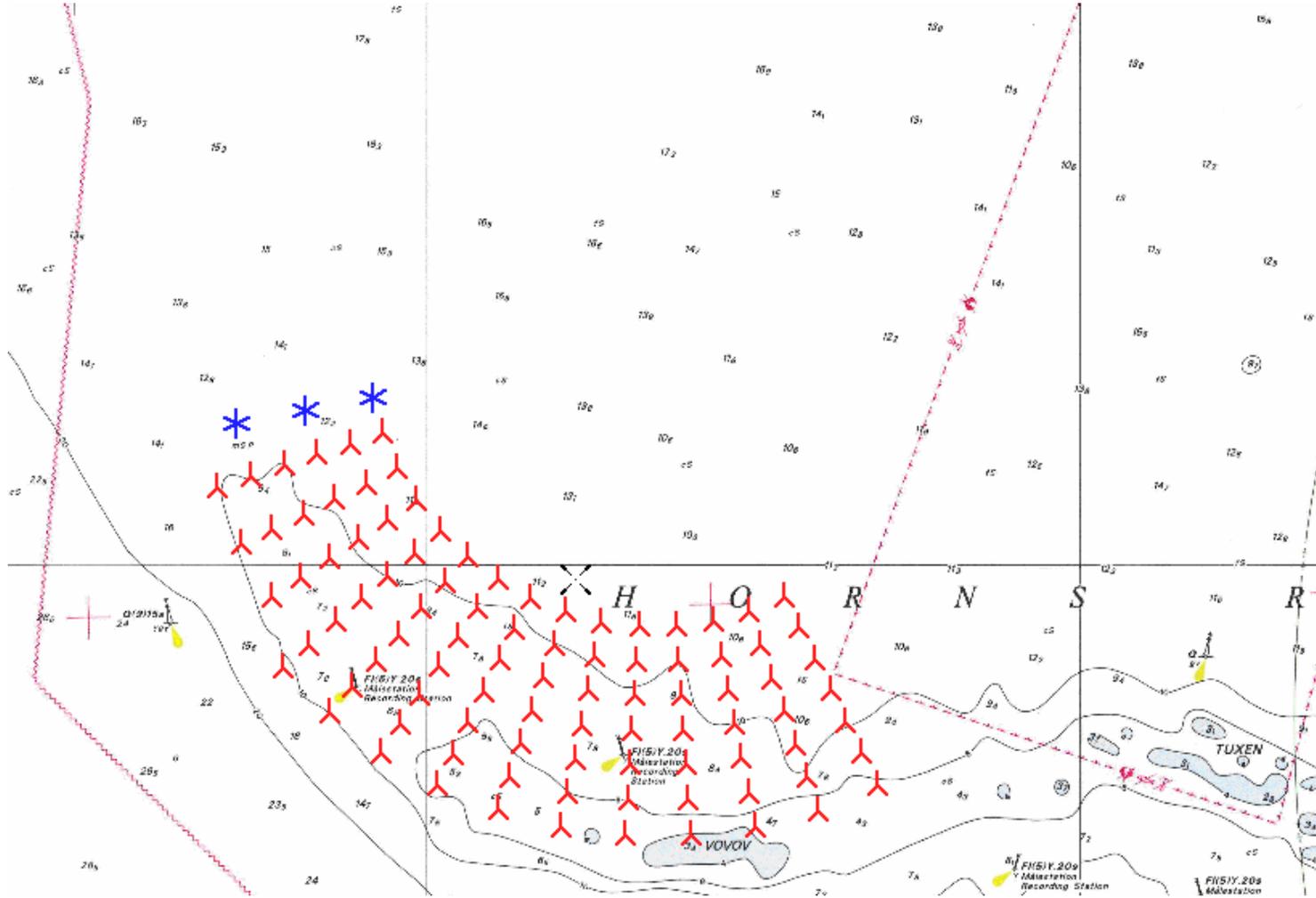
The area for the EIA and pre-investigations



