



Meeting tender Borssele December 2015

17 November 2014

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Ministry of Economic Affairs



Welcome

Content 4th meeting 17th November:

- Progress made so far (Bill, SDE+, EIA)
- Desk study morphodynamics
- Progress site data
- Planning and sector consultation; location of the platforms



Progress

Major steps have been made again last month:

1. Offshore wind energy bill has been sent to House of Representatives of the Netherlands on 17th of October 2014
2. Memorandum Scope and level of Detail EIA has been published 24th of October 2014
3. Letter including information about subsidies windenergy offshore has been sent to House of Representatives of the Netherlands on 11th of November 2014



Notitie reikwijdte
en detailniveau

Milieueffectrapport kavelbesluiten Borssele

Ministeries van Economische Zaken en Infrastructuur en Milieu



Offshore wind energy and Electricity and gas bill

Offshore wind energy bill: into force 1st of July 2015

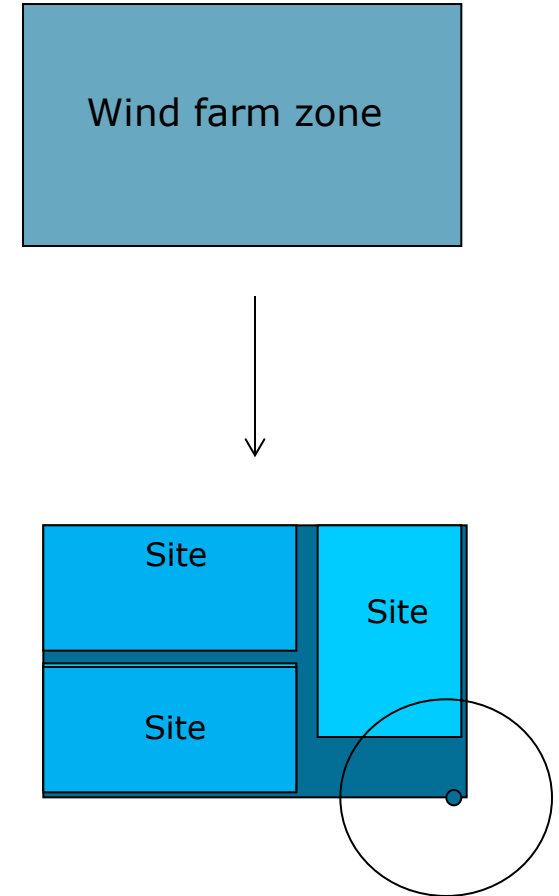
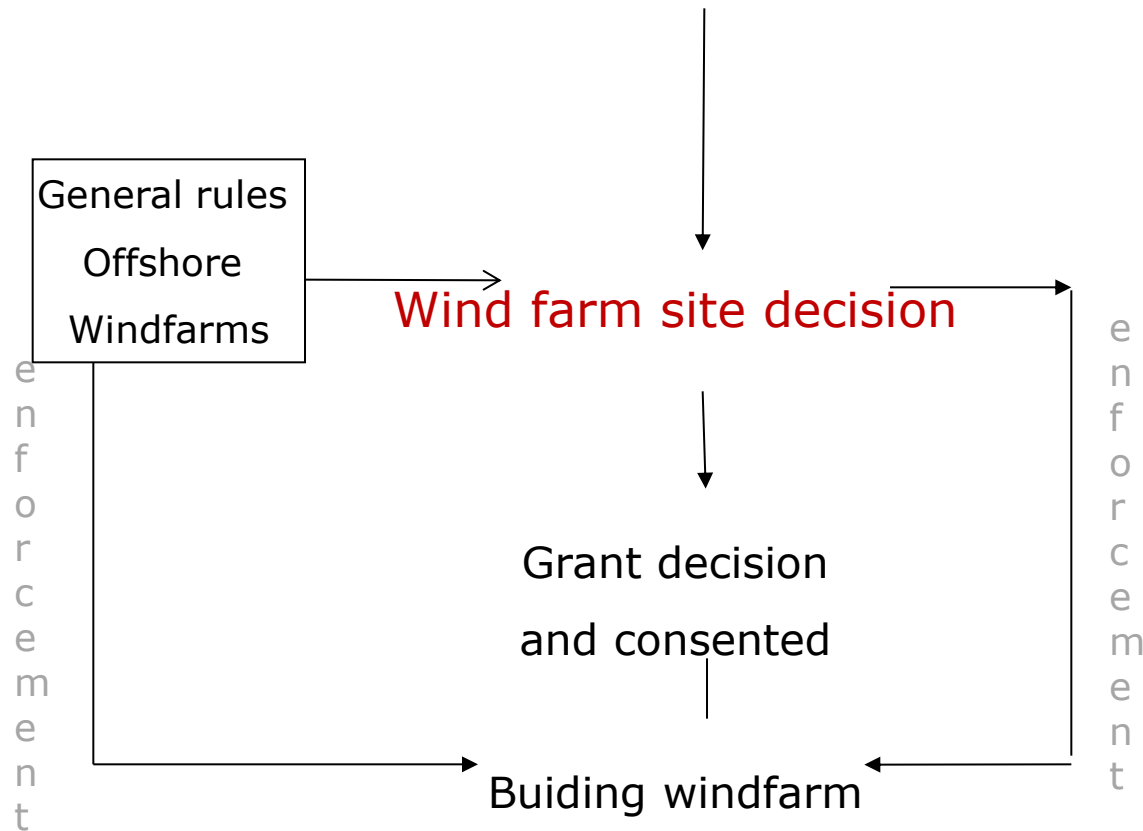
1. Introduces wind farm site decision ('kavelbesluit')
2. TenneT (TSO) can prepare offshore grid (since September 2013)

Electricity and gas bill: into force 1st of January 2016

1. TenneT (TSO) is allowed to build and operate offshore grid
2. Responsibility and liability between offshore grid operator (TenneT) and windfarm developer

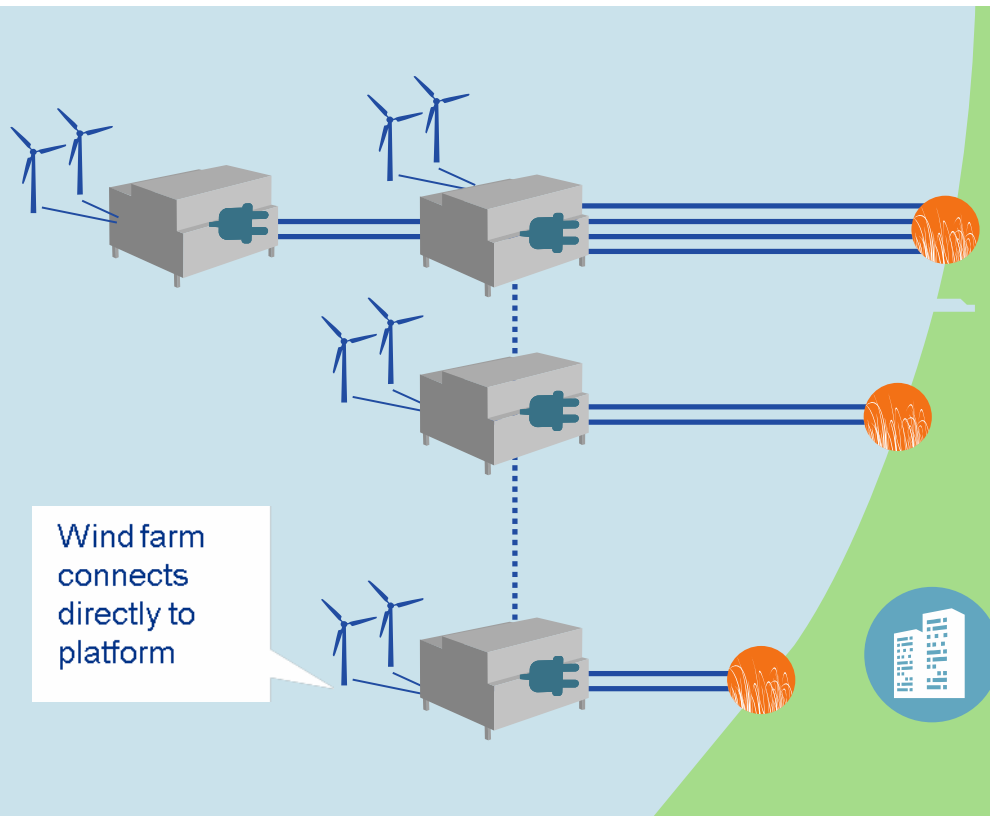


Designated wind farm zones (National waterplan)





Offshore grid



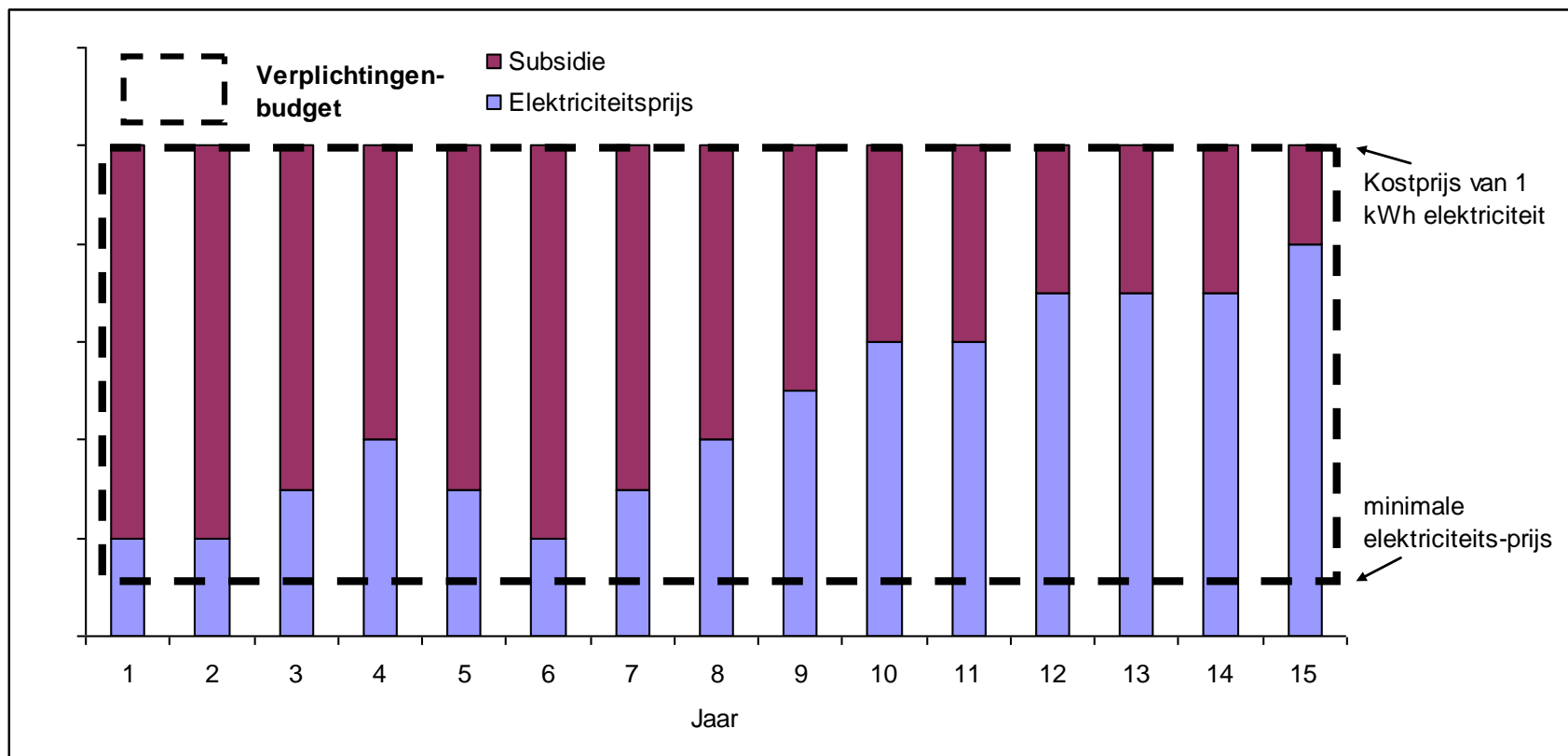


SDE+

SDE = Stimulation of sustainable energy production

Letter to House of Representatives of the Netherlands on 11th of November 2014:

- Banking: higher energy production in any year (max 25%) can be used for subsidy in years to come, if production is lower
- Separate tender in 2015 of total 700 MW (two sites)
- Lowest offer gets subsidy
- Offer should be lower than the maximum
- More details will be sent to House of Representatives in 2015





Base amount (€ ct/MWh)



Step 1

Energy Agreement

- based on an average wind farm site and 40% cost reduction -

2015 14,5

2016 14

2017 13,5

2018 13

2019 12,5

Step 2

Subtract the grid costs

Step 3

Location base amount

- ECN calculates the base amount per location
Borssele, HK Z en HK N. -



Step 4

Site base amount

- ECN calculates base amount per site base of 350 MW ('kavelbesluit') -





Draft Memorandum Scope and Level of Detail

- Indicates scope EIA
- Explanation initiative
- Possibility to give your opinion (consultation)
- Wind farm zone Borssele in relation to the other wind farm zones
- Appropriate assessment: assessment impacts on Natura 2000 areas



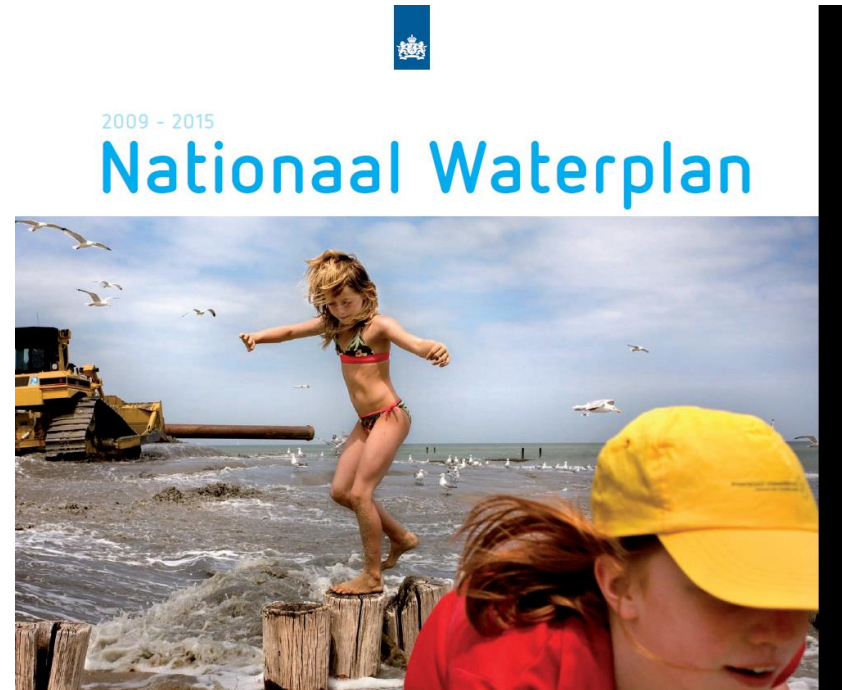
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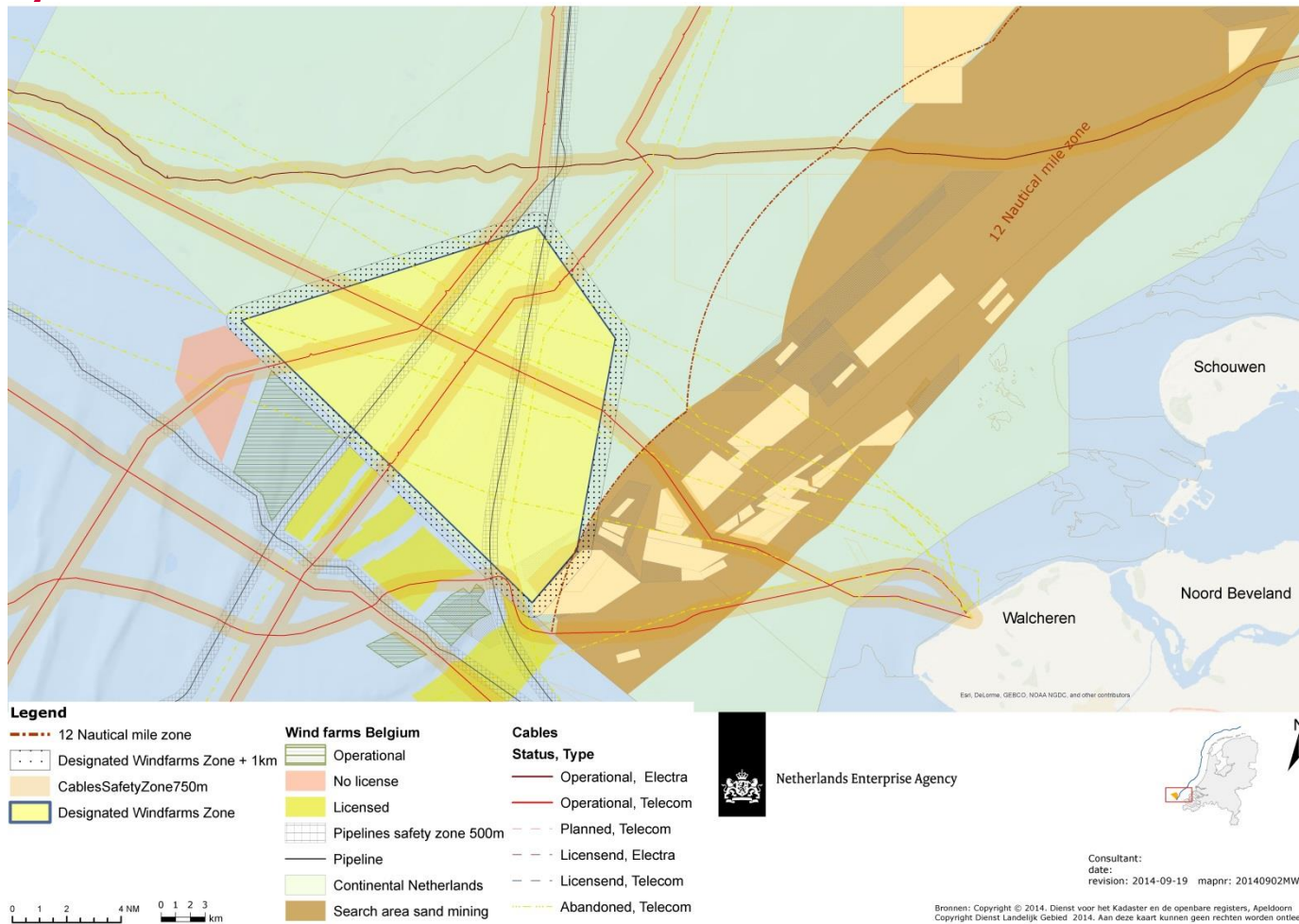
Designated wind farm zone Borssele

- Designated in NWP1
- Why deploying Borssele first?
 - lesser conflicts with other functions
 - grid connection on land faster to realize



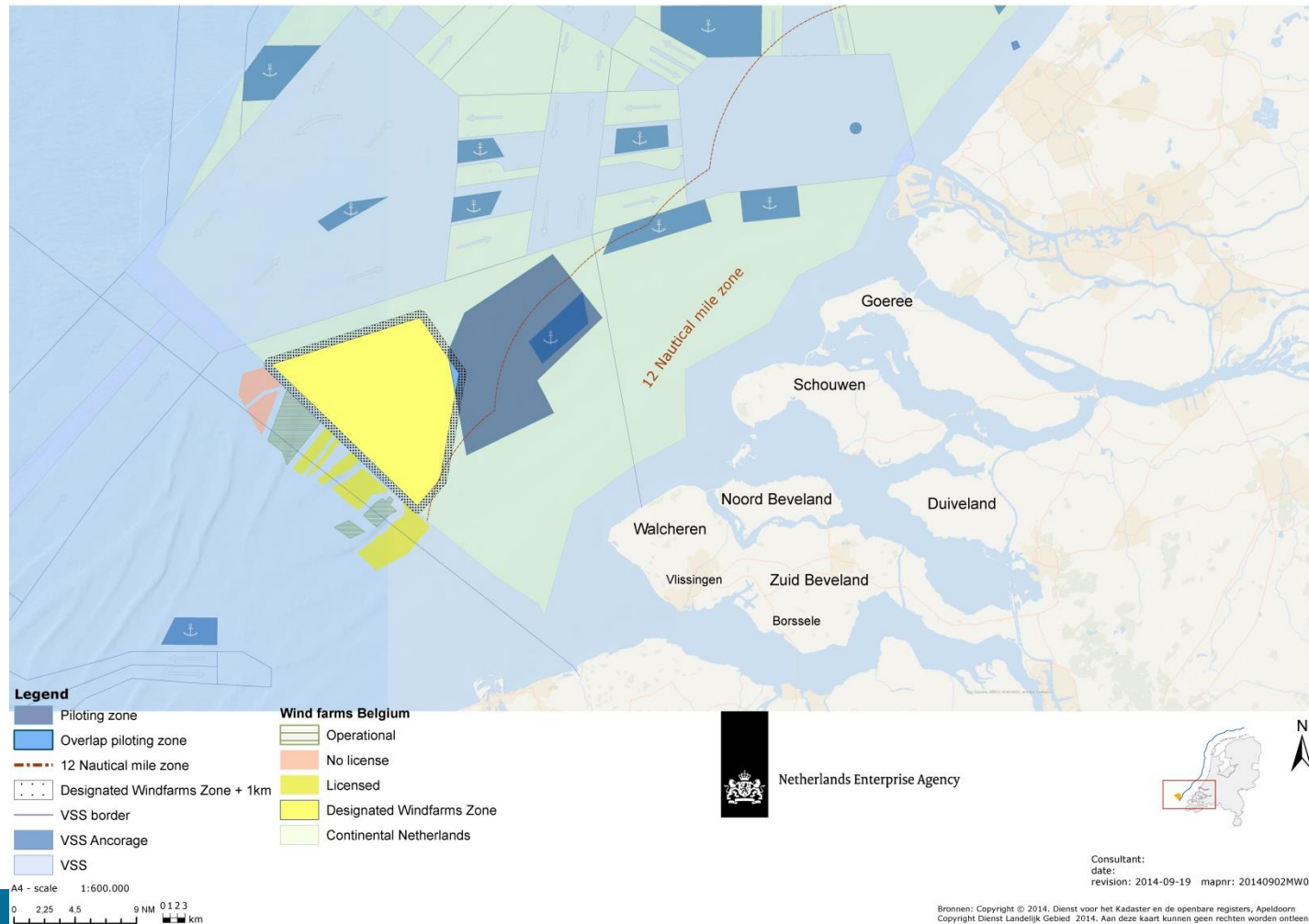


Designated wind farm zone Borssele





Piloting area in relation to the Wind farm zone





Division Wind farm zone Borssele into sites (1)

Criteria for division

1. Exclusions:

- Cables and pipe lines + safety zones
- Belgium wind farms
- Piloting area

2. Wake Belgium wind farms, water depth, wind speed, LCOE.

Division can change:

- Results EIA,
- Translocate SeaMeWe?
- Locations TenneT substations

Division wind farm zone Borssele (2)





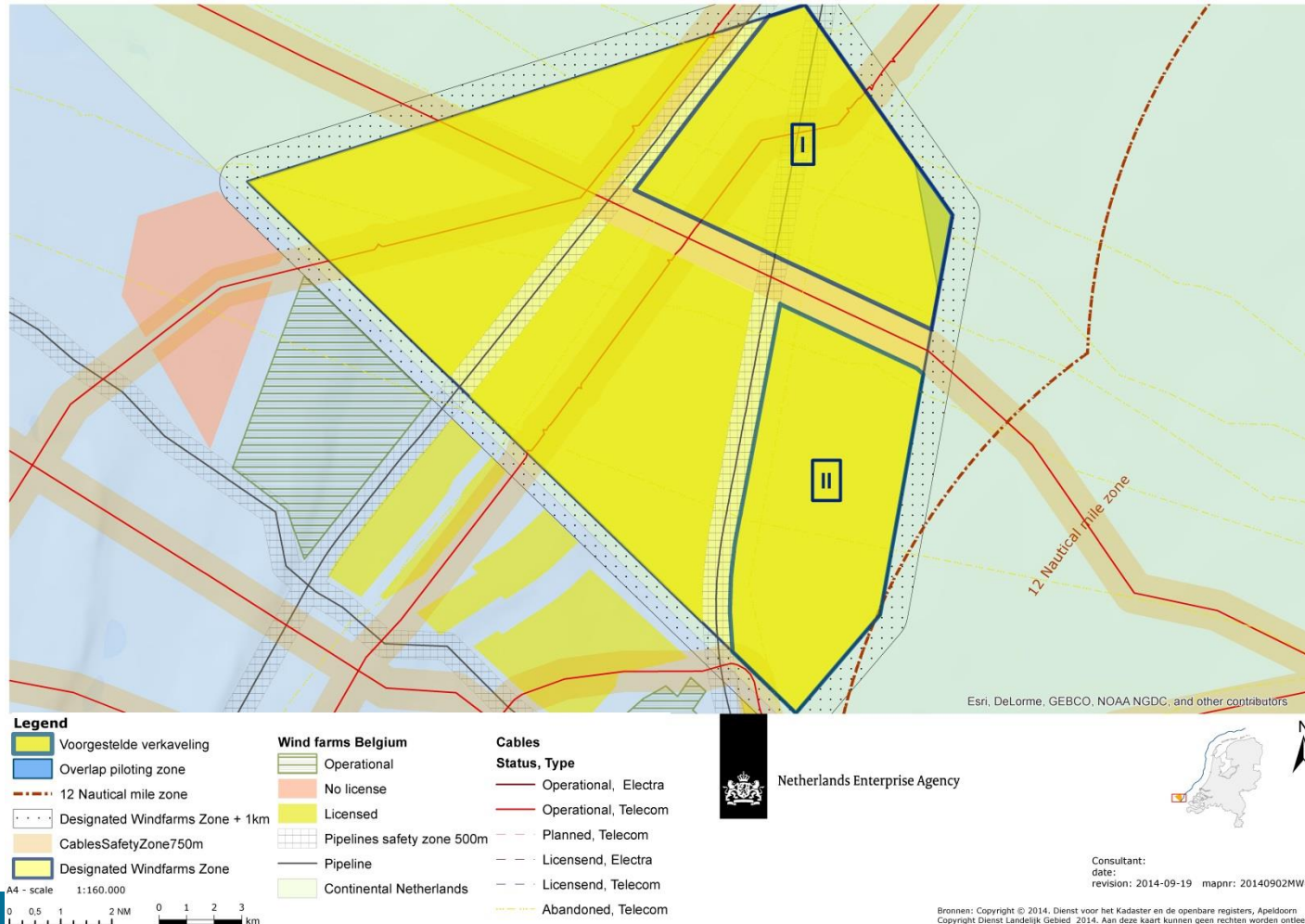
Division Wind farm zone Borssele (3)

- Now: 2 sites, 700 MW total based on Energy Agreement

Why these 2 sites?

- Combination of a site with higher wind resource and higher water depth and a site with lower wind resource and lower waterdepths
- Neighbouring required for locating sub station (no crossings between the sites)
- Optimal lenght infield cables
- Ecology important point of attention in South Eastern part of site II

Division wind farm zone Borssele (4)





Proposed activity and consideration of alternatives (1)

Proposed activity:

Granting of sites through Wind farm site decisions. With a bandwidth for a range of wind turbine types for a wind farm design.



Proposed activity and consideration of alternatives (2)

Subject		Bandwidth
Power individual wind turbines		3 – 10 MW
Tip height individual wind turbines		125 – 250 meter
Tip lowness individual wind turbines		25 – 30 meter
Rotor diameter individual wind turbines		100 – 220 meter
Spacing between wind turbines		≥ 4D
Number of blades per wind turbine		2 – 3
Type of substructures		Monopile, jacket, tripile, tripod, gravity based structure
Type of foundations		(Mono)piles, suction buckets, gravity based structures
Installing piles		Vibratory, hammering, boring, suction
In the case of hammering: hammer energy related to turbine type / pile		1,000 – 3,000 kJ, depending on soil conditions and diameter foundation
In the case of hammering: diameter pile(s) and number of piles per turbine:	Jacket	4 piles 1,5 – 3,5 meter
	Monopile	1 pile 4 -10 meter
	Tripod	3 piles 2 - 4 meter
In the case of a foundation without hammering: dimensions at seabed:	Gravity Based	≤ 40 x 40 meter
	Suction Bucket	Diameter bucket: n.t.b.
Electrical infrastructure, voltage level infield cables		33kV or 66kV

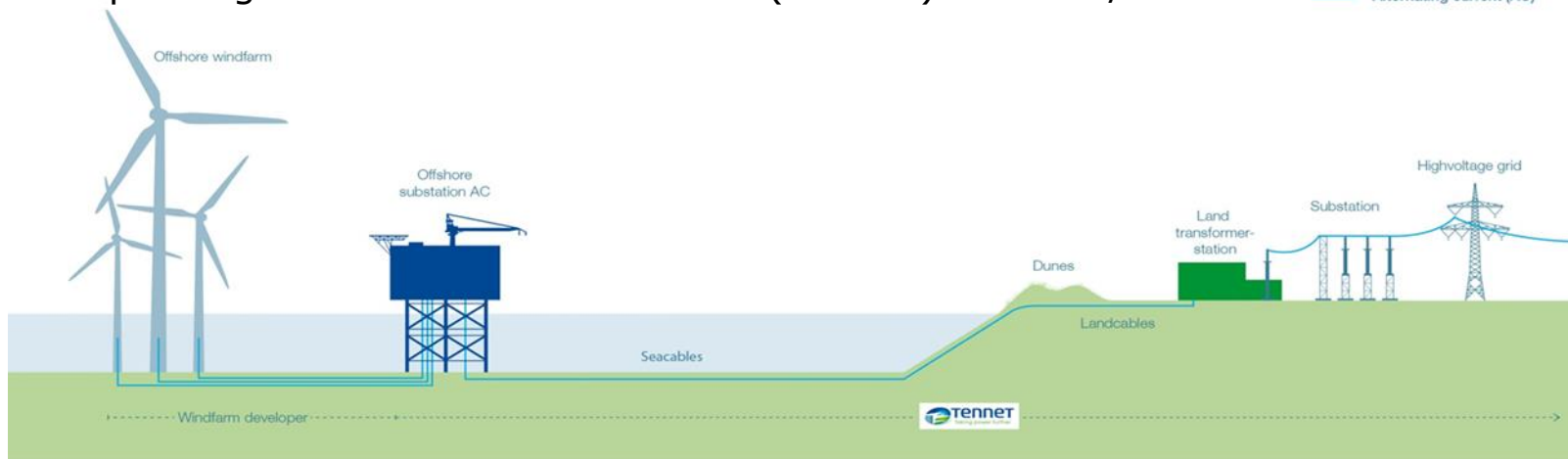


Proposed activity and consideration of alternatives (3)

- Important parameters in the bandwidth
 - spacing between the turbines
 - rotor diameter
 - type foundation hammering energy
 - tip height and – lowness rotor blades
- Innovation
 - Contribution to cost reduction
 - Allowing in small part of the site
 - Sensitivity analysis
- Electrical infrastructure

Elektrical infrastructure

- 2 offshore platforms (AC 66 kV => 220 kV);
- 4 offshore 220 kV AC export cables
(3 phases per cable, 1 cable per system, 2 systems per platform)
- 4 onshore 220 kV AC land cable systems (1 phase per cable - 3 cables per system)
- Expanding 380kV substation Borssele (on land) with 220/380 kV transformers





Proposed activity and consideration of alternatives (4)

- Baseline: Current situation and autonomous developments
- Proposed activity: based on worst cases for each issue
- Appropriate assessment



Predicting and assessing environmental impacts, measures (1)

Biological environment				
Aspect	Impact	Acceptability	Mitigation	Legaly binding in Wind farm site decision
Birds	Collisions ##/a	Exceeding coping capability population of species X and Y	Limitation total swept rotor area within the site	Yes
	Barrier for migrating birds	Acceptable	N/A	No
	Disturbing foraging birds			
Marine mammals				
Porpoises	Disturbing ## porpoises during ++++	Exceeding coping capability population of porpoises	Reducing underwater noise during hammering	Yes
			Hammering only permitted in months ## - ##	No



Predicting and assessing environmental impacts, measures (2)

Shipping safety and navigation		
Shipping safety	Drifting and ramming ships	Propability
		Consequential damage (oil spills, ++++)
	Shipping	Qualitative
Landscape and seascape		
Landscape	Visibility (% of time)	Quantitative
	Visual impact based on visualisations	Qualitative

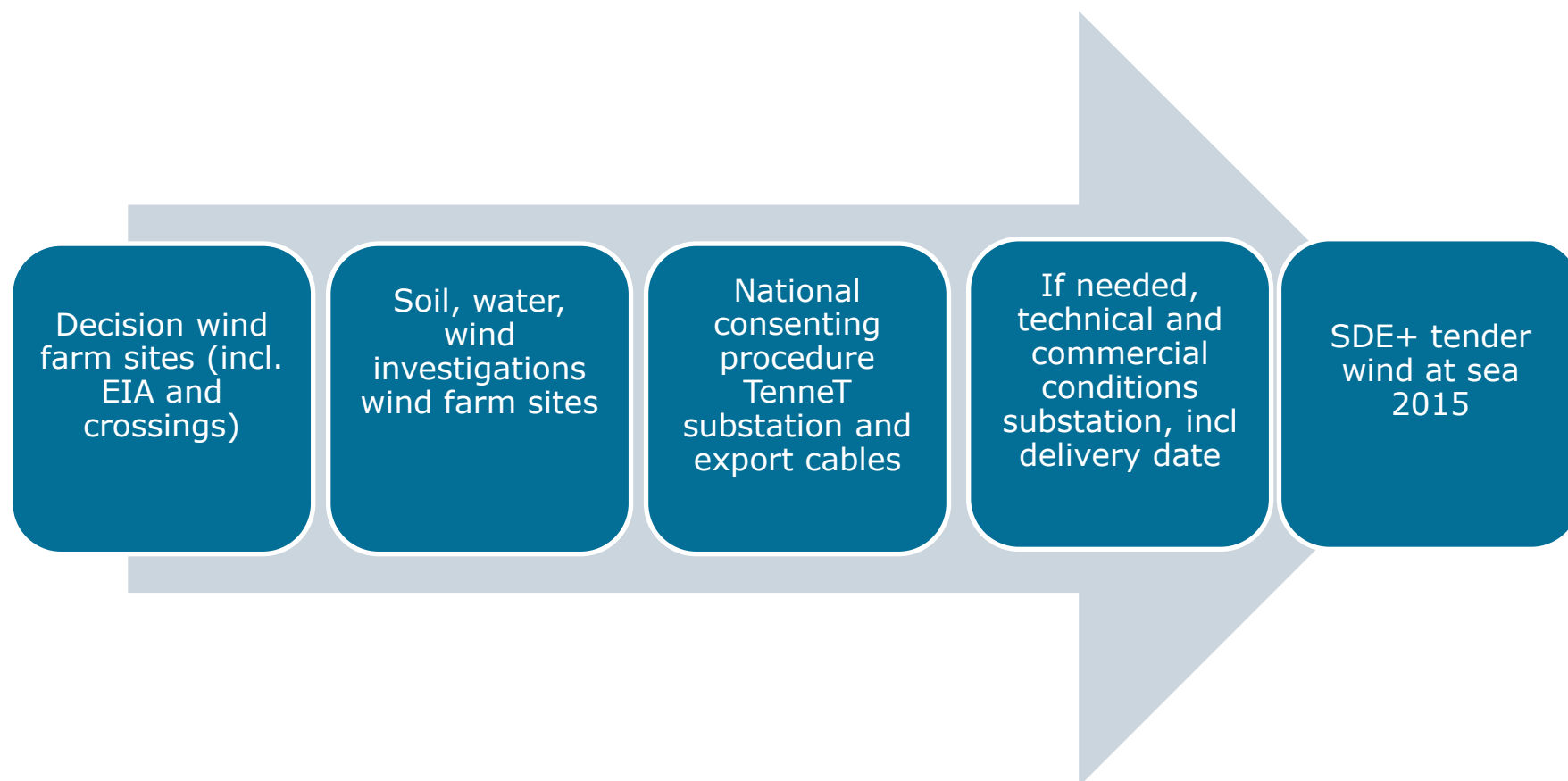


Wind farm site decisions – planning

- Draft scoping document: consultation 24 October – 4 December 2014
Submitting comments: www.bureau-energieprojecten.nl
- Stakeholder – and general consultation meeting 11 November 2014
- Intermediate advice Netherlands Commission for Environmental Assessment (NCEA): spring 2015
- Draft wind farm site decisions: published August 2015
- Final wind farm site decisions: published November 2015
- Decision Council of State: July 2016 latest

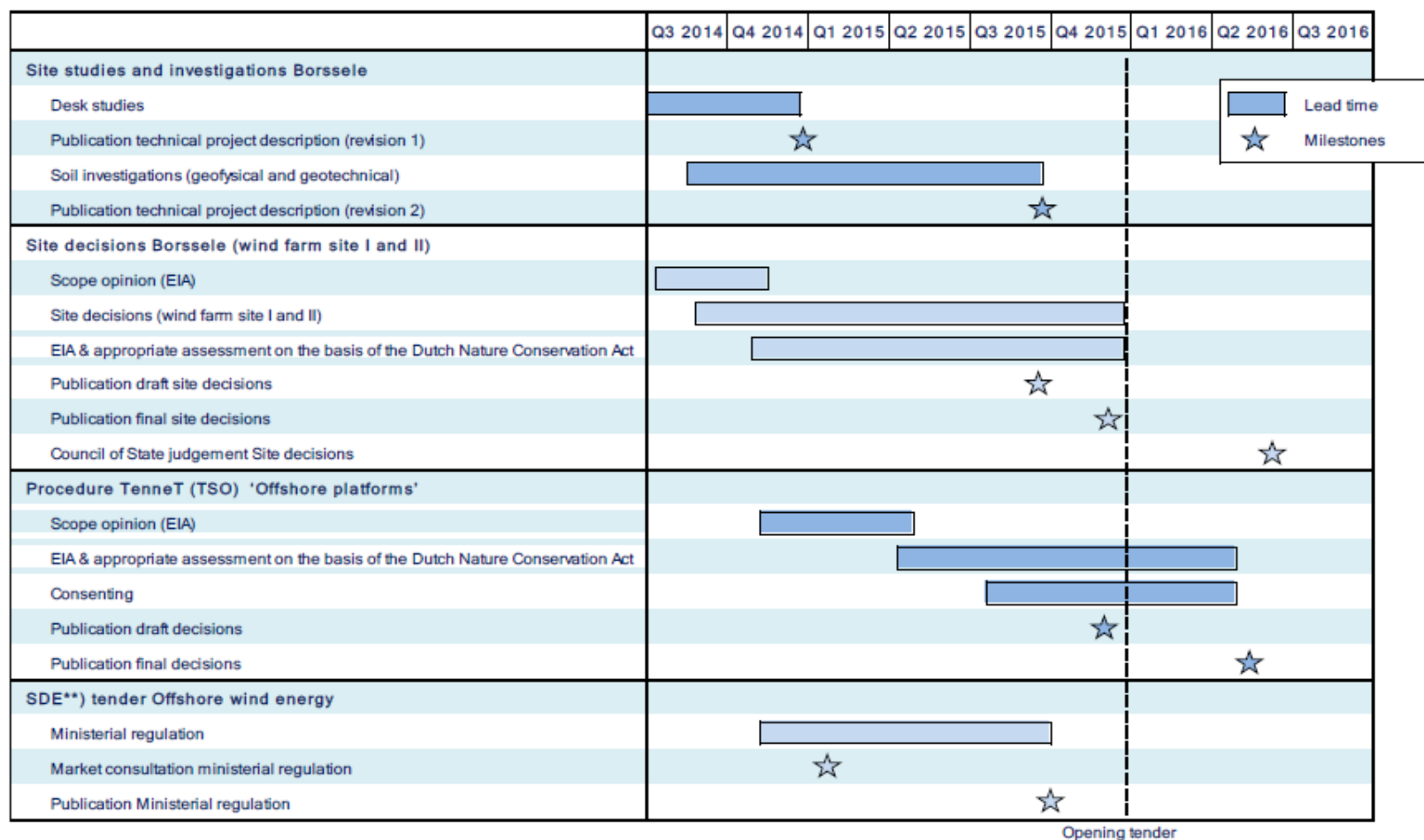


Projects first tender Borssele december 2015





Planning Winfarm zone Borssele





Websites

- <http://english.rvo.nl/topics/sustainability/offshore-wind-energy> (English):
publications, meeting reports and presentations, technical project description (Horns Rev)
- <http://www.rvo.nl/subsidies-regelingen/wind-op-zee-kavels-borssele> (Dutch):
formal procedure wind farm site decisions ('kavelbesluiten') and (later) offshore grid
- <http://www.rijksoverheid.nl/onderwerpen/duurzame-energie/windenergie/windenergie-op-zee>
General public, wind offshore policy in general
- <http://www.noordzeeloket.nl/en/functions-and-use/wind-energy/>
Users North Sea