

This document is confidential. The copyright therein is vested in ABB B.V.  
Written authority of the said company must be obtained before wholly or partly duplication  
the contents of disclosing same to others. All rights are reserved.

# Windpark Zeewolde

## 150kV Substation

### Single Line Diagram

A	04-09-2019	FIRST ISSUE	Scale :	Project :	Windpark Zeewolde		Title :	Cover sheet	Doc No. :	E0014032-E01-FA0-000001		+
B	23-10-2019	SECOND ISSUE	-									=
C	27-11-2019	THIRD ISSUE	Size :	Drawn :	KN							
D	22-01-2020	FOURTH ISSUE	A0	Approved :	GKI		Client :	Windpark Zeewolde	ABB Project No. :	-	Prev. : -	Next : 02
E	19-02-2020	FIFTH ISSUE	Lng :	EN	Release date :	04-09-2019	Number :					

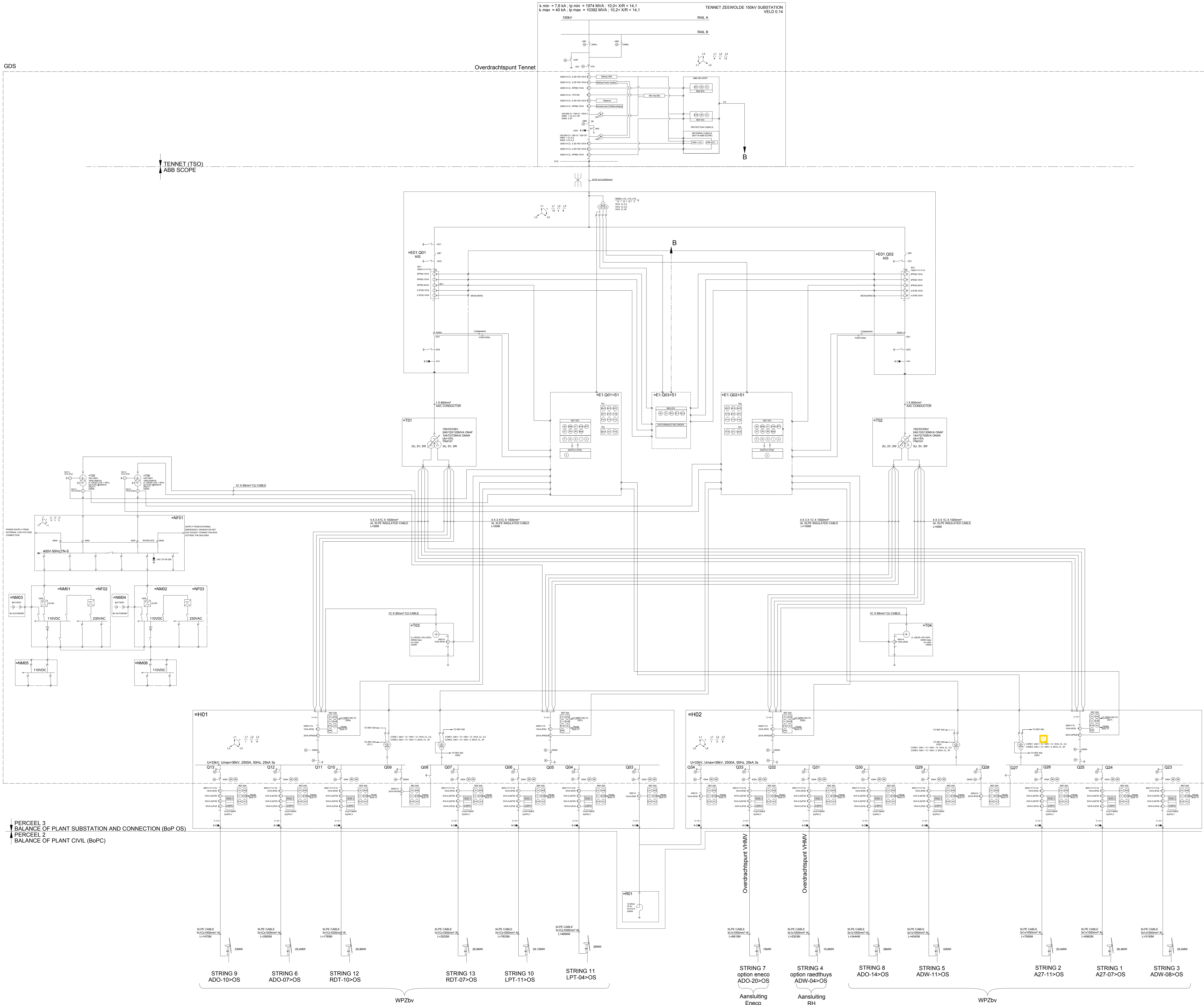
■ This document is confidential. The copyright therein is vested in ABB B.V.  
Written authority of the said company must be obtained before wholly or partly duplication  
the contents of disclosing same to others. All rights are reserved.

