

## APPENDIX A

**Table A.1 Existing Substations**

<b>Name</b>	<b>Site Type</b>	<b>Voltage</b>	<b>POINT_X</b>	<b>POINT_Y</b>	<b>PROVINCE</b>
PEMBROKE	SUBSTATION	220	27,52371000000	-32,88407000000	Eastern Cape
DEDISA	SUBSTATION	400	25,67500000000	-33,74266000000	Eastern Cape
VUYANI	SUBSTATION	400	28,81351000000	-31,64190000000	Eastern Cape
POSEIDON	SUBSTATION	400	25,92485000000	-32,74267000000	Eastern Cape
IZIKO	CAPACITOR	400	25,18760000000	-31,72159000000	Eastern Cape
BUFFALO	SUBSTATION	132	27,80723000000	-32,98747000000	Eastern Cape
GRASSRIDGE	SUBSTATION	400	25,63290000000	-33,71958000000	Eastern Cape
PORT REX	SUBSTATION	132	27,88148000000	-33,02852000000	Eastern Cape
DELPHI	SUBSTATION	400	26,80560000000	-32,01265000000	Eastern Cape
NEPTUNE	SUBSTATION	400	27,85770000000	-32,90242000000	Eastern Cape
MERAPI	SUBSTATION	275	27,08379000000	-28,94259000000	Free State
MERCURY	SUBSTATION	400	26,81979000000	-27,00189000000	Free State
THESEUS	SUBSTATION	400	26,82852000000	-28,16013000000	Free State
MAKALU	SUBSTATION	275	27,91005000000	-26,82310000000	Free State
BETA	SUBSTATION	765	25,70316000000	-28,72190000000	Free State
EVEREST	SUBSTATION	275	26,90180000000	-27,99387000000	Free State
LEANDER	SUBSTATION	400	26,79991000000	-27,94486000000	Free State
PERSEUS	SUBSTATION	400	25,74471000000	-28,63338000000	Free State
HIGHVELD	SUBSTATION	275	27,89290000000	-26,91893000000	Free State
SORATA	SUBSTATION	132	28,91116000000	-28,30135000000	Free State
LETHABO	SUBSTATION	275	27,97573000000	-26,73911000000	Free State
SERUMULA	CAPACITOR	400	26,43835000000	-30,24381000000	Free State
SCAFELL	SUBSTATION	275	27,63706000000	-26,81317000000	Free State
HARVARD	SUBSTATION	275	26,10580000000	-29,10385000000	Free State
CARMEL	SUBSTATION	275	27,30591000000	-26,42449000000	Gauteng
BRENNER	SUBSTATION	275	28,27720000000	-26,27886000000	Gauteng
BENBURG	SUBSTATION	275	28,35498000000	-26,10776000000	Gauteng
GLOCKNER	SUBSTATION	400	27,98702000000	-26,60479000000	Gauteng
JUPITER	SUBSTATION	275	28,11467000000	-26,22923000000	Gauteng
EIGER	SUBSTATION	275	28,11571000000	-26,30702000000	Gauteng
THUSO	SUBSTATION	275	28,24554000000	-25,89500000000	Gauteng
ESSELEN	SUBSTATION	275	28,26887000000	-26,00472000000	Gauteng
NJALA	SUBSTATION	275	28,29054000000	-25,84806000000	Gauteng
CRAIGHALL	SUBSTATION	275	28,01553000000	-26,09415000000	Gauteng
NEVIS	SUBSTATION	275	28,53934000000	-26,24250000000	Gauteng
CROYDON	SUBSTATION	275	28,19470000000	-26,14026000000	Gauteng
APOLLO	SUBSTATION	533	28,27609000000	-25,91944000000	Gauteng
KWAGGA	SUBSTATION	275	28,10442000000	-25,75751000000	Gauteng
PLUTO	SUBSTATION	400	27,45524000000	-26,21803000000	Gauteng
VERDUN	SUBSTATION	275	27,95193000000	-26,63998000000	Gauteng
HERA	SUBSTATION	400	27,66190000000	-26,44746000000	Gauteng
PRINCESS	SUBSTATION	275	27,84578000000	-26,17403000000	Gauteng

TAUNUS	SUBSTATION	275	27,77934000000	-26,26832000000	Gauteng
LEPINI	SUBSTATION	275	28,17915000000	-26,03221000000	Gauteng
LULAMISA	SUBSTATION	400	28,01048000000	-25,96562000000	Gauteng
ETNA	SUBSTATION	275	27,87498000000	-26,38462000000	Gauteng
RIGI	SUBSTATION	275	27,85746000000	-26,67967000000	Gauteng
PELLY	SUBSTATION	275	28,29138000000	-25,41559000000	Gauteng
BERNINA	SUBSTATION	275	27,66190000000	-26,44746000000	Gauteng
SNOWDON	SUBSTATION	275	28,15053000000	-26,53190000000	Gauteng
MIDAS	SUBSTATION	400	27,52884000000	-26,38802000000	Gauteng
WESTGATE	SUBSTATION	275	27,75528000000	-26,14908000000	Gauteng
PIETERBOTH	SUBSTATION	275	28,45971000000	-26,31942000000	Gauteng
KOOKFONTEIN	SUBSTATION	275	27,98802000000	-26,58772000000	Gauteng
OLYMPUS	SUBSTATION	275	27,80584000000	-26,66669000000	Gauteng
TUGELA	SUBSTATION	275	29,32138000000	-28,58041000000	KwaZulu-Natal
IMPALA	SUBSTATION	275	31,94649000000	-28,76629000000	KwaZulu-Natal
EROS	SUBSTATION	132	29,90470000000	-30,60597000000	KwaZulu-Natal
INGULA	SUBSTATION	400	29,58713000000	-28,27854000000	KwaZulu-Natal
VENUS	SUBSTATION	400	29,84545000000	-28,93838000000	KwaZulu-Natal
DANSKRAAL	SUBSTATION	275	29,83445000000	-28,56569000000	KwaZulu-Natal
ILLOVO	SUBSTATION	275	30,83306000000	-30,07532000000	KwaZulu-Natal
ARIADNE	SUBSTATION	400	30,39008000000	-29,72936000000	KwaZulu-Natal
GEORGEDALE	SUBSTATION	275	30,61361000000	-29,78312000000	KwaZulu-Natal
HILLSIDE	SUBSTATION	132	32,02583000000	-28,76888000000	KwaZulu-Natal
DRAKENSBERG	SUBSTATION	400	29,08320000000	-28,56602000000	KwaZulu-Natal
INVUBU	SUBSTATION	400	32,03629000000	-28,68883000000	KwaZulu-Natal
ATHENE	SUBSTATION	400	31,92700000000	-28,75848000000	KwaZulu-Natal
PEGASUS	SUBSTATION	400	30,32613000000	-28,24932000000	KwaZulu-Natal
CHIVELSTON	SUBSTATION	400	29,98920000000	-27,83797000000	KwaZulu-Natal
HECTOR	SUBSTATION	400	30,66073000000	-29,77886000000	KwaZulu-Natal
MERSEY	SUBSTATION	400	30,47750000000	-29,39342000000	KwaZulu-Natal
INCANDU	SUBSTATION	400	29,97863000000	-27,71991000000	KwaZulu-Natal

AVON	SUBSTATION	275	31,16077000000	-29,41769000000	KwaZulu-Natal
BLOUKRANS	SUBSTATION	275	29,85139000000	-28,76040000000	KwaZulu-Natal
INGAGANE	SUBSTATION	275	29,98471000000	-27,84573000000	KwaZulu-Natal
BLOEDRIVIER	SUBSTATION	275	30,57614000000	-27,89490000000	KwaZulu-Natal
UMFOLOZI	SUBSTATION	400	31,18680000000	-28,21582000000	KwaZulu-Natal
SENAKWANGWEDI	SUBSTATION	275	30,11681000000	-24,81319000000	Limpopo
FOSKOR	SUBSTATION	275	31,12700000000	-24,02828000000	Limpopo
BORUTHO	SUBSTATION	400	28,97511000000	-23,90229000000	Limpopo
LESEDING	SUBSTATION	400	30,01641000000	-24,43972000000	Limpopo
WITKOP	SUBSTATION	400	29,35699000000	-24,04402000000	Limpopo
TABOR	SUBSTATION	275	29,78312000000	-23,37213000000	Limpopo
MATIMBA	SUBSTATION	400	27,61550000000	-23,66907000000	Limpopo
DWAALBOOM	SUBSTATION	132	26,83741000000	-24,81212000000	Limpopo
SPITSKOP	SUBSTATION	400	27,22775000000	-24,96645000000	Limpopo
MERENSKY	SUBSTATION	400	30,22118000000	-24,71787000000	Limpopo
SPENCER	SUBSTATION	275	30,38062000000	-23,48784000000	Limpopo
WARMBAD	SUBSTATION	275	28,32611000000	-24,89063000000	Limpopo
MEDUPI	SUBSTATION	400	27,56352000000	-23,70451000000	Limpopo
SIMPLON	SUBSTATION	275	30,05061000000	-25,23506000000	Mpumalanga
DWARSBERG	SUBSTATION	400	26,76700000000	-24,90779000000	North West
ATLAS	SUBSTATION	400	28,11719000000	-26,75995000000	Gauteng
DUVHA	SUBSTATION	400	29,33649000000	-25,96006000000	Mpumalanga
KOMATI	SUBSTATION	275	29,47323000000	-26,09291000000	Mpumalanga
ZEUS	SUBSTATION	400	29,08881000000	-26,69454000000	Mpumalanga
KENDAL	SUBSTATION	400	28,97014000000	-26,08644000000	Mpumalanga
MATLA	SUBSTATION	400	29,13905000000	-26,28276000000	Mpumalanga
ARNOT	SUBSTATION	400	29,78843000000	-25,94275000000	Mpumalanga
VULCAN	SUBSTATION	400	29,11028000000	-25,82893000000	Mpumalanga
CAMDEN	SUBSTATION	400	30,09056000000	-26,61888000000	Mpumalanga
MARATHON	SUBSTATION	275	30,92179000000	-25,41044000000	Mpumalanga
PRAIRIE	SUBSTATION	275	30,22894000000	-25,71725000000	Mpumalanga
ROCKDALE	SUBSTATION	275	29,50606000000	-25,80995000000	Mpumalanga
KRIEL	SUBSTATION	400	29,17632000000	-26,25620000000	Mpumalanga
KHANYAZWE	SUBSTATION	275	31,52815000000	-25,50235000000	Mpumalanga
HENDRINA	SUBSTATION	400	29,59955000000	-26,03014000000	Mpumalanga
SASOLII	SUBSTATION	132	29,14742000000	-26,55863000000	Mpumalanga
ALPHA	SUBSTATION	765	29,39699000000	-26,80426000000	Mpumalanga
ACORNHOEK	SUBSTATION	275	31,05367000000	-24,59830000000	Mpumalanga
KRUISPUNT	SUBSTATION	275	29,09195000000	-26,21027000000	Mpumalanga
KOMATIPOORT	SUBSTATION	275	31,94394000000	-25,43339000000	Mpumalanga
GUMENI	SUBSTATION	400	30,23121000000	-25,75038000000	Mpumalanga
TUTUKA	SUBSTATION	400	29,35200000000	-26,77382000000	Mpumalanga

NORMANDIE	SUBSTATION	400	30,87739000000	-27,16167000000	Mpumalanga
MAJUBA	SUBSTATION	400	29,76827000000	-27,09809000000	Mpumalanga
SOL	SUBSTATION	400	29,11757000000	-26,53879000000	Mpumalanga
GROOTVLEI	SUBSTATION	400	28,49445000000	-26,77053000000	Mpumalanga
SASOLIII	SUBSTATION	132	29,16480000000	-26,56527000000	Mpumalanga
KUSILE	SUBSTATION	400	28,91379999960	-25,91349999960	Mpumalanga
MINERVA	SUBSTATION	400	28,08081000000	-25,92028000000	Gauteng
MARANG	SUBSTATION	400	27,33375000000	-25,61483000000	North West
NGWEDI	SUBSTATION	400	27,08600000000	-25,40730000000	North West
MOOKODI	SUBSTATION	400	24,74400000000	-27,01000000000	North West
LOMOND	SUBSTATION	275	27,93881000000	-25,80307000000	North West
TRIDENT	SUBSTATION	275	27,18218000000	-25,63501000000	North West
BIGHORN	SUBSTATION	400	27,50886000000	-25,68223000000	North West
ARARAT	SUBSTATION	275	27,18708000000	-25,56279000000	North West
DINALEDI	SUBSTATION	400	27,85491000000	-25,57919000000	North West
WATERSHED	SUBSTATION	275	26,14458000000	-26,09043000000	North West
HERMES	SUBSTATION	400	26,78439000000	-26,90206000000	North West
ANDERSON	SUBSTATION	275	27,94837000000	-25,80237000000	North West
RUIGTEVALLEI	SUBSTATION	220	25,50358000000	-30,64069000000	Eastern Cape
GARIEP	SUBSTATION	132	25,50372000000	-30,62582000000	Eastern Cape
LUCKHOFF	CAPACITOR	400	24,80648000000	-29,74752000000	Free State
BOUNDARY	SUBSTATION	275	24,88010000000	-28,72396000000	Free State Northern
OLIEN	SUBSTATION	275	23,62378000000	-28,33209000000	Cape Northern
NAMA	SUBSTATION	220	17,88402000000	-29,63235000000	Cape Northern
LEWENSAAR	SUBSTATION	275	22,59557000000	-28,21187000000	Cape Northern
NIEUWEHOOP	SUBSTATION	400	21,33800000000	-29,14900000000	Cape Northern
UPINGTON	SUBSTATION	400	21,13284000000	-28,54597000000	Cape Northern
PAULPUTS	SUBSTATION	220	19,56490000000	-28,87879000000	Cape Northern
AGGENEIS	SUBSTATION	400	18,80338000000	-29,29758000000	Cape Northern
HYDRA	SUBSTATION	400	24,08833000000	-30,71487000000	Cape Northern
ARIES	SUBSTATION	400	20,79392000000	-29,49440000000	Cape Northern
GARONA	SUBSTATION	275	21,99521000000	-28,73922000000	Cape Northern
HELIOS	SUBSTATION	400	19,56037000000	-30,49961000000	Cape Northern
ROODEKUIL	SUBSTATION	220	24,70699000000	-29,99916000000	Cape Northern
GROMIS	SUBSTATION	220	17,18046000000	-29,59969000000	Cape

ORANJEMOND	SUBSTATION	220	16,60046000000	-28,54486000000	Northern Cape
FERRUM	SUBSTATION	275	23,05693000000	-27,73119000000	Northern Cape
GAMMA	SUBSTATION	765	23,40462000000	-31,67934000000	Northern Cape
VAN DER KLOOF	SUBSTATION	220	24,73084000000	-29,99352000000	Northern Cape
KRONOS	SUBSTATION	400	22,33830000000	-30,02251000000	Northern Cape
GROEIPUNT	SUBSTATION	220	18,26825000000	-29,51700000000	Northern Cape
KOMSBERG	CAPACITOR	400	20,59439000000	-32,93355000000	Cape
PALMIET	SUBSTATION	400	18,97305000000	-34,19856000000	Western Cape
ACACIA	SUBSTATION	400	18,53541000000	-33,88352000000	Western Cape
PHILIPPI	SUBSTATION	400	18,53708000000	-33,98768000000	Western Cape
PINOTAGE	SUBSTATION	400	18,77957000000	-34,04729000000	Western Cape
MULDERSVLEI	SUBSTATION	400	18,80762000000	-33,81805000000	Western Cape
GOURIKWA	SUBSTATION	400	21,96069000000	-34,16521000000	Western Cape
ANKERLIG	SUBSTATION	400	18,46069000000	-33,67368000000	Western Cape
JUNO	SUBSTATION	400	18,44423000000	-31,60800000000	Western Cape
AURORA	SUBSTATION	400	18,23403000000	-33,00724000000	Western Cape
PROTEUS	SUBSTATION	400	21,88055000000	-34,10403000000	Western Cape
KOEBERG	SUBSTATION	400	18,43224000000	-33,67368000000	Western Cape
STIKLAND	SUBSTATION	400	18,68677000000	-33,90619000000	Western Cape
KAPPA	SUBSTATION	400	20,01361000000	-33,10500000000	Western Cape
DROERIVIER	SUBSTATION	400	22,53056000000	-32,40558000000	Western Cape
STERREKUS	SUBSTATION	765	18,51220000000	-33,70216000000	Western Cape
BACCHUS	SUBSTATION	400	19,40423000000	-33,81467000000	Western Cape

**Table A.2 Future Substations**

Name	Site Type	Voltage	POINT_X	POINT_Y	PROVINCE
HLAZIYA	FUTURE SUBSTATION	400	24,70951167980	-34,15848410800	Eastern Cape
POSEIDON SOUTH	FUTURE SUBSTATION	400	25,81999166700	-33,03236388900	Eastern Cape
POSEIDON NORTH	FUTURE SUBSTATION	400	25,64400000000	-32,26400000000	Eastern Cape
DORPER	FUTURE SUBSTATION	400	26,44888888900	-31,42630833300	Eastern Cape
GRAHAMSTOWN	FUTURE SUBSTATION	400	26,64638000100	-33,24542700170	Eastern Cape
ZANOKHANYO	FUTURE SUBSTATION	765	24,28693071950	-32,93992301450	Eastern Cape
ABERDEEN	FUTURE SUBSTATION	400	23,74260309320	-32,49284200590	Eastern Cape
ARTEMIS	FUTURE SUBSTATION	400	25,71745872620	-28,67820378410	Free State
IGESI	FUTURE SUBSTATION	275	27,88455000000	-26,81400000000	Free State
MERCURY B	FUTURE SUBSTATION	400	27,03590210150	-27,02461199320	Free State
EDENVILLE	FUTURE SUBSTATION	400	27,43049287900	-27,86018986520	Free State
ARTEMIS B	FUTURE SUBSTATION	400	25,83257693430	-28,77769252010	Free State
QUATTRO	FUTURE SUBSTATION	275	27,92900000010	-26,27950000020	Gauteng
DIPHORORO	FUTURE SUBSTATION	275	28,10024815700	-25,56316813290	Gauteng
SISIMUKA	FUTURE SUBSTATION	275	28,15494290020	-26,22578011390	Gauteng
MESONG	FUTURE SUBSTATION	400	28,18024999970	-26,08400000040	Gauteng
JUPITER B	FUTURE SUBSTATION	400	28,11099999980	-26,23000000000	Gauteng
SESIU	FUTURE SUBSTATION	400	27,94041000000	-25,98923000000	Gauteng
LESOKWANA	FUTURE SUBSTATION	400	28,26656250150	-26,40369715740	Gauteng
KYALAMI	FUTURE SUBSTATION	400	28,07185603010	-26,01651921420	Gauteng
DONATELLO	FUTURE SUBSTATION	275	28,08051480890	-26,08872192590	Gauteng
WILDEBEES	FUTURE SUBSTATION	400	28,41554000000	-25,74848000000	Gauteng
SEBENZA	FUTURE SUBSTATION	400	28,19054000000	-26,11572000000	Gauteng
NGUNI	FUTURE SUBSTATION	400	26,89318292690	-26,14834235810	North West
MBEWU	FUTURE SUBSTATION	400	31,76019000010	-28,70533000040	KwaZulu-Natal
ISUNDU	FUTURE SUBSTATION	400	30,40083207240	-29,73559153600	KwaZulu-Natal
INYANINGA	FUTURE SUBSTATION	275	31,09338799660	-29,58513779380	KwaZulu-Natal
IPHIVA	FUTURE SUBSTATION	400	31,98680018630	-27,54753981970	KwaZulu-Natal
SHONGWENI	FUTURE SUBSTATION	400	30,76076982380	-29,78086131860	KwaZulu-Natal
MANOGENG	FUTURE SUBSTATION	400	29,82483000010	-25,11243000040	Limpopo
NZHELELE	FUTURE SUBSTATION	400	29,93800000020	-22,65600000020	Limpopo
SILIMELA	FUTURE SUBSTATION	400	29,29755000030	-25,08676999970	Limpopo
SEKHUKHUNE	FUTURE SUBSTATION	400	30,12499193770	-24,92350115530	Limpopo
MASA	FUTURE SUBSTATION	400	27,38341000000	-23,78248000000	Limpopo

WARMBAD B	FUTURE SUBSTATION	400	28,99336848690	-24,37315200950	Limpopo
WARMBAD C	FUTURE SUBSTATION	400	28,37018764940	-25,13624515410	Limpopo
SPITSKOP B	FUTURE SUBSTATION	400	27,12640617580	-24,88660948660	Limpopo
EMKHIWENI	FUTURE SUBSTATION	400	29,40299999970	-25,87599999970	Mpumalanga
WONDERKRAG	FUTURE SUBSTATION	400	29,16364231660	-26,61731692000	Mpumalanga
AMAFUTHA	FUTURE SUBSTATION	132	29,16218056000	-26,56463889000	Mpumalanga
CAMDEN B	FUTURE SUBSTATION	400	30,07111111000	-26,64491389000	Mpumalanga
VUNUMOYA	FUTURE SUBSTATION	400	29,59076423280	-26,64609967300	Mpumalanga
MADLANZINI	FUTURE SUBSTATION	400	30,51033162690	-26,95438098710	Mpumalanga
MAHIKENG	FUTURE SUBSTATION	400	25,56227900000	-25,68725300000	North West
WATERSHED C	FUTURE SUBSTATION	400	26,23191042090	-26,06766606430	North West
VENTERSDORP	FUTURE SUBSTATION	400	26,51837864150	-26,16891748540	North West
PLUTO CLUSTER	FUTURE SUBSTATION	400	27,25298099350	-25,98264786920	North West
KORANA	FUTURE SUBSTATION	400	19,28680555560	-29,32536111110	Northern Cape
UMTU	FUTURE SUBSTATION	400	22,90206024090	-27,21955150560	Northern Cape
KRYPTON	FUTURE SUBSTATION	400	24,35054167000	-30,28280833000	Northern Cape
KORUSON	FUTURE SUBSTATION	400	24,82183332660	-31,35450389960	Northern Cape
LOXTON	FUTURE SUBSTATION	400	22,56083056000	-31,53266667000	Northern Cape
SIYONEZA	FUTURE SUBSTATION	765	23,57955556000	-30,94196389000	Northern Cape
AQUILA	FUTURE SUBSTATION	400	24,29000000000	-30,88000000000	Northern Cape
KESTREL	FUTURE SUBSTATION	400	24,11450556000	-30,68655556000	Western Cape
ASTERIA	FUTURE SUBSTATION	400	19,18142000000	-34,23957000000	Western Cape
ERICA	FUTURE SUBSTATION	400	18,60435000000	-34,01658000000	Western Cape
KORING	FUTURE SUBSTATION	400	21,25974701950	-32,71224588000	Western Cape
BOKKOM	FUTURE SUBSTATION	400	17,99907485400	-32,98122634200	Western Cape
GALENIA	FUTURE SUBSTATION	400	22,55830000000	-32,93434000000	Western Cape
NUWEVELD	FUTURE SUBSTATION	400	22,47993056000	-31,85898889000	Western Cape
AGULHAS	FUTURE SUBSTATION	400	20,33857000000	-34,12780000000	Western Cape
SALDANHA	FUTURE SUBSTATION	400	17,94152020100	-32,95358495630	Cape

## APPENDIX B: Updated Renewable Energy Parks

