



Rijkswaterstaat
*Ministry of Infrastructure
and Water Management*

Requirements and inspections Water Decree and WFSD's

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Won the tender, celebrated party, and then?





Interaction with



Rijkswaterstaat
Ministerie van Infrastructuur en Waterstaat



Staatstoezicht op de Mijnen
*Ministerie van Economische Zaken
en Klimaat*

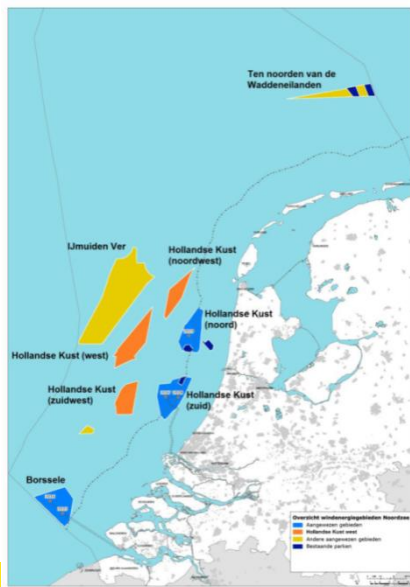
Nederlandse Kustwacht





Interaction

- Information, answers to (many) questions
- Assessment of mandatory plans
- Inspections
- (if violations) Law enforcement (warning letter, fine, order penalty)





Information, meetings

- Q&A (for those unknown on the Dutch continental shelf with regard to legislation and organisation Dutch government)
- Guide minimum content plans Water Decree and WFSD's
- Elaboration regulations with regard to:
 - identification marks and lighting
 - archaeology
 - certification
 - ...
- Project-status meetings and operational meetings with wind farm operators



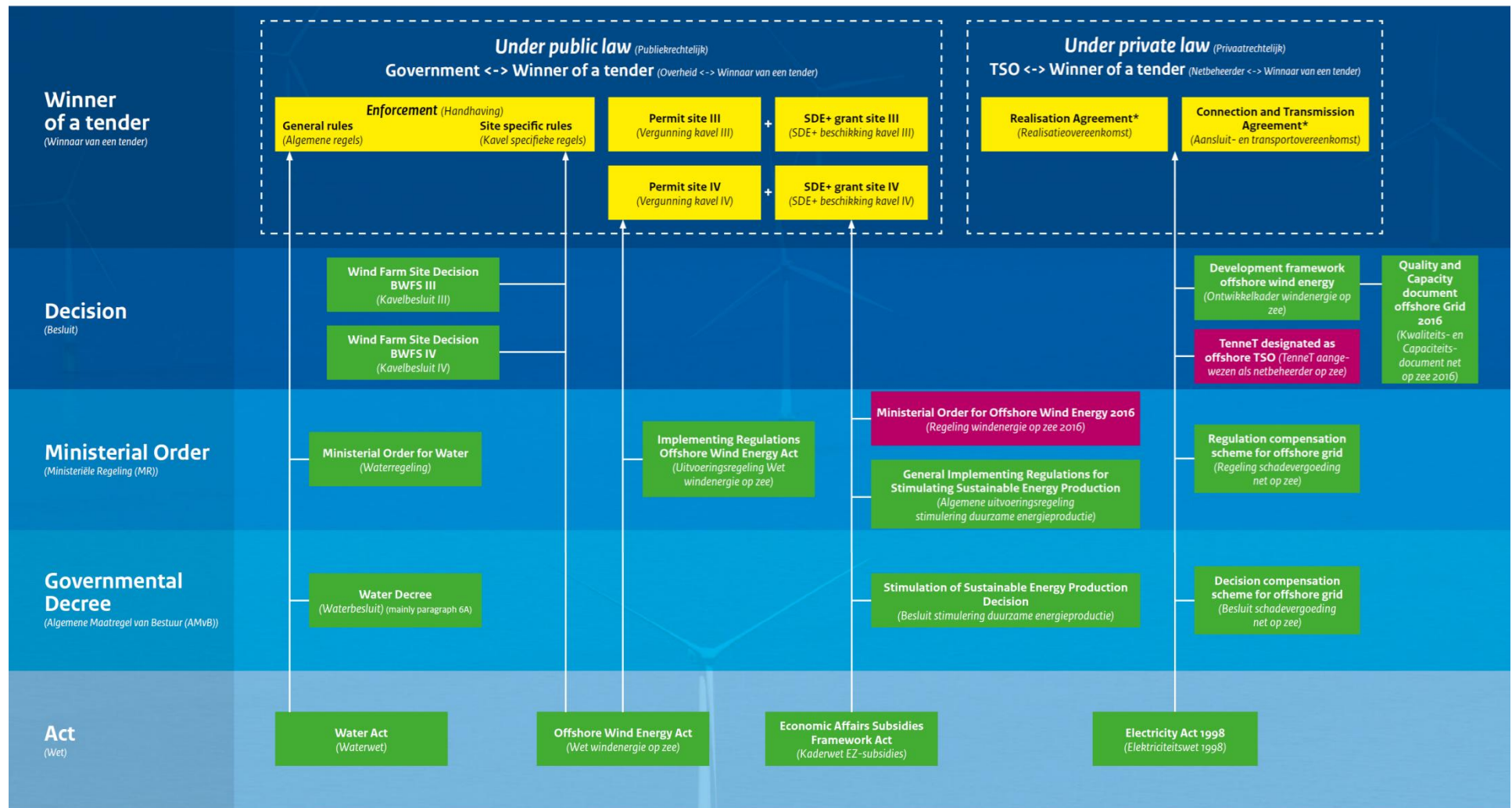


Figure 2.4 Legal framework

For the winner of a tender
(Winnaar van een tender)

Bill or Draft or to be
discussed (Concept Wet- of
regelgeving)

Final, into force
(Finaal)

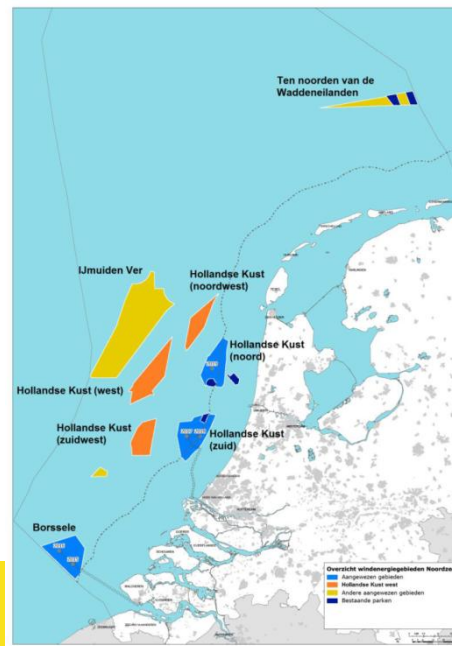




General rules offshore wind farms (Water Decree paragraph 6a)

General requirements for building, operating, maintenance and decommissioning wind farm.

RWS competent authority approval plans, inspection and law enforcement.





Mandatory plans Water Decree

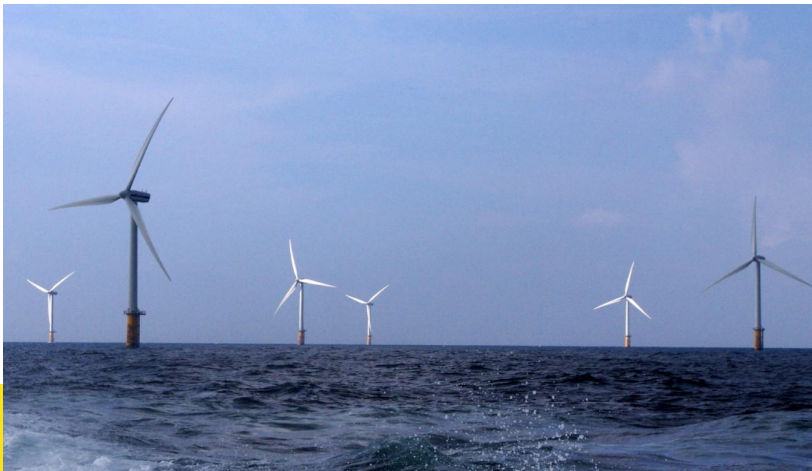
- Construction and layout plan (6.16d)
- Operational working plan (6.16e)
- Certification plan (6.16g)
- Identification marks and lighting plan (6.16h)
- Emergency Response Plan (6.16k)
- Decommissioning plan (6.16l)





Mandatory plans WFSD's

- Nature inclusive building plan (2.15)
- Economy enhancement plan (2.16)
- Piling plan (4.1, 4.2)
- Curtailment plan birds (4.3)
- Curtailment plan bats (4.4)
- Archaeology and cultural history (4.5)





Construction and layout plan

Location, type and design of:

- Foundations
- Erosion protection (scour)
- Corrosion protection
- Towers and turbines
- Electrical installations
- Routing inter-array cables and ground coverage





Operational working plan

Description of activities

- from surveys to WTG installation
- timetables
- vessels to be deployed
- measures related to shipping traffic
- HSSE
- SIMOPS
- communication with Coastguard

Method Statements





Certification plan

- Technical integrity of wind farm during full lifetime of wind farm
- Asset related: foundations, substructures, towers, turbines, array (infield) cables
- Phase related: design, manufacturing, transport and installation, commissioning
- Statement independent expert (NEN-EN-ISO/IEC 17020/17065, or equivalent)
- Documentation





Identification marks and lighting plan

Nautical

Navigation lantern (SPS, IPS), foghorns, radar reflectors, visibility meters, UPS, colouring, ID signboards, virtual marking.

(IALA O-139)



Aviation

Aviation warning lights nacelle and lights mid-way tower, visibility meters, UPS, colouring.

(Information Circular CAA)





Nature inclusive building plan



“Make demonstrable efforts to design and build the wind farm in such a way that it contributes to the strengthening of a healthy sea and to the preservation and sustainable use of native species and habitats that originally existed in the Netherlands”.

Advisors: Ministry of Agriculture, Nature and Food Quality

Economy enhancement plan

“Make a demonstrable effort to design, build, and operate the wind farm in such a way that the wind farm actively contributes to strengthening the local and regional economy”.

Advisor: Ministry of Economic Affairs and Climate Policy





Archaeology and cultural history

Stay away during surveys and construction works from locations that could represent possible archaeological objects or anomalies with archaeological potential identified in the Archaeological Assessment reports.

Apply passive archaeological supervision (certified archaeologist stand-by).

If not: conduct further archaeological field studies, prepare an archaeological Written Scheme of Investigation (WSI).

Advisor: Cultural Heritage Agency



Marine mammals

- *Effects*
 - hearing impairment due to underwater noise from piling activities
- *Mitigation (piling)*
 - ADD
 - Soft start
 - Sound emission standards
 - Sound measurements

Number of wind turbines to be erected	Sound level (dB re μPa 's SEL op 750 metres of the source of the sound)		
	period		
	January to May	June to August	September to December
77 - 95	159	165	166
64 - 76	160	166	167
55 - 63	162	167	169
49 - 54	163	169	170
43 - 48	163	169	171
39 - 42	164	170	172
35 - 38	165	171	172



Piling plan

Description

- piling cycle
- mitigation measures (ADD, soft start, measures taken to not exceed underwater sound emission standards)
- underwater sound measurements (ISO)
- reporting





Birds

- *Effects*
 - Collision victims
 - Habitat loss
- *Mitigation*
 - Bird detection system (authorities)
 - During periods of mass bird migration rotation at night → turbines idling
 - Curtailment based on a bird prediction model (instead of real time bird count)
 - Prediction model under construction





Bats

- *Effects*
 - Collision victims during migration
- *Mitigation*
 - Adjust cut-in wind speed turbines to 5 m/s during mitigation period (15 August - 30 September) at night
 - In case of wind speeds less than 5 m/s in referred period → turbines idling





Curtailment plan birds

Technical description of wind farm and control system (normal operation, braking systems, start/stop scenarios and modes), procedure communication RWS, reporting.

Authorities responsible for bird detection systems.

Curtailment based on bird prediction model (instead of real time bird count).

Model not available yet.

Curtailment plan bats

Technical description of the wind farm and control system (normal operation, braking systems, start/stop scenarios and modes), procedure communication RWS, reporting.





Inspections; types?



- Inspections onshore
- Inspections/surveillances offshore (by ship or airplane) (SSM and Netherlands Coastguard)
- Desk-top inspections
- Administrative inspections (office of operator)





Inspections; when?

- During manufacturing
- During storage in port/harbour
- During installation offshore
- During O&M





Inspections; what?

Water Decree

- Construction and layout
- Certificates
- Nautical & aviation lights
- Emergency response
- Maintenance (NEN)
- ...



Rijkswaterstaat

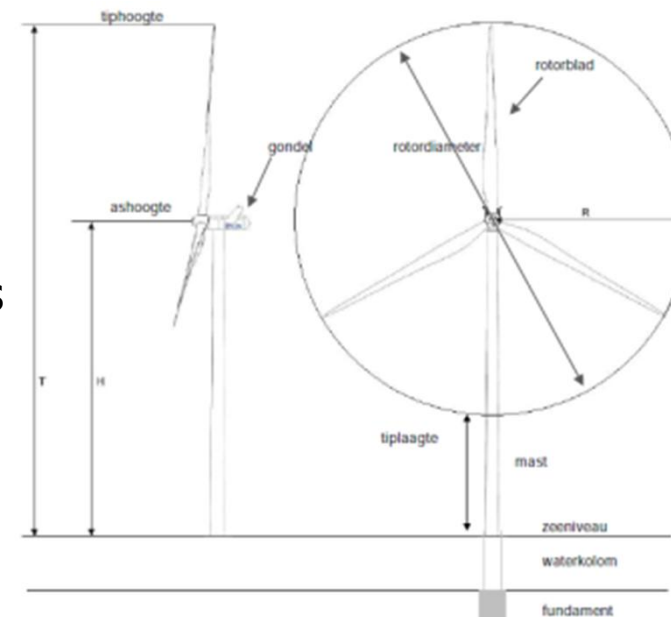




Inspections; what?

WFSD

- Contours
- Maximum number turbines
- Maximum total swept area
- Minimum distance between turbines
- Minimum and maximum tip height
- Cathodic protection

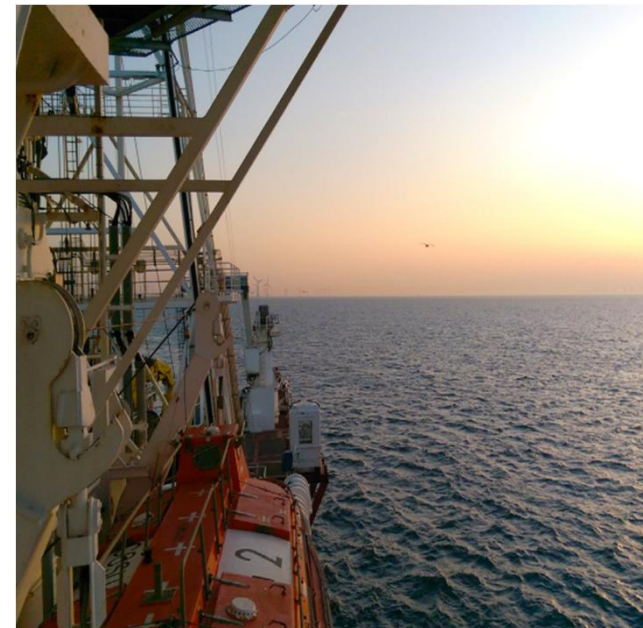




Inspections; what?

WFSD

- Nature inclusive building
- Economy enhancement
- Piling
- Curtailment birds and bats
- ...





Thank you for your attention!

Questions?