01	02					03	04	05	06	07	08	09	10	11	12					13	14	15	16	17	18	19	20
SHEET	REVISION					DESCRIPTION																					
01	A	B	C	D	E	Cover sheet																					
02	A	B	C	D	E	Table of contents																					
03	A	B	C	D	E	Single line diagram for 350MW - Windpark Zeewolde																					



This document is confidential. The copyright therein is vested in ABB B.V.  
Written authority of the said company must be obtained before wholly or partly duplication  
the contents of disclosing same to others. All rights are reserved.

0102030405060708091011121314151617181920



LEGEND:

- DISCONNECTOR WITH 2 EARTH SWITCH
- CURRENT TRANSFORMER
- CIRCUIT BREAKER
- EARTH SWITCH
- SURGE ARRESTER
- POTENTIAL TRANSFORMER
- POWER TRANSFORMER
- AUXILIARY TRANSFORMER
- ZIGZAG TRANSFORMER
- CIRCUIT BREAKER MOTORIZED
- CIRCUIT BREAKER MOTORIZED WITH EARTH SWITCH
- NEUTRAL GROUNDING RESISTOR
- CAPACITIVE VOLTAGE DEVICE

PROTECTION RELAY FUNCTIONS:

- ANSI FUNCTIONALITY
- 2 SYNCHRONIZED SWITCHING
- 21 DISTANCE
- 26 TEMPERATURE
- 27 UNDERVOLTAGE
- 49 THERMAL
- 50 INSTANTANEOUS OVERCURRENT
- 50BF BREAKER FAILURE
- 50N INSTANTANEOUS OVERCURRENT EARTHFAULT
- 51 AC-TIME OVERCURRENT
- 51BF BREAKER FAILURE
- 51N AC-TIME OVERCURRENT EARTHFAULT
- 51G TRANSFORMER OVER CURRENT EARTH FAULT RELAY
- 59 OVERVOLTAGE
- 59N RESIDUAL OVERVOLTAGE
- 63 PRESSURE SWITCH
- 67 AC DIRECTIONAL OVERCURRENT
- 68 CURRENT INRUSH DETECTION BLOCKING
- 71 LEVEL SWITCH
- 80 OIL FLOW
- 81OU OVERFREQUENCY/UNDERFREQUENCY
- 81R FREQUENCY GRADIENT «f»
- 86 LOCK-OUT
- 87C CABLE DIFFERENTIAL PROTECTION
- 87L LINE DIFFERENTIAL PROTECTION
- 87T TRANSFORMER DIFFERENTIAL PROTECTION
- 87N RESTRICTED EARTH FAULT PROTECTION, LOW IMPEDANCE
- 90 VOLTAGE REGULATING DEVICE
- 98 TCS, TRIPCOIL SUPERVISION
- 97 BUCHHOLZ
- A ALARM
- T TRIP
- L LOW
- H HIGH

STRING NO.	FROM WTG	STRING NO.	FROM WTG
STRING 1	A27-01	STRING 8	ADO-14
	A27-02		ADO-15
	A27-03		ADO-16
	A27-04		ADO-17
	A27-05		ADO-18
	A27-06		ADO-19
	A27-07		ADO-21
STRING 2	A27-11	STRING 9	ADO-08
	A27-12		ADO-09
	A27-13		ADO-10
	A27-14		ADO-11
	A27-15		ADO-12
	A27-16		ADO-13
	A27-17		ADW-09
STRING 3	A27-08	STRING 10	SCH-01
	A27-09		SCH-02
	ADW-05		SCH-03
	ADW-06		SCH-04
	ADW-07		SCH-05
	ADW-08		SCH-06
	ADW-01		SCH-07
STRING 4	ADW-02	STRING 11	SCH-08
	ADW-03		SCH-09
	ADW-04		LPT-11
	ADW-11		LPT-12
	ADW-12		LPT-04
	ADW-13		LPT-05
	ADW-14		LPT-06
STRING 5	ADW-15	STRING 12	LPT-07
	ADW-16		LPT-08
	ADW-17		LPT-09
	ADW-18		LPT-10
	ADO-01		ADO-02
	ADO-02		ADO-03
	ADO-03		ADO-04
STRING 6	ADO-04	STRING 13	ADO-05
	ADO-05		ADO-06
	ADO-06		ADO-07
	ADO-07		ADO-08
	ADW-19		ADO-09
	ADW-20		ADO-10
	ADO-20		ADO-21
STRING 7	ADO-21		ADO-22
	ADO-22		ADO-23

A 05-09-2019 FIRST ISSUE	Scale: N/A	Project: Windpark Zeewolde	Doc No: E0014032-E01-FA0-000001	+
B 23-10-2019 SECOND ISSUE	Size: A0	Drawn: KN	Client: Windpark Zeewolde	=
C 27-11-2019 THIRD ISSUE	Approved: GK	Release date: 05-09-2019	Number: -	Sh. Nr. 03/03
D 22-01-2020 FOURTH ISSUE				
E 19-02-2020 FIFTH ISSUE				