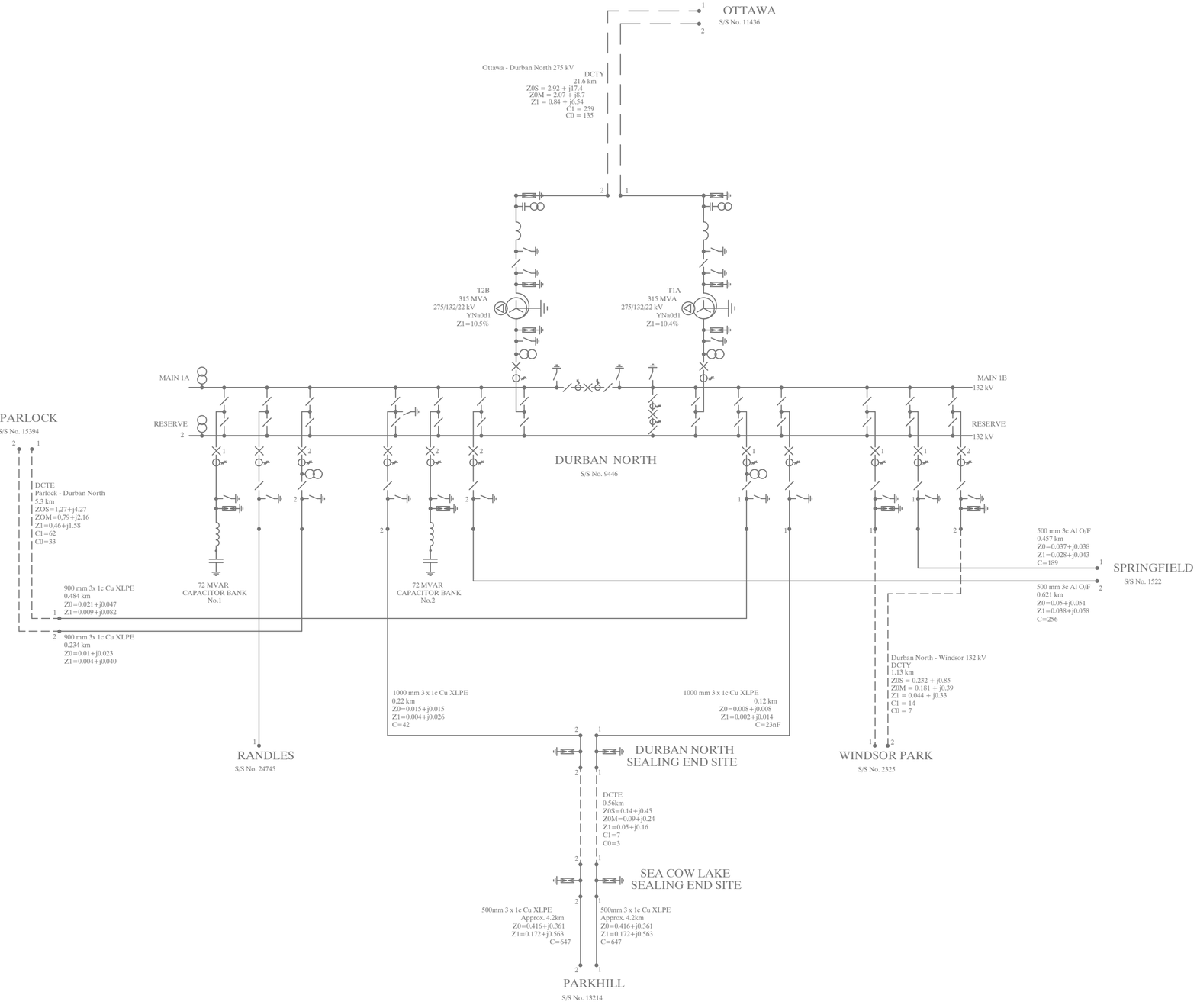

LEGEND

- AUTO TRANSFORMER WITH DELTA TERTIARY WINDINGS
- POWER TRANSFORMER
- VOLTAGE TRANSFORMER
- CURRENT TRANSFORMER
- EARTHING TRANSFORMER (ZIG-ZAG) [Commonly referred to as Neutral Earthing Compensator (NEC)]
- LIQUID NEUTRAL EARTHING RESISTOR (LNER) [Commonly referred to as Neutral Earthing Resistor (NER)]
- FAULT THROWER
- SURGE ARRESTOR
- EARTHING TRANSFORMER WITH LIQUID NEUTRAL EARTHING RESISTOR
- EARTH WITH EARTH LINK
- OFF LOAD ISOLATOR
- ON LOAD ISOLATOR
- CIRCUIT BREAKER
- METERING POSITION
- JUNCTION BETWEEN DIFFERENT OVERHEAD LINES AND OR CABLES OR BUSBARS
- LINE TRAP
- INDUCTOR
- POWER LINE CARRIER UNIT
- CAPACITOR BANK
- ESKOM 275 kV OVERHEAD LINES
- 275 kV OVERHEAD LINES
- 132 kV OVERHEAD LINES
- 132 kV UNDERGROUND CABLES
- PROPOSED
- FUTURE

Z0	ZERO SEQUENCE IMPEDANCE
Z0S	ZERO SEQUENCE SELF IMPEDANCE
Z0M	ZERO SEQUENCE MUTUAL IMPEDANCE
Z1	POSITIVE SEQUENCE IMPEDANCE
Al	ALUMINUM
Cu	COPPER
1c	ONE CORE
3c	THREE CORE
O/F	OIL FILLED
G/F	GAS FILLED
XLPE	CROSS LINKED POLYETHYLENE
S/S	SUBSTATION
ϕ	PHASE
DME	DURBAN METRO ELECTRICITY
[*]	Non-constant impedance transformers

OHTL RATINGS (MVA)

	SINGLE	TWIN
WOLF	***94***	***188***
LYNX	***103***	***206***
ELM	***103***	***206***
BEAR	***128***	***256***
YEW @132 kV	***169***	***338***
YEW @275 kV	***352***	***704***

CON AK1, AD1 , E1, AE2 = SINGLE WOLF = 94
CON U1, P2 = TWIN WOLF = 188

132 kV XLPE Cu / Al

mm	A	MVA
300	540	123
400	608	140
500	683	156 / 100
630	761	173 / 150
800	836	190
1000	900	205

NOTES:

1. Transformer % Impedances are based on the MVA Rating of each Transformer.
2. NER's and/or NEC's Limit the Earth Fault Current to 800 amps except where otherwise indicated.
3. All impedances in Ohms and nF

	SIGNATURE	DATE
DRAWN	J.LAWRENZ	2017-05-30
CHIEF DRAUGHTPERSON		
PLANNING OFFICER		
PROTECTION ENGINEER		
PLANNING ENGINEER		
PROJECTS ENGINEER		
PLAN./PROJ. MANAGER		
SAFTEY OFFICER		
HV NETWORK CONTROL ENG.		

REFERENCE DRAWINGS:	REVISIONS:	BY:	DATE:

ETHEKWINI ELECTRICITY

DURBAN NORTH 275/132 kV SUBSTATION No.9446
275/132 kV TRANSFORMER BAY, 275 kV BUS-SECTION BAY AND 275 kV INCOMER BREAKERS ADDITION
EXISTING 275/132 kV SCHEMATIC

APPROVED
R.DHROCHAND
DEPUTY HEAD: HV OPERATIONS

SCALE: NTS

DRAWING NUMBER: PE / 20 / S / 84

REV: