APPENDIX B NETWORK CHARACTERISTICS

This appendix presents details of the physical and electrical characteristics of the transmission system in tabular form. Data for the existing system is presented first, followed by the data for planned developments.

The planned developments include network reinforcements that have been proposed by the TSO and approved within ESB, and developments necessary to connect new generation and demands to the Grid.

The developments are listed in tables that relate to study periods in the Forecast Statement. The following is a list of the tables in each section of Appendix B.

Parameters of future transmission plant or parameter changes brought about by planned developments are indicative only. Parameters will be reviewed when the plant is commissioned.

A small number of 110kV stations are connected to the Grid via a tee i.e., an unswitched connection into an existing line between two other stations. For the purposes of describing the various sections of lines in the following tables, the tee point is identified by the name of the teed 110kV station with a suffix “T” added.

Network parameters at the three nominal voltage levels are quoted in per unit (p.u.) to an MVA base of 100 and the following reference voltages.

Nominal Voltage Level	Reference Voltage
400kV	380kV
220kV	220kV
110kV	110kV

Tables B-1 and B-4 include the maximum continuous ratings for lines and cables. In some cases, other equipment associated with a line or cable, such as current transformers, may have lower ratings. However, as these are easier to uprate or change out than the line or cable, they are not expected to restrict access to the Grid.

B.1 CHARACTERISTICS OF EXISTING LINES AND CABLES

Table B-1(a) Characteristics of Existing 400kV Lines

400kV Circuits			Length	Impedance p.u on 100 MVA			Circuit Rating MVA	
From	To	No.	km	R	X	B	Summer	Winter
MP	**WOO**	1	229.2	0.004	0.051	1.155	1424	1713
MP	**DSN**	1	208.6	0.004	0.046	1.035	1424	1713

Table B-1(b) Characteristics of Existing 220kV Lines and Cables

220kV Circuits			Length	Impedance p.u. on 100 MVA			Circuit Rating MVA	
From	To	No.	km	R	X	B	Summer	Winter
AD	KRA	1	25.6	0.003	0.023	0.032	431	518
AD	KRA	2	25.6	0.003	0.023	0.032	431	518
ARK	CKM	1	53.3	0.006	0.048	0.068	431	518
ARK	GI	1	87.8	0.010	0.076	0.115	431	518
CKM	DSN	1	41.6	0.005	0.037	0.054	431	518
CKM	ISH	1	11.7	0.000	0.005	0.320	570	570
CKM	PB	1	14.5	0.001	0.005	0.616	267	267
CSH	FLA	1	88.1	0.010	0.076	0.115	431	518
CSH	PRO	1	88.5	0.010	0.077	0.116	431	518
CUL	GI	1	24.0	0.003	0.021	0.031	229	438
CUL	KRA	1	83.9	0.010	0.073	0.110	431	518
DSN	KLS	1	59.2	0.007	0.052	0.077	431	518
DSN	MAY	1	36.3	0.004	0.032	0.047	431	518
DSN	MAY	2	30.6	0.004	0.026	0.040	431	518
DSN	TH	1	26.9	0.003	0.023	0.131	351	351
FIN	HN	1	1.4	0.000	0.001	0.038	570	570
FIN	NW	1	11.9	0.001	0.003	0.677	332	332
FIN	SHL	1	13.4	0.000	0.005	0.368	570	570
FIN	WOO	3	21.7	0.003	0.019	0.028	431	518
FIN	WOO	4	21.4	0.002	0.019	0.027	431	518
FLA	LOU	1	110.1	0.013	0.095	0.144	431	518
GI	KLS	1	69.3	0.008	0.060	0.090	431	518
INC	ISH	1	11.0	0.000	0.004	0.301	570	570
INC	MAY	1	19.0	0.002	0.017	0.024	431	518
INC	MAY	2	19.0	0.002	0.017	0.024	431	518
INC	PB	1	12.5	0.001	0.004	0.498	267	267
INC	PB	2	11.3	0.001	0.003	0.722	351	351
ISH	SHL	1	1.4	0.000	0.001	0.038	570	570
KLN	KRA	1	82.4	0.013	0.073	0.105	286	370
KLN	SH	1	89.7	0.014	0.080	0.115	286	370
KLN	TB	1	70.6	0.008	0.061	0.092	431	518
KRA	RAF	1	23.4	0.003	0.020	0.031	431	518
KRA	TB	1	142.3	0.016	0.123	0.186	431	518
LOU	MAY	1	74.9	0.009	0.065	0.098	431	518
LOU	WOO	1	61.2	0.007	0.053	0.080	431	518
MAY	SH	1	105.6	0.017	0.094	0.135	286	370
MAY	TH	1	53.2	0.006	0.045	0.169	351	351
MAY	WOO	1	22.5	0.003	0.020	0.029	431	518
MP	PRO	1	12.7	0.001	0.009	0.021	825	992
NW	PB	1	4.5	0.000	0.001	0.263	332	332
PB	SHL	1	0.1	0.000	0.000	0.002	250	250
PRO	TB	1	10.3	0.001	0.007	0.173	431	461