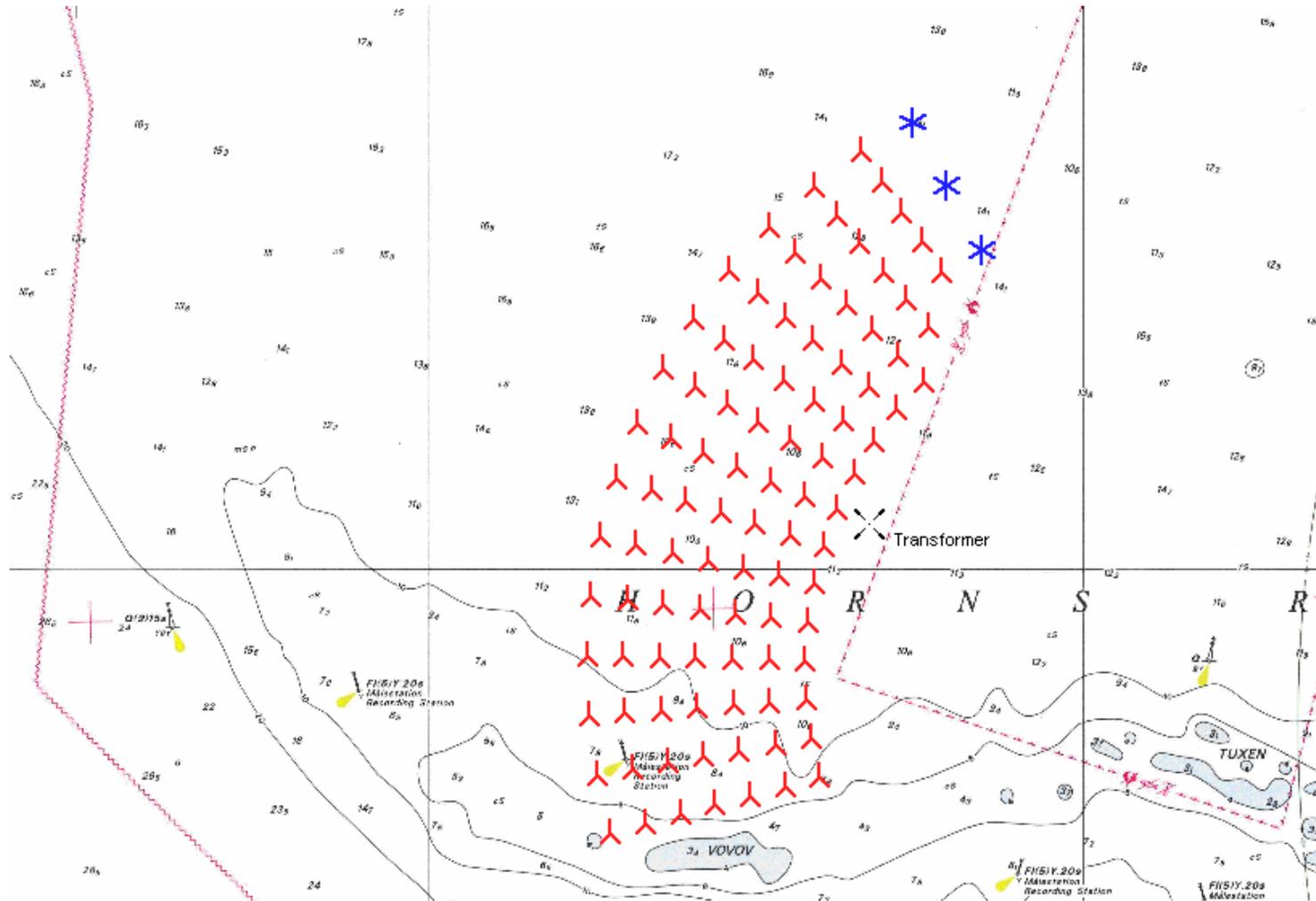
Timetable for Horns Rev 2



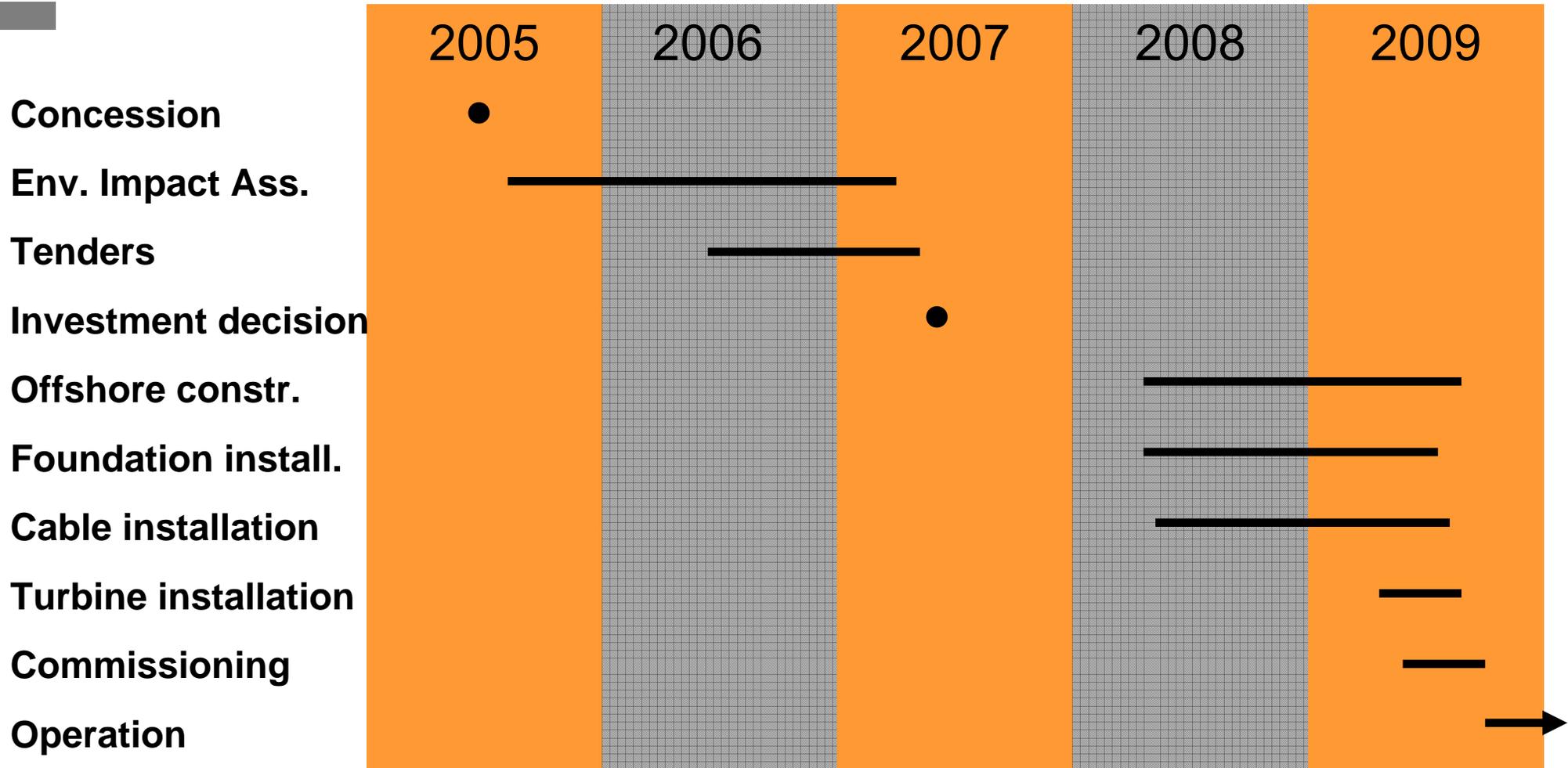
The layout of wind farm alternative South



The layout of wind farm alternative North



Timetable for Horns Rev 2



Know-how gained in the Nysted Project will be used to make Horns Rev 2 a success

- Implementation over two seasons
- Only turbine platform with which E2 has hands-on experience will be used
- Erection of a completely identical turbine on land before production of turbines for Horns Rev 2
- Multi-contracting principle
- E2 to handle operation of wind farm
- E2 operation staff will handle construction management and commissioning



Choice of Technology Turbines

■	Vestas	V 90	90 m rotor	3.0 MW
■	Vestas	V 120	120 m rotor	4.5 MW
■	Siemens Wind Power		93 m rotor	2.3 MW
■	Siemens Wind Power		107 m rotor	3.6 MW
■	Repower		126 m rotor	4.5 MW

The smaller turbines are safe candidates.

The bigger ones will only be candidates if E2 has good hands-on experience before investment decision in summer 2007

Choice of Technology Turbines

- Vestas V 120 120 m rotor 4.5 MW

E2 is planning to erect a test turbine of this type at Masnedø Power Station in late 2006

- Siemens Wind Power 107 m rotor 3.6 MW

E2 is planning to erect a test turbine of this type at Kyndby Power Station in early 2006

E2 is working closely with the turbine manufacturers to "modify" the turbines in order to achieve the same availability from the very start as seen at Nysted

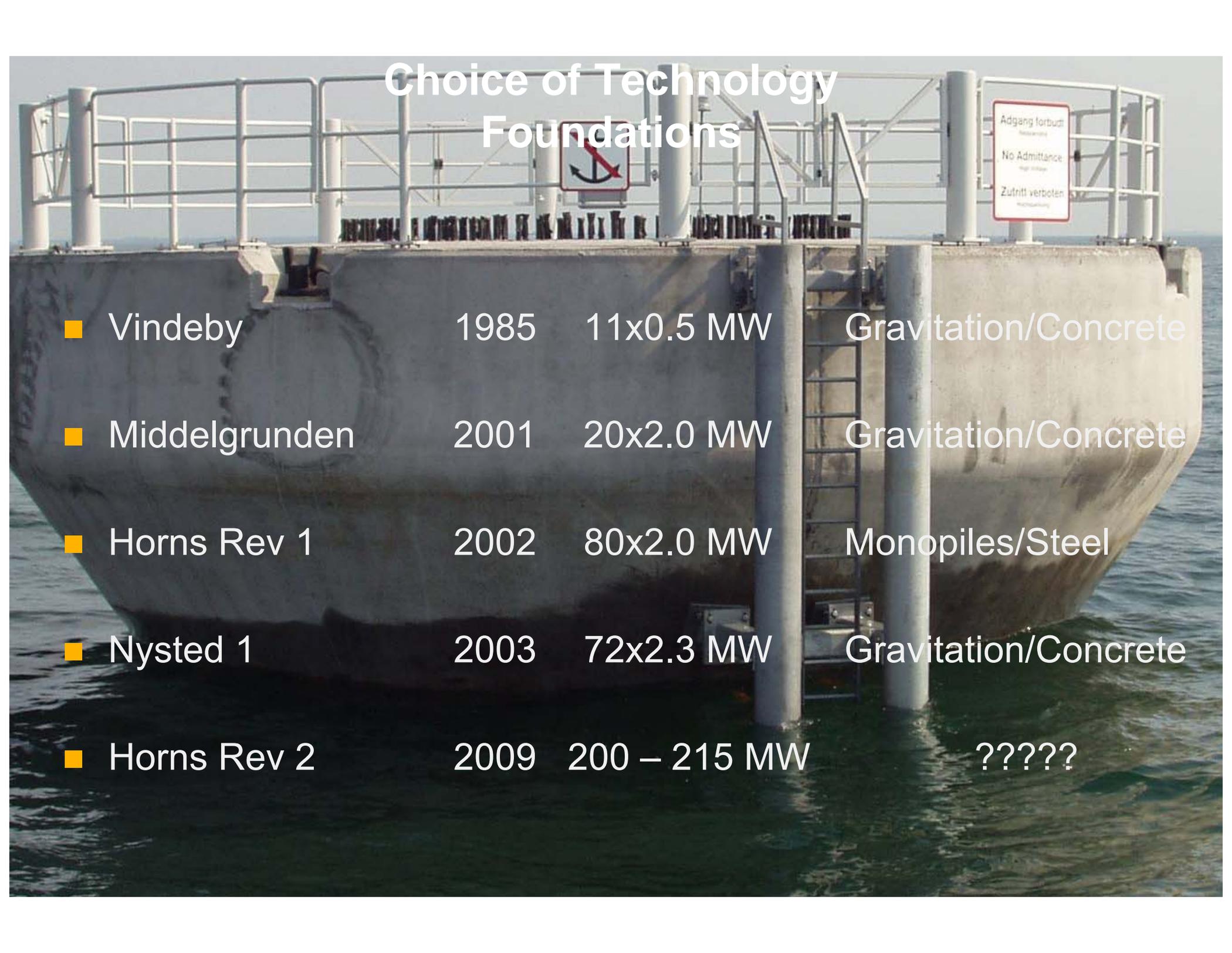


Choice of Technology Turbines

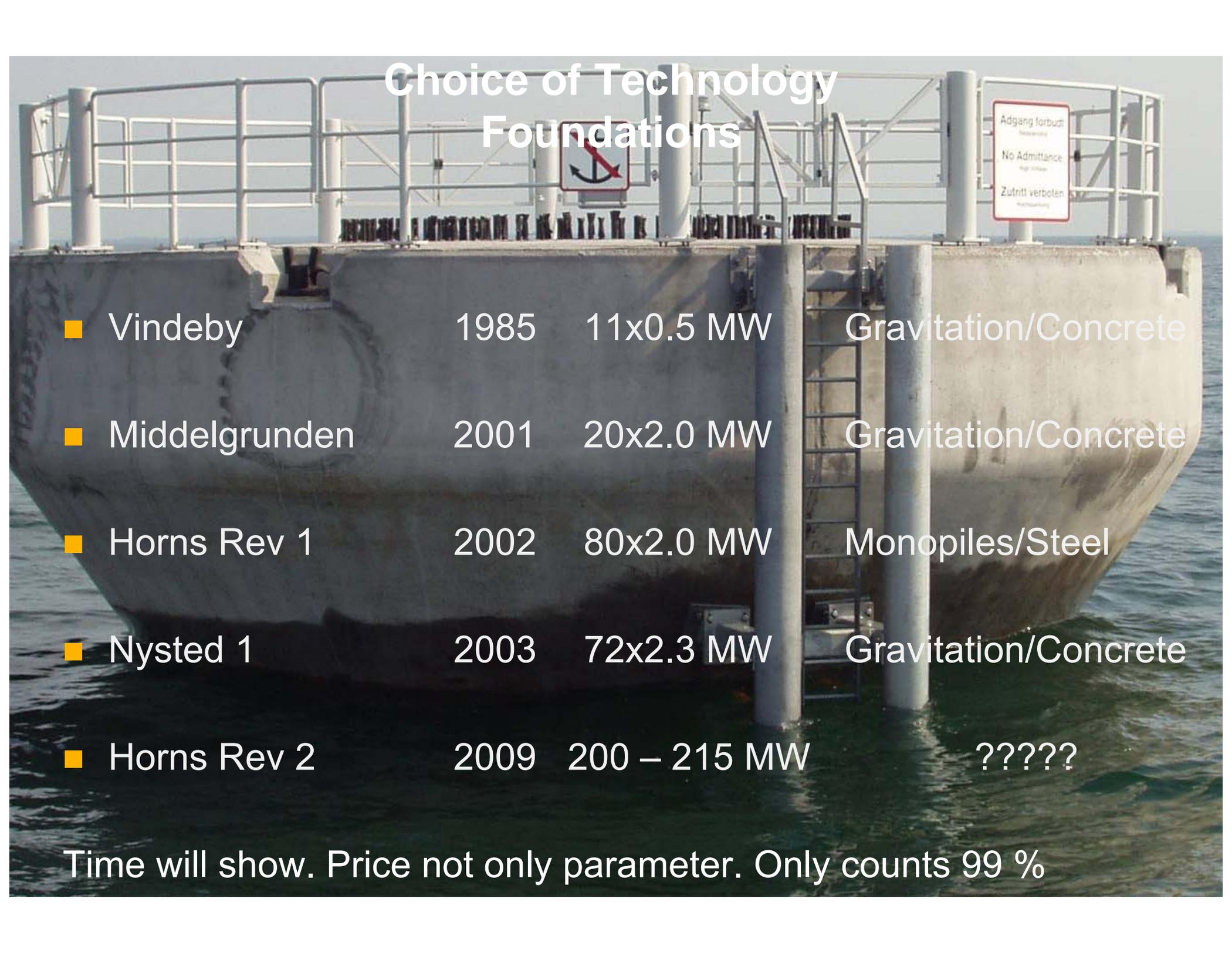
- Vestas V 120 120 m rotor 4.5 MW
- Siemens Wind Power 107 m rotor 3.6 MW

E2 expect that our test programme will provide a confident basis for buying one of these turbines for Horns Rev 2.

Choice of Technology Foundations

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- Vindeby 1985 11x0.5 MW Gravitation/Concrete
 - Middelgrunden 2001 20x2.0 MW Gravitation/Concrete
 - Horns Rev 1 2002 80x2.0 MW Monopiles/Steel
 - Nysted 1 2003 72x2.3 MW Gravitation/Concrete
 - Horns Rev 2 2009 200 – 215 MW ?????

Choice of Technology Foundations



■ Vindeby	1985	11x0.5 MW	Gravitation/Concrete
■ Middelgrunden	2001	20x2.0 MW	Gravitation/Concrete
■ Horns Rev 1	2002	80x2.0 MW	Monopiles/Steel
■ Nysted 1	2003	72x2.3 MW	Gravitation/Concrete
■ Horns Rev 2	2009	200 – 215 MW	?????

Time will show. Price not only parameter. Only counts 99 %

165 MW Nysted Offshore Wind Farm

Multi-contracting

- Turbines: Bonus Energy A/S (Siemens)
- Foundations: Per Aarsleff/Ballast Nedam
- Inter-array cabling: ABB
- Export cabling: Pirelli
- SCADA: ABB

Horns Rev 2 Offshore Wind Farm

Multi-contracting and contract strategy

- Turbines:
 - A One contract including installation and 5-year warranty and operation
 - B One contract for turbines including a 2-year warranty. E2 to take care of operation from day one
- Foundations:
 - A One contract including installation
 - B One contract for hardware
- If B One or two separate contracts for installation

Horns Rev 2 Offshore Wind Farm

Multi-contracting and contract strategy

- The market is changing rapidly
- Nothing has been decided
- E2 will use own experience and build according to a multi-contract strategy
- Only turbines well known by E2 are candidates
- Price will decide technology for foundations
- Contractors only to supply what they are best at



Thank You for Your Attention