General Notes:

1. Lighting:
   1.1. Internal luminaires shall be wall mounted at a height of 2.4 m above floor level. Luminaires shall be fitted with a diffuser with an IP rating of IP 42 minimum.
   1.2. Energy efficient lamps to be used.
   1.3. Exterior type 1 luminaires shall be controlled by photocell with zero-crossing switching which shall be connected in series with a timer set to allow the luminaires to be energised between 9 pm and 5 am. A bypass switch shall be installed for the control circuit.
   1.4. Exterior type 2 luminaires shall be energised with the use of a photocell with zero-crossing switching which shall be connected in series with a duration based manual switches that allow the circuit to be energised for a duration of at least five hours, located inside the control.
   1.5. All light switches shall be labelled as per their function. Switches to be mounted next to all the entrances of each room.
2. All glazing shall be shatter proof with a minimum glazing thickness of 6 mm.
3. Switch room and control room floors shall be epoxy paint coated, colour light grey.
4. Switch room shall be air conditioned.
5. Turbine type roof ventilators shall be installed in the switch room and battery room.
6. An inverter type air conditioner with anti corrosion fins shall be installed with fixed wall mounted control panel in the control room. A status contact must be available for remote monitoring. Room temperature of 24° to be maintained.
7. The structural design shall ensure minimal pillars are required in the basements of the GIS room and switch room.
8. Conduits with a diameter of at least 25 mm shall be installed for the CCTV system on locations as shown on the detail with junction boxes at 30 m intervals. Provide the mild steel draw wire in the conduits. 250 mm below the basement soffit. The location (inside or outside) of the top junction box is as per detail.
9. Conduit to be installed from the centre of Switch room and control rooms.
10. Brown epoxy powder coated aluminium doors to be installed. Bottom half to be louvered (IP 42) as per manufacturers detail in the battery rooms.
11. Roller door shall provide a minimum IP rating of IP55.
12. Automatic door closers to be installed on all pedestrian doors leading to the control room.
13. There is to be a three phase outdoor power supply mounted next to the control or switch room door located closest to the transformers.
14. The outdoor stainless steel wash trough shall have an oil trap fitted.
15. Sliding access gate to be motorised with a high speed industrial motor.
16. Perimeter fencing shall be 2.4 m high with a height of at least 500mm (400mm in loose soil) with a minimum wall height of 2.2m (2.4 m high risk areas) when measured from the outside.
17. Grout steel bases into concrete plinths to prevent accelerated corrosion (outdoor substations).
18. All steel items which can corrode must be either hot-dip galvanised or made of stainless steel. An epoxy coating alone shall not suffice for the prevention of corrosion on corrosive items. These items shall include but not be limited to:
   a) boundary steel fence;
   b) bolts securing the boundary steel fence;
   c) nuts securing the name of the substation onto the wall;
   d) screws or key bolts securing the cover for the smash-glass fire protection device;
   e) bolts securing the air conditioning vents on the walls;
   f) manhole covers and
   g) the track onto which the driveway gate slides.
19. All paving shall be installed in a manner that prevents the growth of weeds in-between.
20. Space to be provided at ground level in case sliding gate is to be automated.

Luminaire types:
Type 1: 20 W CFL, Bulkhead type fitting (minimum IP 66)
Type 2: 150 W, metal halide flood light (minimum IP 66)
Note:
Deviations to above to be approved by eThekwini Electricity's project Engineer in writing.

DUCT FORMATIONS

275 kV BUS COUPLER
SECTION B - B
Scale 1 : 500

132 kV BUS SECTION
SECTION A - A
Scale 1 : 500

275 kV INCOMER FEEDER
SECTION D - D
Scale 1 : 500

275/132 kV TRANSFORMER CIRCUITS
SECTION C - C
Scale 1 : 500

To Coordinate E1
To Coordinate D1
To Coordinate F1
To Coordinate H1
To Coordinate J1
To Coordinate K1
To Coordinate G1
SEE NOTE A
Existing DD90 Tower T101
PERIMETER WALL
Temporary deviation of lines during excavations
FENCE TO BE REPOSITIONED
45 m Buffer from Live Yard Fence
Ottawa 132/11 kV Substation
Towers for temporary relocation of 275 kV circuits
To be constructed imminently
To be constructed imminently
Existing Tower Position T103 DD
To Durban North 275/132 kV substation
To Coordinate O1
To Coordinate N1
45 m Buffer from Live Yard Fence
1 pt to 1 Pt 66 kV Microwave Link tower for Eskom

POINT	X	Y
A	3 284 154.75	- 4 899.02
B	3 284 168.83	- 4 924.15
C	3 284 185.16	- 4 937.15
D	3 284 179.53	- 4 940.65
E	3 284 322.00	- 5 170.00
F	3 284 328.62	- 5 165.89
G	3 284 333.62	- 5 173.19
H	3 284 350.75	- 5 174.37
J	3 284 388.44	- 5 139.56
K	3 284 398.31	- 5 138.63
L	3 284 415.71	- 5 164.72
M	3 284 472.00	- 5 158.53
N	3 284 522.27	- 5 135.59
P	3 284 537.56	- 5 100.58
Q	3 284 536.90	- 5 073.40
R	3 284 516.78	- 5 034.16
S	3 284 476.69	- 5 006.04
T	3 284 449.20	- 4 925.36
U	3 284 433.74	- 4 893.39
V	3 284 411.36	- 4 864.41
W	3 284 346.04	- 4 802.58
X	3 284 324.42	- 4 783.44
Y	3 284 268.49	- 4 758.59
Z	3 284 230.89	- 4 769.84
A1	3 284 219.31	- 4 803.92
B1	3 284 215.00	- 4 859.54
C1	3 284 168.51	- 4 878.80
D1	3 284 050.87	- 4 987.16
E1	3 284 101.56	- 4 994.02
F1	3 284 055.12	- 5 033.33
G1	3 284 242.86	- 5 062.06
H1	3 284 157.05	- 5 199.81
J1	3 284 185.02	- 5 240.02
K1	3 284 227.03	- 5 172.58
L1	3 284 449.42	- 5 090.85
M1	3 284 795.61	- 4 913.95
N1	3 284 577.51	- 4 813.08
O1	3 284 547.64	- 4 709.45
P1	3 284 426.91	- 4 858.17
Q1	3 284 306.95	- 4 861.50

	SIGNATURE	DATE
DRAWN	JRL	2014-02-28
CHIEF EXAUGHTSMAN		
PLANNING OFFICER		
PROTECTION ENGINEER		
PLANNING ENGINEER		
PROJECTS ENGINEER		
PLAN PREP. MANAGER		
APPROVED: E.EDRICHTAND DEPUTY HEAD HV OPERATIONS		

REFERENCE DRAWINGS: | REVISIONS: | BY: | DATE:

ETHEKWINI ELECTRICITY
OTTAWA 275/132 kV SUBSTATION
No. 11436
PROPOSED ADDITION OF ONE 275/132 kV TRANSFORMER

SCALE: 1 : 500
DRAWING NUMBER: PE 79 / S / 99
REV: