GB Seven Year Statement 2010
Appendix A
Additional Figures

FIGURES

G.B. SYS. FIGURE A.1.1

GB TRANSMISSION SYSTEM WITH LARGE POWER STATIONS AS AT 31st DECEMBER 2009

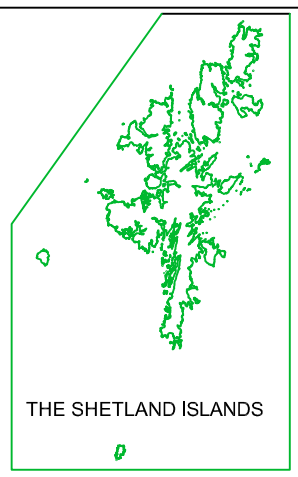
THE SHETLAND ISLANDS

Plant Type	Existing
NUCLEAR	▲
COAL	■
OIL & OCGT	●
CCGT/CHP	◗
HYDRO/PUMPED STORAGE	⊙
WIND	⅄
OTHER	◆
SUBSTATIONS:	■

Hotta
Causeymire
Cassley
Boulfrich
Lairg
Lairg-Achany
Kilbraur
Gordonbush
Shin
Beinn Tharsiun
Grudie Bridge
Mossford
Novar
Alness
Lutchart
Orrin
Fairburn
Deanie
Culligran
Algas
Kilmorack
Fairburn
Ben Aketil
Edinbane
Fasnakyle
Torr Achilty
Calm Ulsh
Boyndie
Dunmuir
Peterhead
Millenium
Llyishle
Glen Morrison
Foyers
Paul's Hill
Glens of Foundland
Stoneywood
Ceannacroc
Glendoe
Farr
Quoich
Invergarry
Kinlochleven
Rannoch
Tummel Bridge
Errochty
Clunie
Pitlochry
Drumderg
Tullo
Cashlie
Lochay
Finlarig
Cruachan
Ardkinglas
Clachan
St. Fillans
SCOTTISH HYDRO-ELECTRIC TRANSMISSION
Inveraray
Nant
Sloy
Braes of Doune
Earlsburn
Cruach Mhor
Fife Power
Grangemouth
Cockenzie
Alkenge
Torness
Crystal Rig 1&2
Toddleburn
Dun Law Extension
Hunterston
Whitelee
Black Law
Long Park
Belnn an Tuirc
Tangy
Deuchern
Caledonian Paper Mill
SP TRANSMISSION LTD.
Hadyard Hill
Lynemouth
Dalswinton
Steven's Croft
Minsca
NGET
Auchencrosh
Tongland
Hartlepool
Wilton
Teesside
Fellside Power
Rocksecote
Heysham
Salt End
Killingholme
Ironbridge
Drax
Eggborough
Ferrybridge
Keadby
Brigg
West Burton
Cottam
CDCL
Wylfa
Shotton Paper
Fiddlers Ferry
Connahs Quay
Deeside
Rocksavage
Dinorwig
Ffestiniog
Staythorpe
Derwent
Ratcliffe
Spalding
Kings Lynn
Sutton Bridge
Peterborough
Great Yarmouth
Corby
Sizewell
Greater Gabbard
Little Barford
Bradford
NATIONAL GRID
ELECTRICITY TRANSMISSION plc
Rye House
Brimsdown
Oldbury
Severn Power
Baglan Bay
Seabank
Uskmouth
Barry
Aberthaw
Didcot
Taylors Lane
Barking
Canyton
Grain
Netherlands
Thanet
Medway
Damhead Creek
Littlebrook
Hinkley Point
Shoreham
Dungeness
E de F
Marchwood
Fawley
Cowes
Langage
Indian Queens

GB SYS FIG.A.1.2

GB TRANSMISSION SYSTEM
AS AT 31st DECEMBER 2009



400kV Substations
275kV Substations
132kV Substations
400kV Circuits
275kV Circuits
132kV Circuits

Major Generating Sites Including Pumped Storage

Connected at 400kV
Connected at 275kV
Hydro Generation

SCOTTISH HYDRO-ELECTRIC TRANSMISSION

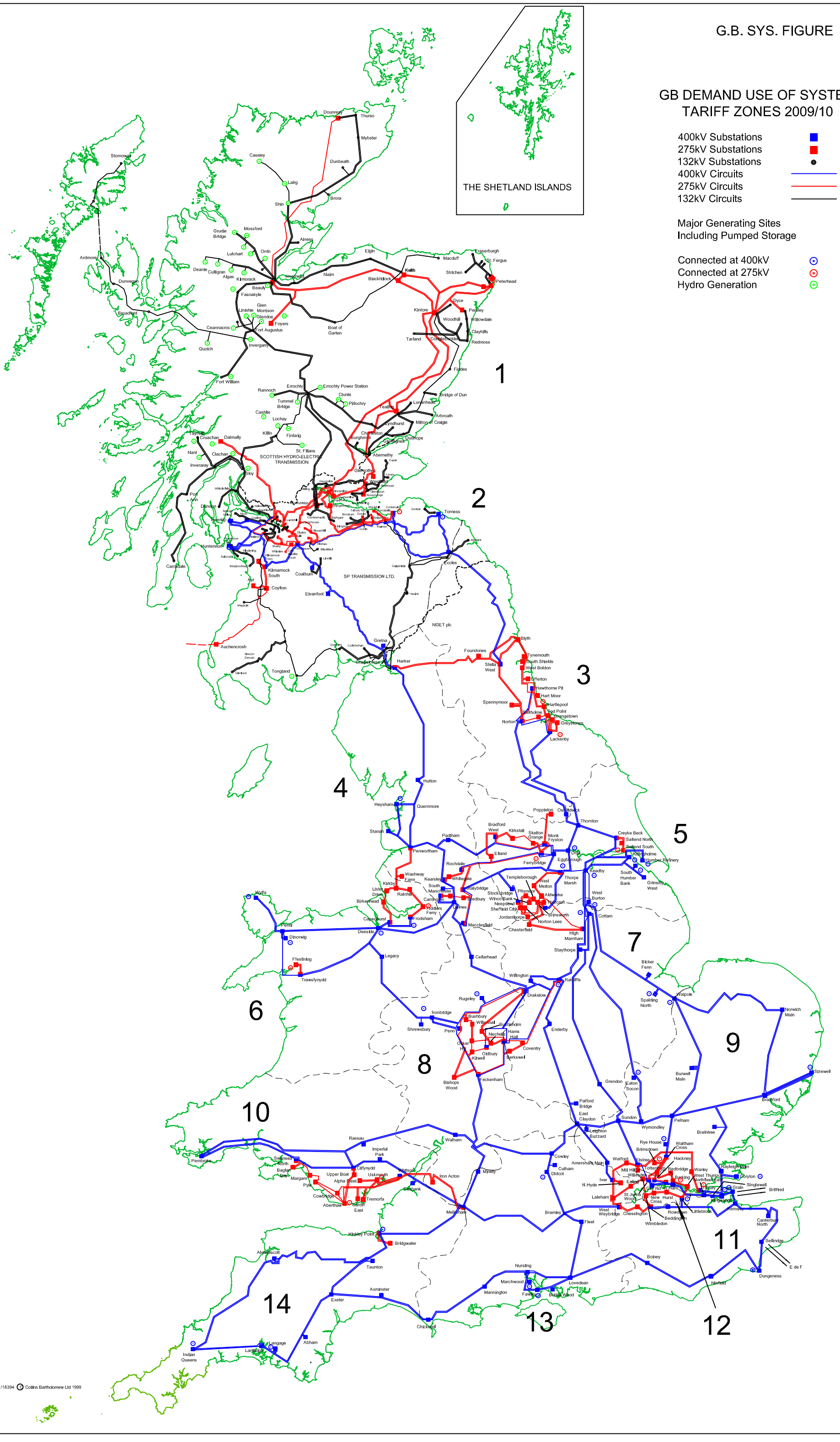
SP TRANSMISSION LTD.

NGC

NATIONAL GRID
ELECTRICITY TRANSMISSION plc

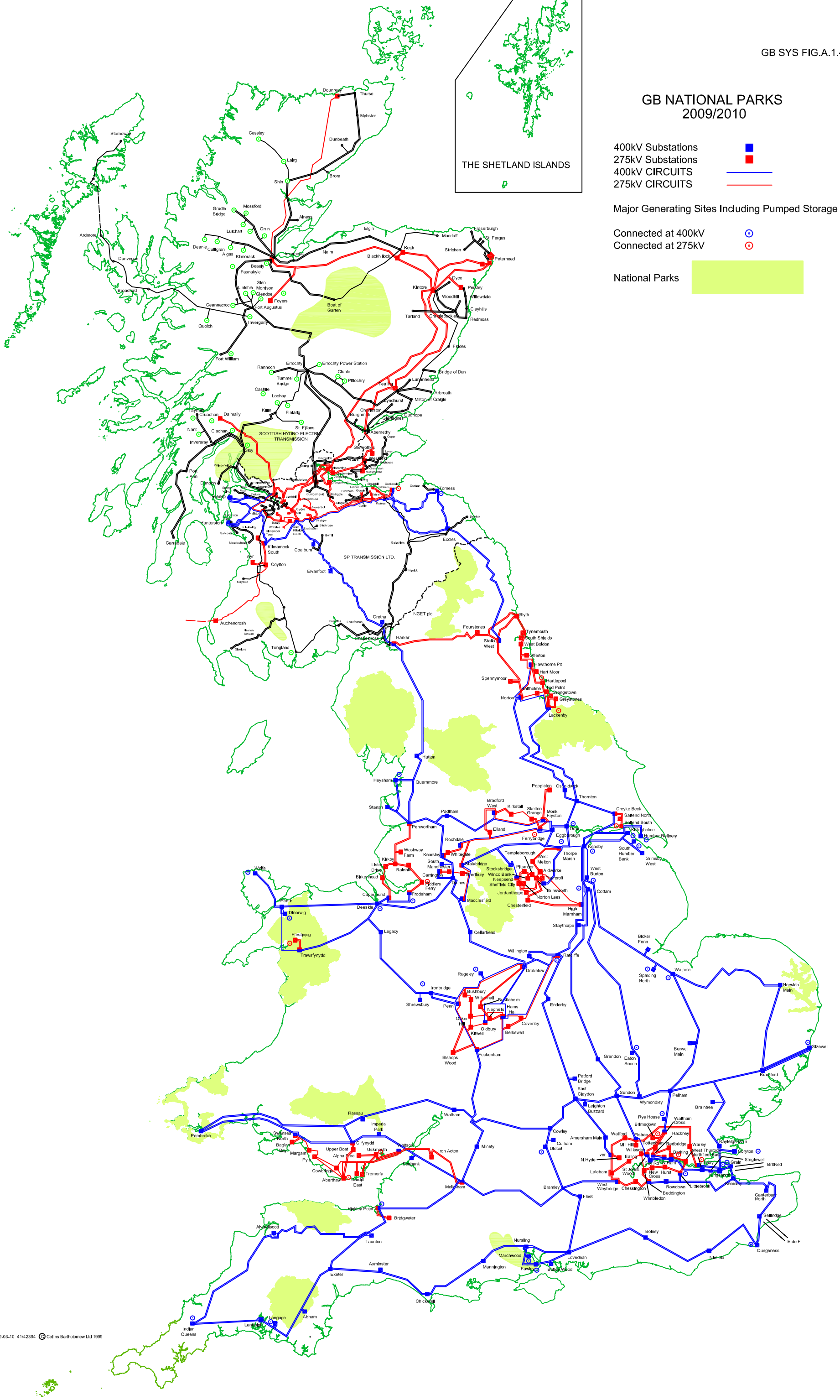
G.B. SYS. FIGURE A.1.3

GB DEMAND USE OF SYSTEM TARIFF ZONES 2009/10



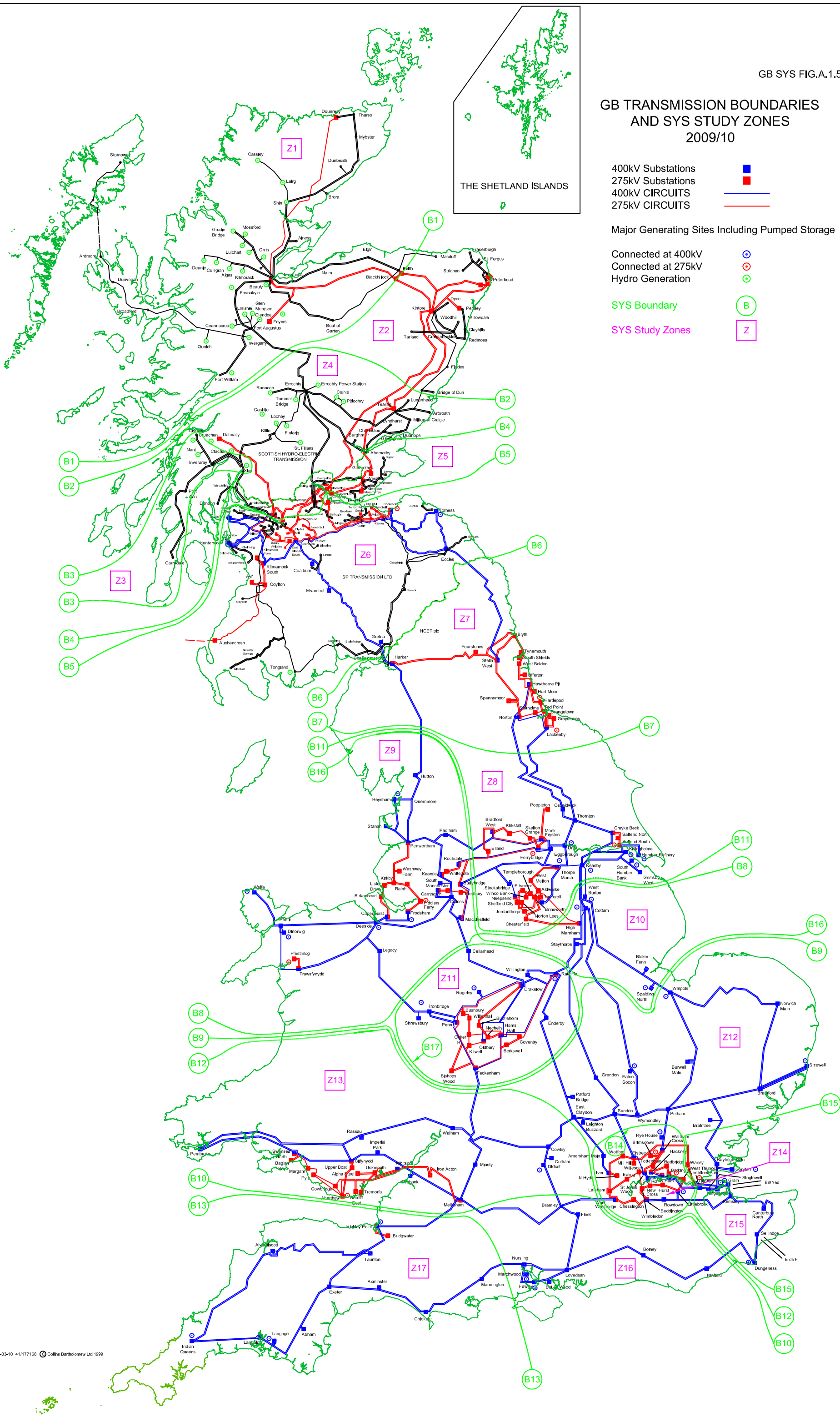
GB SYS FIG.A.1.4

GB NATIONAL PARKS 2009/2010



GB SYS FIG.A.1.5

GB TRANSMISSION BOUNDARIES AND SYS STUDY ZONES 2009/10



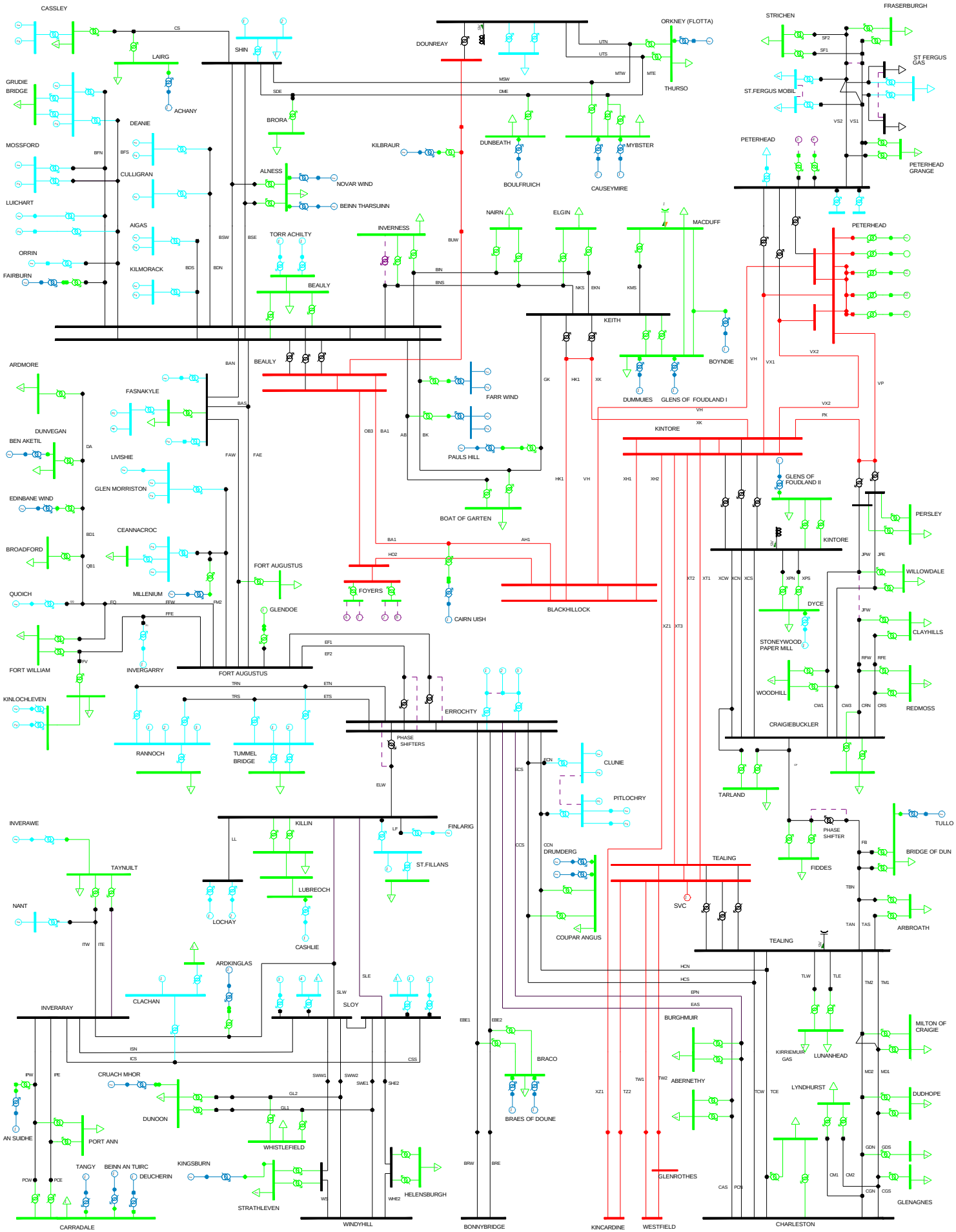
400kV Substations
275kV Substations
400kV CIRCUITS
275kV CIRCUITS

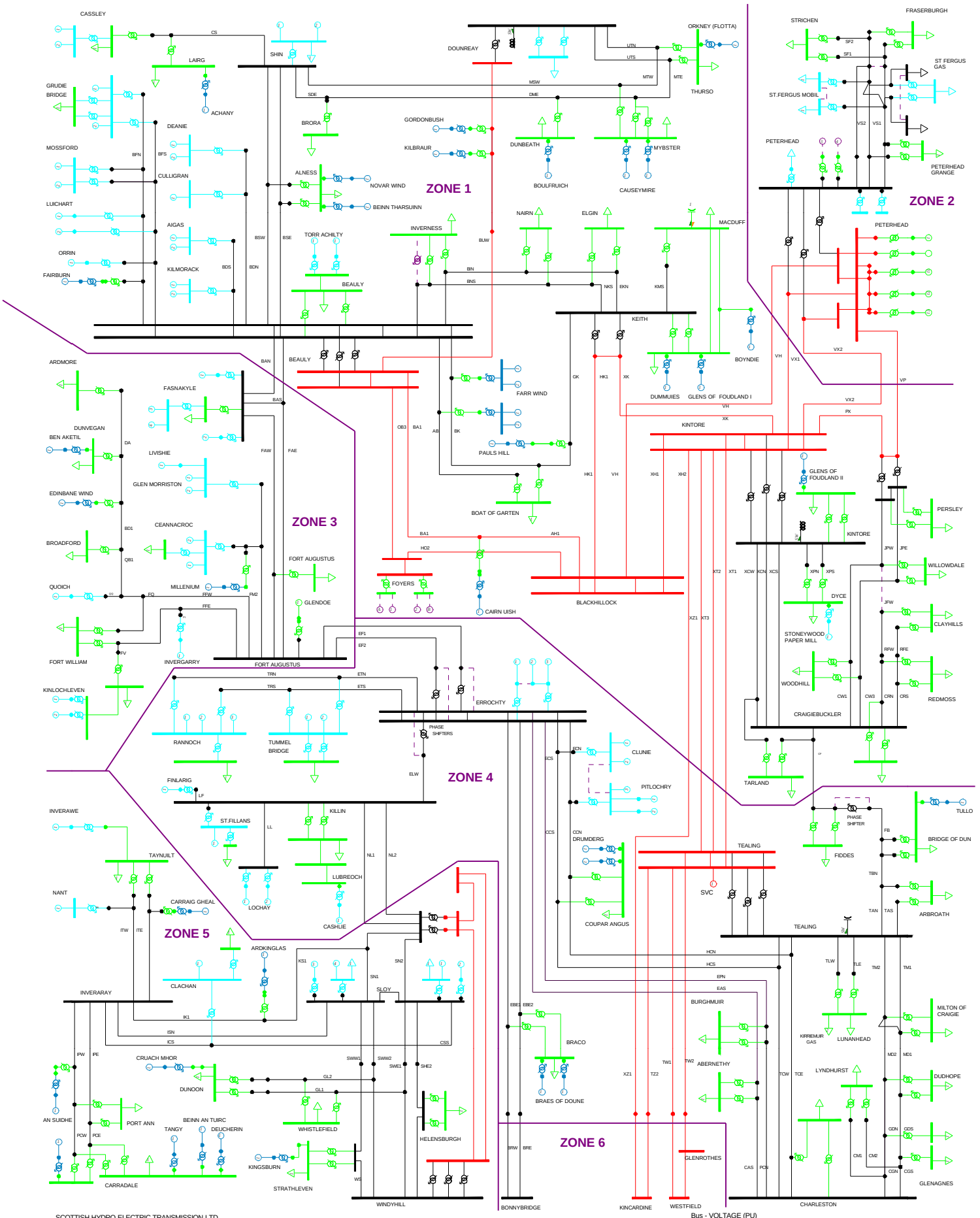
Major Generating Sites Including Pumped Storage

Connected at 400kV
Connected at 275kV
Hydro Generation

SYS Boundary — B

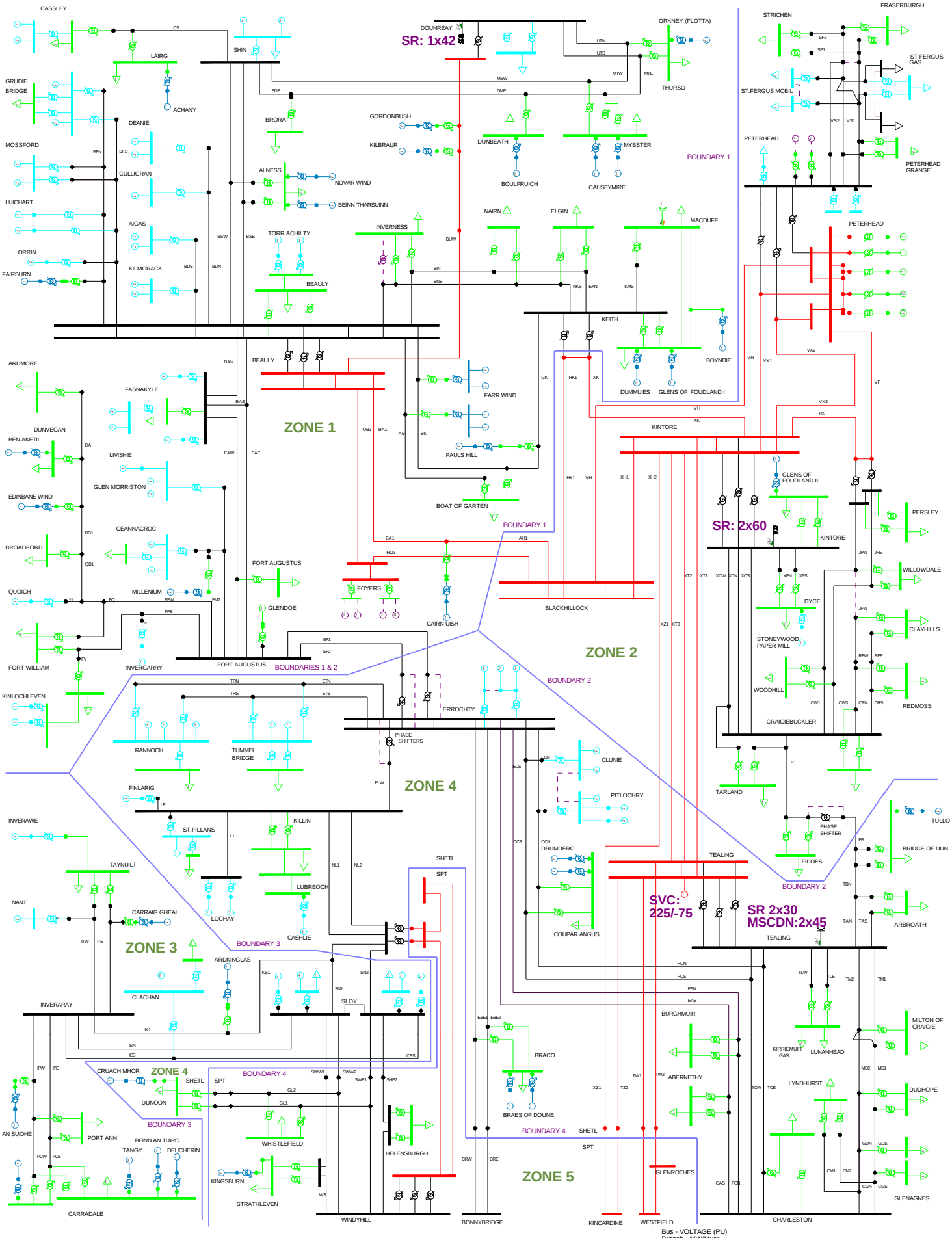
SYS Study Zones — Z


CASSLEY
LAIRG
SHIN
GRUDIE BRIDGE
ACHANY
DEANIE
MOSSFORD
CULLIGRAN
LUICHART
AIGAS
ORRIN
KILMORACK
FAIRBURN
BRORA
ALNESS
NOVAR WIND
BEINN THARSUINN
TORR ACHILTY
BEAULY
DOUNREAY
ORKNEY (FLOTTA)
THURSO
KILBRAUR
DUNBEATH
BOULFRUICH
MYBSTER
CAUSEYMIRE
INVERNESS
NAIRN
ELGIN
MACDUFF
KEITH
BOYNDIE
DUMMUIES
GLENS OF FOUDLAND I
FRASERBURGH
STRICHEN
ST FERGUS GAS
ST.FERGUS MOBIL
PETERHEAD
PETERHEAD GRANGE
ARDMORE
DUNVEGAN
BEN AKETIL
EDINBANE WIND
BROADFORD
QUOICH
FORT WILLIAM
KINLOCHLEVEN
FASNAKYLE
LIVISHIE
GLEN MORRISTON
CEANNACROC
MILLENIUM
INVERGARRY
FORT AUGUSTUS
GLENDOE
FARR WIND
PAULS HILL
BOAT OF GARTEN
FOYERS
CAIRN UISH
BLACKHILLOCK
KINTORE
GLENS OF FOUDLAND II
PERSLEY
WILLOWDALE
DYCE
STONEYWOOD PAPER MILL
CLAYHILLS
WOODHILL
REDMOSS
CRAIGIEBUCKLER
TARLAND
RANNOCH
TUMMEL BRIDGE
ERROCHTY
PHASE SHIFTERS
CLUNIE
PITLOCHRY
COUPAR ANGUS
DRUMDERG
TEALING
SVC
PHASE SHIFTER
FIDDES
TULLO
BRIDGE OF DUN
ARBROATH
MILTON OF CRAIGIE
LUNANHEAD
KIRRIEMUIR GAS
LYNDHURST
DUDHOPE
GLENAGNES
CHARLESTON
INVERAWE
TAYNUILT
NANT
KILLIN
LUBREOCH
LOCHAY
CASHLIE
FINLARIG
ST.FILLANS
ARDKINGLAS
CLACHAN
SLOY
INVERARAY
CRUACH MHOR
DUNOON
AN SUIDHE
PORT ANN
WHISTLEFIELD
TANGY
BEINN AN TUIRC
DEUCHERIN
CARRADALE
KINGSBURN
STRATHLEVEN
WINDYHILL
HELENSBURGH
BRACO
BRAES OF DOUNE
BONNYBRIDGE
BURGHMUIR
ABERNETHY
GLENROTHES
KINCARDINE
WESTFIELD
SCOTTISH HYDRO ELECTRIC TRANSMISSION LTD
EXISTING TRANSMISSION SYSTEM - 2009/10, FIGURE A.2.1
TUE, MAY 25 2010 17:01
Bus - VOLTAGE (PU)
Branch - MW/Mvar
Equipment - MW/Mvar
100.0%RATEA
1.060OV 0.940UV
kV: <=1.000 <=11.000 <=33.000 <=132.000 <=275.000



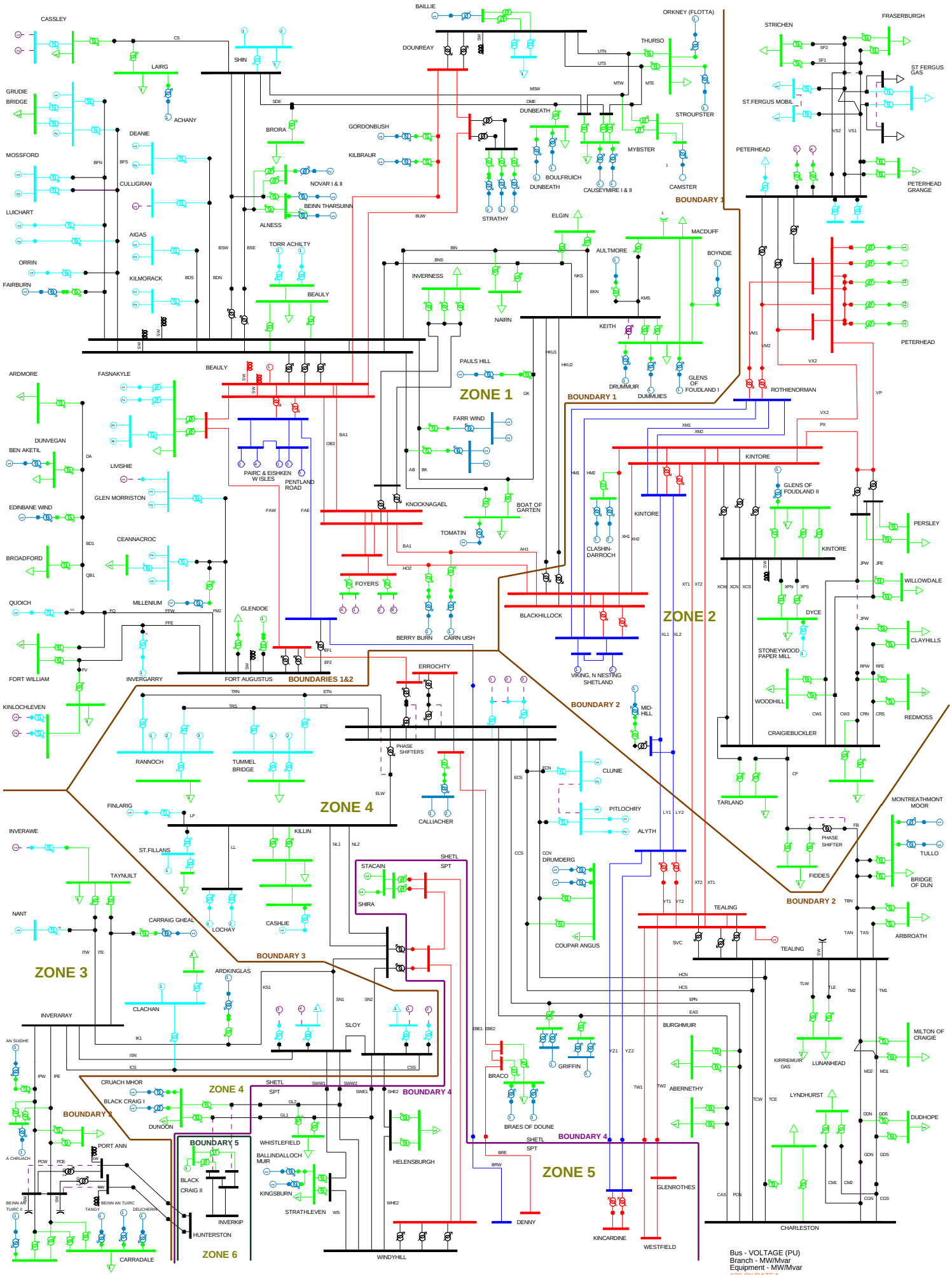
SCOTTISH HYDRO ELECTRIC TRANSMISSION LTD
2010 GBSYS - YEAR 1 FIGURE A.2.2
WED, MAY 26 2010 7:46

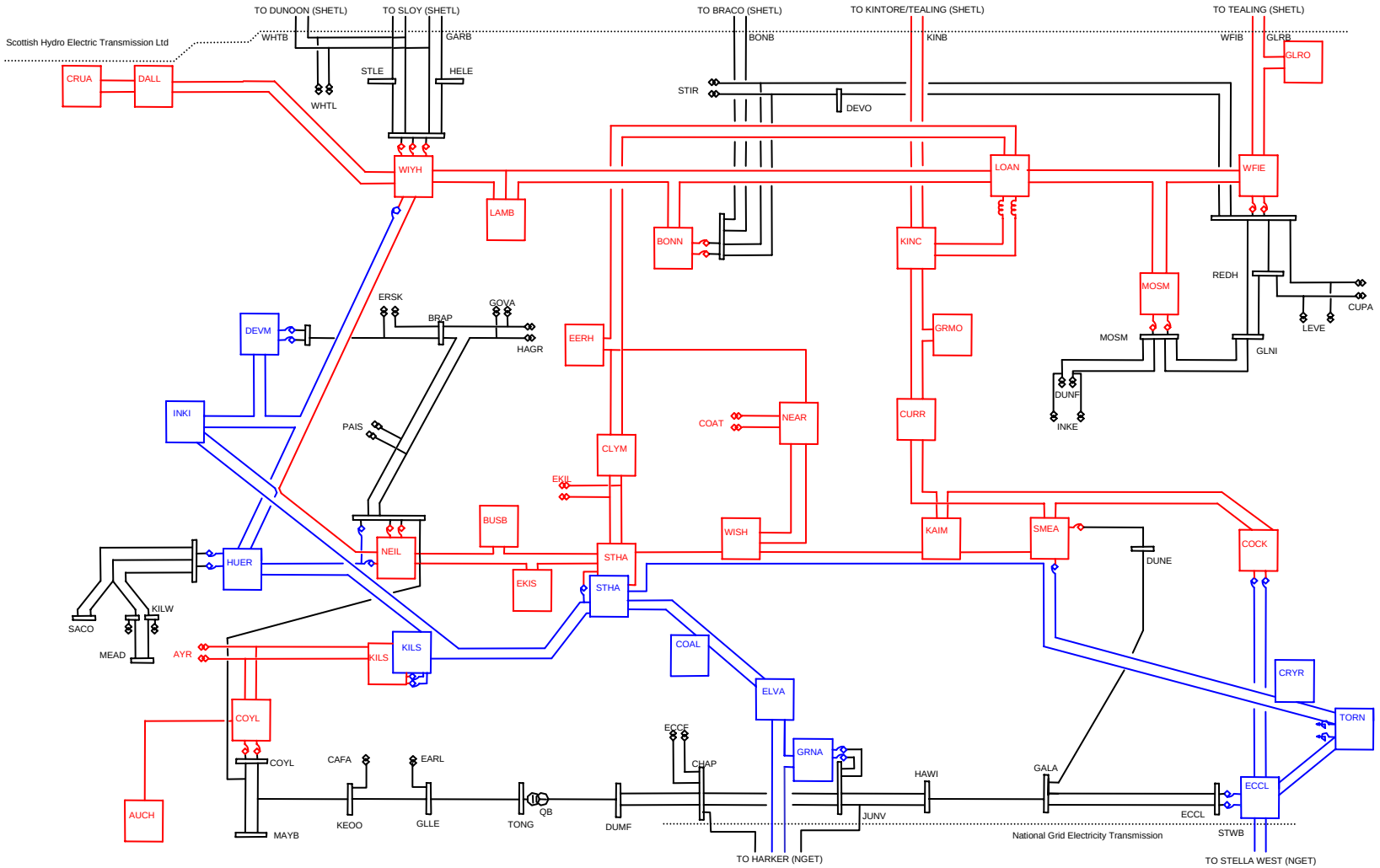
Bus - VOLTAGE (PU)
Branch - MW/Mvar
Equipment - MW/Mvar
100.0%RATEA
1.060OV 0.940UV
kV: <=1.000 <=11.000 <=33.000 <=132.000 <=275.000



SCOTTISH HYDRO ELECTRIC TRANSMISSION LTD
REACTIVE COMPENSATION PLANT, 2010/11, FIG A.2.3
WED, MAY 26 2010 7:33

Bus - VOLTAGE (PU)
Branch - MW/Mvar
Equipment - MW/Mvar
100.0%RATEA
1.060OV 0.940UV
kV: <=1.000 <=11.000 <=33.000 <=132.000 <=275.000


ZONE 1
ZONE 2
ZONE 3
ZONE 4
ZONE 5
ZONE 6
BOUNDARY 1
BOUNDARY 2
BOUNDARY 3
BOUNDARY 4
BOUNDARY 5
BOUNDARIES 1&2
CASSLEY
LAIRG
ACHANY
GRUDIE BRIDGE
MOSSFORD
LUICHART
FAIRBURN
ORRIN
DEANIE
CULLIGRAN
AIGAS
KILMORACK
SHIN
BRORA
ALNESS
NOVAR I & II
BEINN THARSUINN
TORR ACHILTY
BEAULY
BAILLIE
DOUNREAY
GORDONBUSH
KILBRAUR
STRATHY
DUNBEATH
BOULFRUICH
CAUSEYMIRE I & II
MYBSTER
THURSO
ORKNEY (FLOTTA)
STROUPSTER
CAMSTER
ELGIN
AULTMORE
MACDUFF
BOYNDIE
INVERNESS
NAIRN
KEITH
DRUMMUIR
DUMMUIES
GLENS OF FOUDLAND I
PAULS HILL
FARR WIND
ARDMORE
FASNAKYLE
DUNVEGAN
BEN AKETIL
LIVISHIE
GLEN MORRISTON
EDINBANE WIND
CEANNACROC
BROADFORD
QUOICH
MILLENIUM
FORT WILLIAM
INVERGARRY
GLENDOE
FORT AUGUSTUS
PAIRC & EISHKEN W ISLES
PENTLAND ROAD
KNOCKNAGAEL
BOAT OF GARTEN
TOMATIN
FOYERS
BERRY BURN
CAIRN UISH
BLACKHILLOCK
VIKING, N NESTING SHETLAND
CLASHIN-DARROCH
KINTORE
GLENS OF FOUDLAND II
ROTHIENORMAN
PETERHEAD
PETERHEAD GRANGE
ST.FERGUS MOBIL
ST FERGUS GAS
STRICHEN
FRASERBURGH
PERSLEY
WILLOWDALE
DYCE
STONEYWOOD PAPER MILL
CLAYHILLS
WOODHILL
REDMOSS
CRAIGIEBUCKLER
TARLAND
FIDDES
PHASE SHIFTER
MONTREATHMONT MOOR
TULLO
BRIDGE OF DUN
ARBROATH
TEALING
SVC
MID-HILL
ERROCHTY
PHASE SHIFTERS
CALLIACHER
RANNOCH
TUMMEL BRIDGE
FINLARIG
KILLIN
CASHLIE
LOCHAY
CARRAIG GHEAL
NANT
ST.FILLANS
TAYNUILT
INVERAWE
CLUNIE
PITLOCHRY
ALYTH
DRUMDERG
COUPAR ANGUS
STACAIN
SHIRA
SHETL SPT
SLOY
ARDKINGLAS
CLACHAN
INVERARAY
AN SUIDHE
CRUACH MHOR
BLACK CRAIG I
DUNOON
PORT ANN
A CHRUACH
BEINN AN TUIRC II
CARRADALE
BLACK CRAIG II
INVERKIP
HUNTERSTON
WHISTLEFIELD
BALLINDALLOCH MUIR
KINGSBURN
STRATHLEVEN
HELENSBURGH
WINDYHILL
BRACO
BRAES OF DOUNE
GRIFFIN
BURGHMUIR
ABERNETHY
GLENROTHES
KINCARDINE
WESTFIELD
DENNY
KIRRIEMUIR GAS
LUNANHEAD
MILTON OF CRAIGIE
LYNDHURST
DUDHOPE
CHARLESTON
SCOTTISH HYDRO ELECTRIC TRANSMISSION LTD
2010 GBSYS : YEAR 7, FIGURE A.2.4
WED, MAY 26 2010 7:35
Bus - VOLTAGE (PU)
Branch - MW/Mvar
Equipment - MW/Mvar
100.0MRATEA
1.060OV 0.940UV
kV: <=1.000 <=11.000<=33.000<=132.000<=275.000 <=400.000

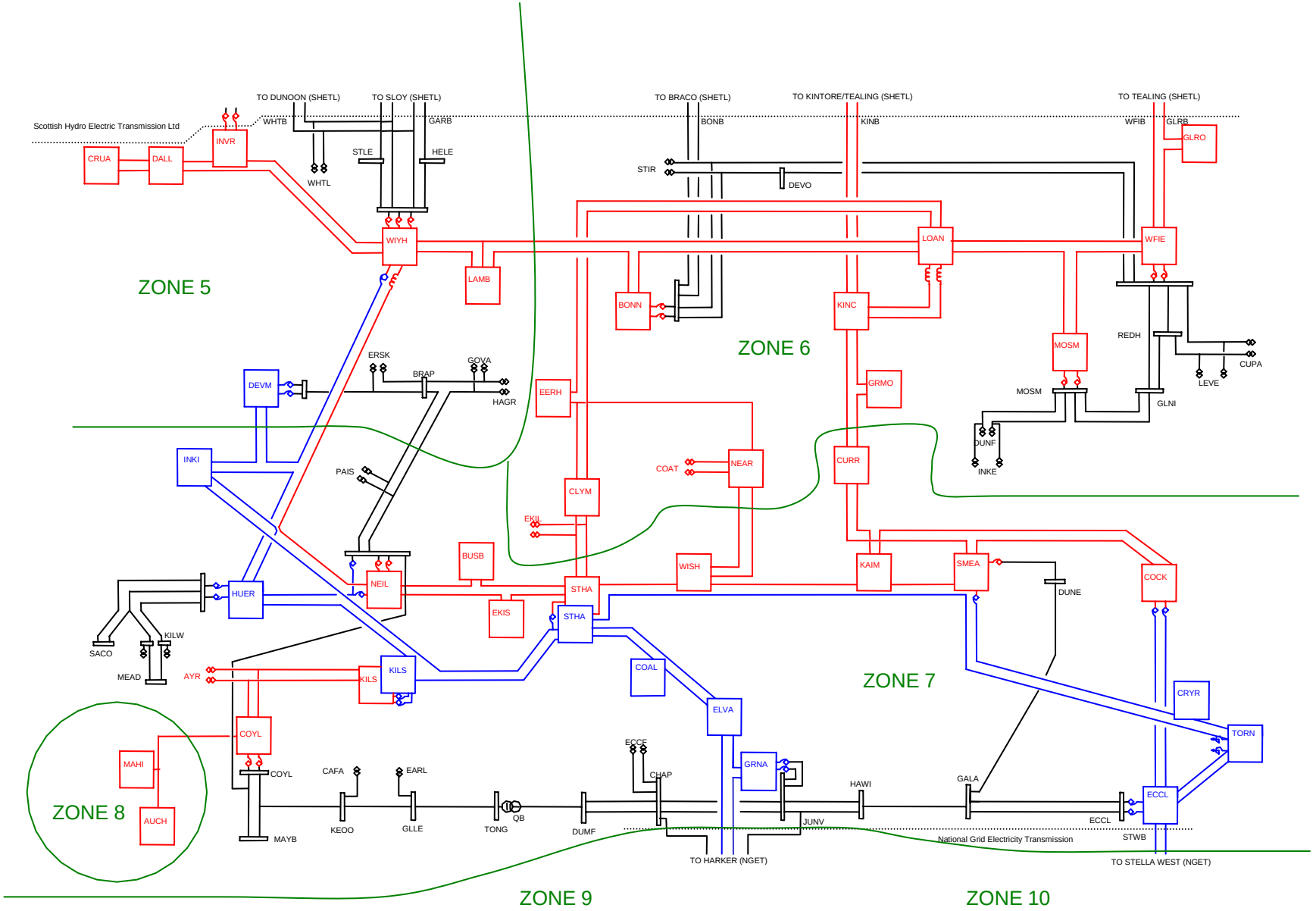


400kV BLUE
275kV RED
132kV BLACK

INTERCONNECTED TRANSMISSION SYSTEM

SPT Existing Transmission System, April 2010

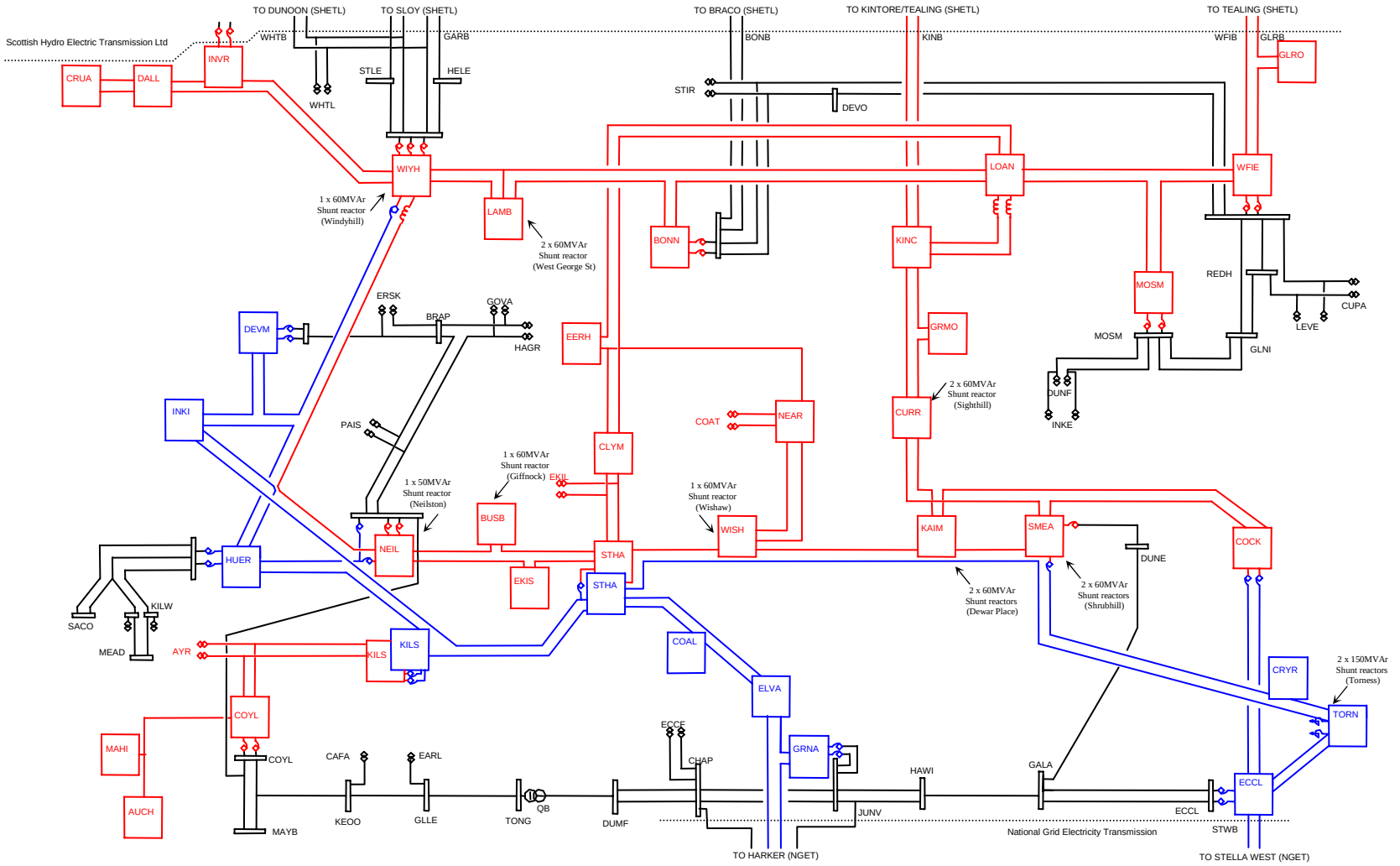
Figure A.3.1



400kV BLUE
275kV RED
132kV BLACK

INTERCONNECTED TRANSMISSION SYSTEM
SPT Generation Use of System Tariff Zones (Electrical), April 2011

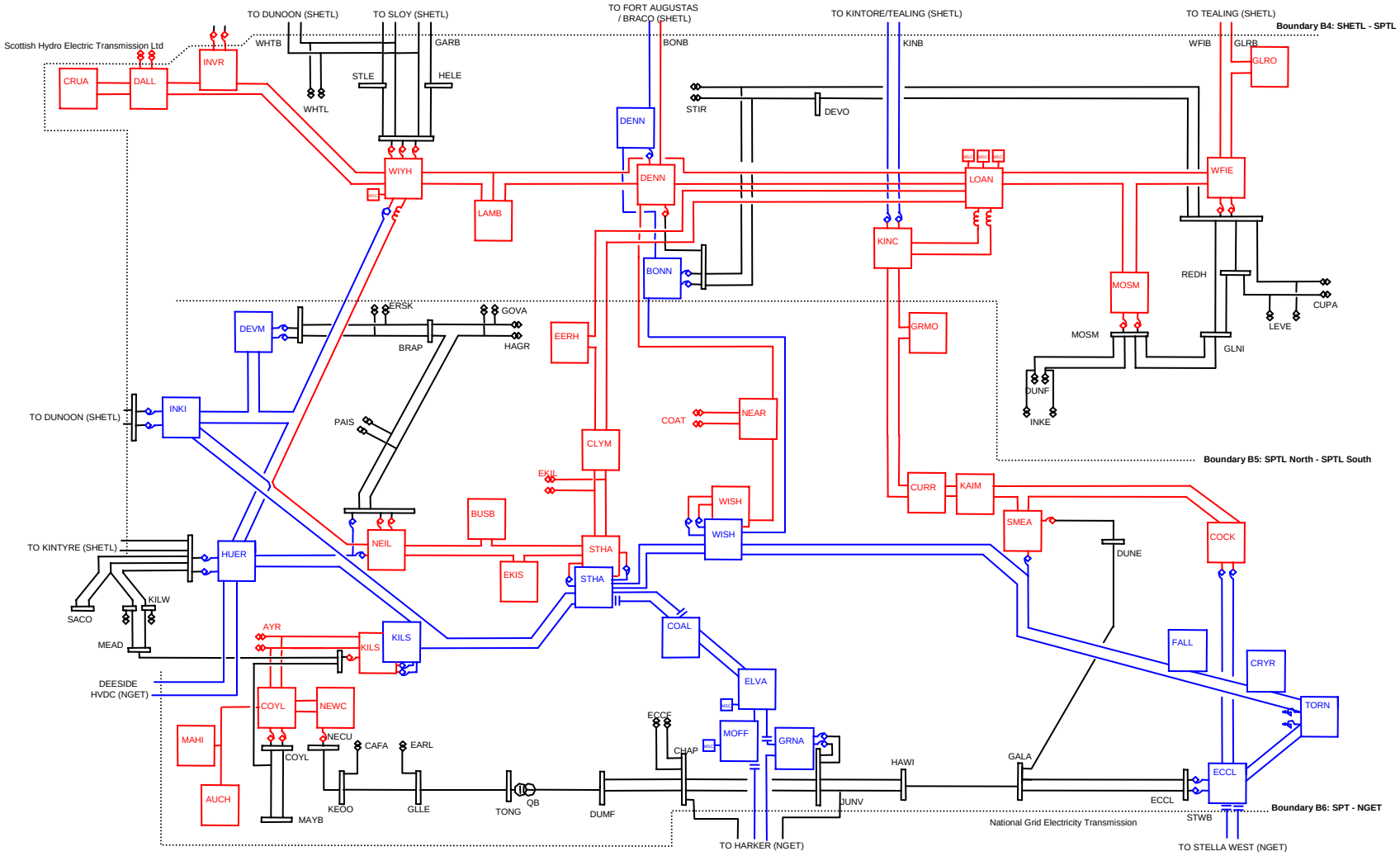
Figure A.3.2



400kV BLUE
275kV RED
132kV BLACK

INTERCONNECTED TRANSMISSION SYSTEM
SPT Reactive Compensation, April 2011

Figure A.3.3

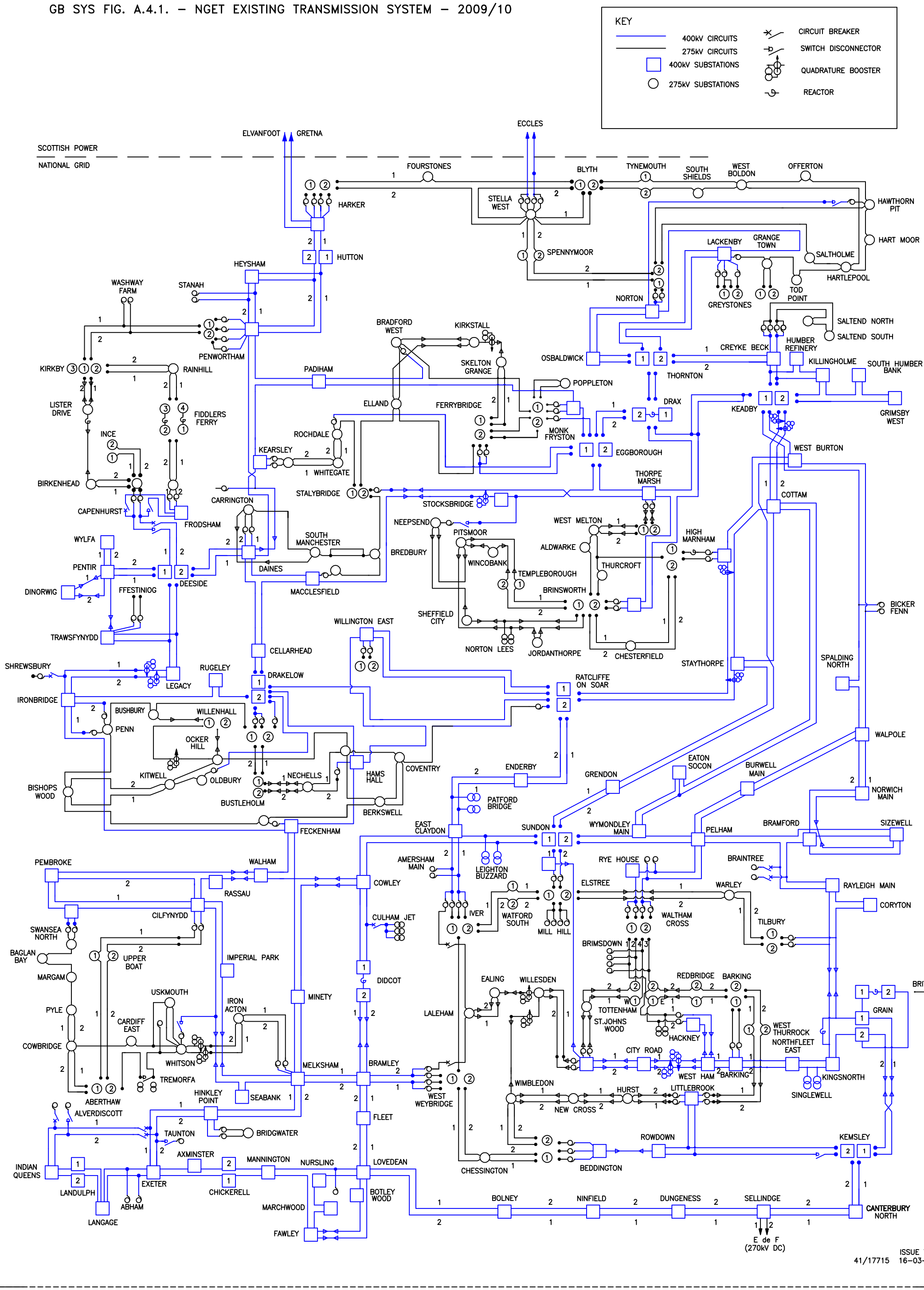


400kV BLUE
275kV RED
132kV BLACK

INTERCONNECTED TRANSMISSION SYSTEM
SPT Transmission Boundaries and SYS Study Zones, 2016/17

Figure A.3.4

GB SYS FIG. A.4.1. – NGET EXISTING TRANSMISSION SYSTEM – 2009/10



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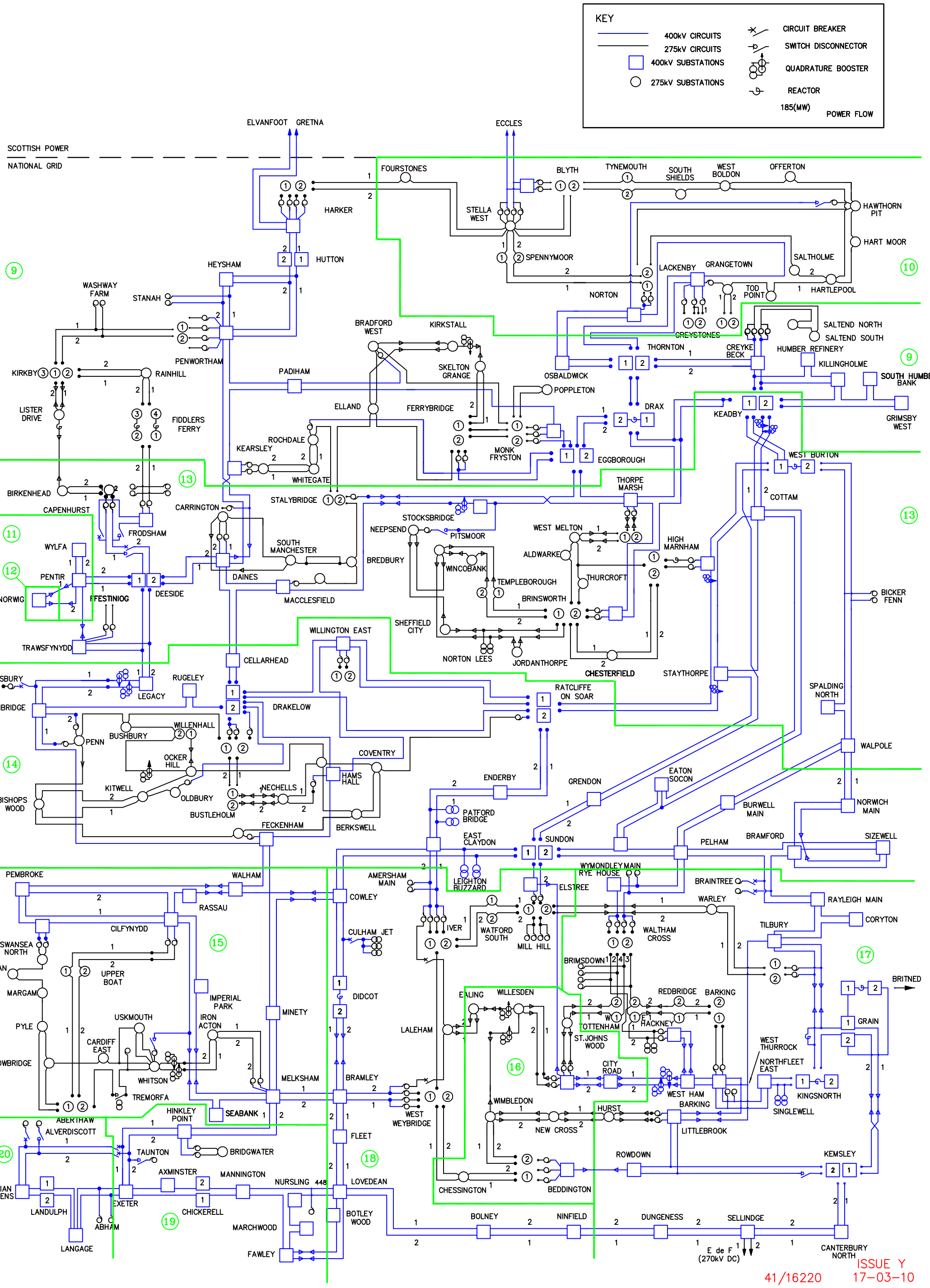
GB SYS FIG. A.4.2. NGET GENERATION USE OF SYSTEM TARIFF ZONES (ELECTRICAL) 2010/11



GB SYS. FIG. A.4.3

NGET REACTIVE COMPENSATION PLANT – 2010/11

KEY

- MSC MECHANICALLY SWITCHED CAPACITOR
- (GT) MAIN GAS TURBINE SYNC COMP CAPABILITY 132kV CONNECTED
- (SC) SYNCHRONOUS COMPENSATOR
- STATIC VAR COMPENSATOR
- SHUNT REACTOR
- STATIC CAPACITOR
- T COMPENSATION CONNECTED TO TERTIARY OF TRANSFORMER
- * QUADRATURE BOOSTER EQUIPMENT TO BE INSTALLED
- FIGURES QUOTED IN MVAr

KEY

SCOTTISH POWER

NATIONAL GRID

ELVANFOOT GRETNA ECCLES

HARKER FOURSTONES STELLA WEST BLYTH TYNEMOUTH SOUTH SHIELDS WEST BOLDON OFFERTON

HAWTHORN PIT HARTMOOR SALTHOLME HARTLEPOOL TOD POINT GRANGETOWN

SPENNYMOOR LACKENBY GREYSTONES CREYKE BECK SALTEND NORTH SALTEND HUMBER REFINERY

HEYSHAM HUTTON WASHWAY FARM STANAH NORTON THORNTON

BRADFORD WEST KIRKSTALL KNARESBOROUGH SKELTON GRANGE OSBALDWICK POPPLETON DRAX

PADIHAM ELLAND FERRYBRIDGE MONK FRYSTON EGGBOROUGH KEADBY KILLINGHOLME SOUTH HUMBER BANK GRIMSBY WEST

ROCHDALE KEARSLEY WHITEGATE WEST BURTON

LISTER DRIVE FIDDLERS FERRY KIRKBY RAINHILL CAPENHURST BIRKENHEAD WYLFA FRODSHAM

STALYBRIDGE THORPE MARSH COTTAM

CARRINGTON SOUTH MANCHESTER BREDBURY NEEPSEND STOCKSBRIDGE PITSMOOR WEST MELTON ALDWARKE HIGH MARNHAM

DAINES MACCLESFIELD WINCOBANK TEMPLEBOROUGH THURCROFT

PENTIR DEESIDE DINORWIG FFESTINIOG BRINSWORTH

SHEFFIELD CITY WILLINGTON EAST NORTON LEES JORDANTHORPE CHESTERFIELD STAYTHORPE BICKER FENN

TRAWSFYNYDD CELLARHEAD DRAKELOW RUGELEY LEGACY SHREWSBURY

RATCLIFFE ON SOAR SPALDING NORTH

IRONBRIDGE BUSHBURY WILLENHALL PENN OCKER HILL KITWELL OLDBURY BISHOPS WOOD BUSTLEHOLM NECHELLS HAMS HALL COVENTRY WALPOLE

FECKENHAM BERKSWELL ENDERBY EATON SOCON

PATFORD BRIDGE GRENDON NORWICH MAIN

EAST CLAYDON SUNDON WYMONDLEY MAIN PELHAM BURWELL MAIN BRAMFORD SIZEWELL

RYE HOUSE

PEMBROKE WALHAM AMERSHAM MAIN LEIGHTON BUZZARD ELSTREE BRAINTREE RAYLEIGH MAIN

RASSAU COWLEY CULHAM JET IVER WATFORD SOUTH MILL HILL WALTHAM CROSS WARLEY CORYTON

SWANSEA NORTH CILFYNYDD TILBURY

BAGLAN BAY UPPER BOAT IMPERIAL PARK DIDCOT BRIMSDOWN BRITNED

MARGAM USKMOUTH IRON ACTON MINETY EALING WILLESDEN REDBRIDGE BARKING GRAIN

PYLE CARDIFF EAST LALEHAM TOTTENHAM HACKNEY WEST THURROCK

COWBRIDGE WHITSON TREMORFA MELKSHAM BRAMLEY ST.JOHNS WOOD CITY ROAD WEST HAM NORTHFLEET EAST

ABERTHAW HINKLEY POINT SEABANK WEST WEYBRIDGE WIMBLEDON HURST BARKING KINGSNORTH

ALVERDISCOTT TAUNTON BRIDGWATER FLEET NEW CROSS SINGLEWELL

INDIAN QUEENS AXMINSTER MANNINGTON NURSLING LOVEDEAN BEDDINGTON LITTLEBROOK

LANDULPH EXETER CHICKERELL BOTLEY WOOD CHESSINGTON ROWDOWN KEMSLEY

LANGAGE ABHAM MARCHWOOD FAWLEY BOLNEY NINFIELD DUNGENESS SELLINDGE CANTERBURY NORTH

E de F (270kV DC)

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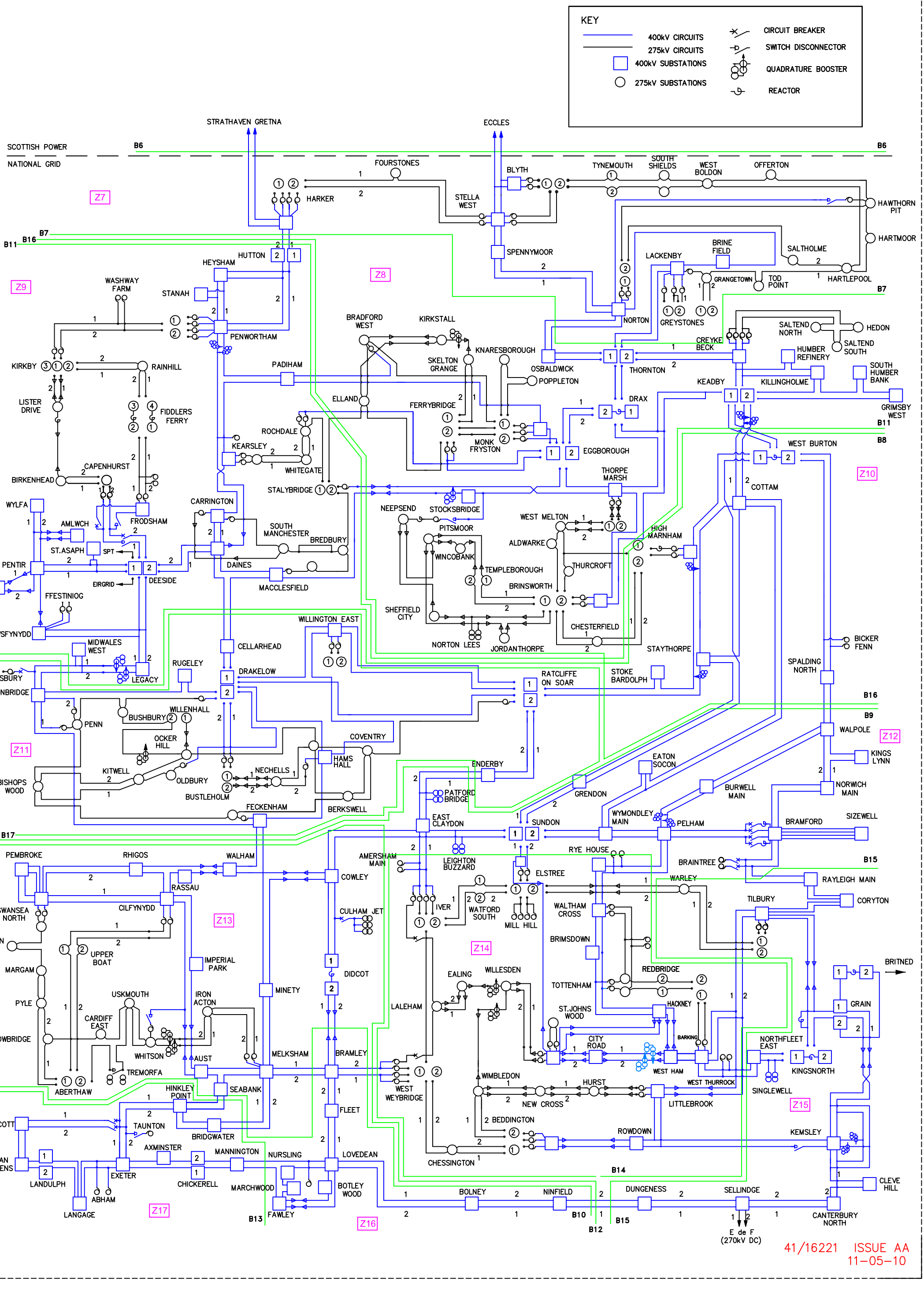
GB SYS FIG. A.4.4. NGET TRANSMISSION BOUNDARIES AND SYS STUDY ZONES – 2016/17



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11–05–10