Table B-1(c) Characteristics of Existing 110kV Lines and Cables

110kV Circuits			Length	Impedance p.u. on 100 MVA			Circuit Rating MVA	
From	To	No.	km	R	X	B	Summer	Winter
AA	DRU	1	18.2	0.028	0.063	0.006	107	126
AA	ENN	1	32.8	0.051	0.113	0.010	107	126
AA	KLN	1	9.5	0.015	0.033	0.003	107	126
AA	LIM	1	11.7	0.014	0.038	0.014	107	126
AD	WHI	1	3.1	0.005	0.011	0.001	107	126
AHA	KLN	1	3.8	0.004	0.012	0.004	112	112
ANR	DOO	1	1.9	0.003	0.006	0.001	107	126
ARI	ARI T	1	0.3	0.000	0.001	0.000	34	57
ARK	CKM	1	53.3	0.025	0.190	0.018	215	259
ARK	CRA	1	41.5	0.064	0.143	0.013	72	103
ARK	SHE A	1	2.2	0.003	0.008	0.001	34	57
ARK	SHE B	1	2.4	0.004	0.008	0.001	34	57
ARV	COS	1	41.4	0.064	0.142	0.013	107	126
ARV	GWE	1	30.5	0.036	0.103	0.010	107	126
ARV	NAV	1	66.4	0.080	0.223	0.022	69	103
ARV	SKL	1	18.6	0.029	0.064	0.006	86	111
ATH	LA	1	35.8	0.054	0.123	0.012	93	126
ATH	SH	1	21.6	0.022	0.072	0.007	93	131
AUG	CFM A	1	0.6	0.001	0.002	0.001	96	96
AUG	CFM B	1	0.7	0.001	0.002	0.001	96	96
AUG	MTN	1	27.5	0.025	0.091	0.009	107	126
AUG	TB	1	34.0	0.023	0.111	0.012	152	152
BAN	BRI	1	2.6	0.004	0.009	0.001	107	126
BAN	BRI	2	2.5	0.004	0.009	0.001	107	126
BAN	DMY	1	25.9	0.040	0.089	0.008	107	126
BAN	RAF	1	26.4	0.041	0.091	0.009	107	126
BAR	BAR T	1	0.3	0.000	0.001	0.000	107	126
BDN	CUL	1	20.6	0.032	0.071	0.007	107	126
BDN	DOO	1	11.0	0.018	0.039	0.004	107	126
BIN	CF	1	34.3	0.053	0.118	0.011	72	103
BK	CBR	1	37.2	0.058	0.128	0.012	72	103
BK	MOY	1	27.0	0.042	0.093	0.009	72	103
BLK	BLK T	1	0.5	0.001	0.002	0.000	107	126
BRY	HAU A	1	4.4	0.005	0.015	0.001	93	126
BRY	RAF	1	1.7	0.003	0.006	0.001	72	103
BRY	RAF	2	1.8	0.002	0.006	0.001	107	126
BUT	CUL	1	14.0	0.022	0.048	0.005	107	126
BUT	WAT	1	6.1	0.009	0.022	0.002	107	126
CAH	BAR T	1	44.0	0.068	0.151	0.014	107	126
CAH	DOO	1	15.9	0.025	0.055	0.005	107	126
CAH	KLN	1	68.0	0.106	0.234	0.022	107	126
CAH	THU	1	39.1	0.041	0.130	0.013	93	131
CBR	DLT	1	27.0	0.042	0.093	0.009	107	126
CD	IA	1	16.0	0.024	0.053	0.005	107	126

Table B-1(c) Characteristics of Existing 110kV Lines and Cables (continued)

110kV Circuits			Length	Impedance p.u. on 100 MVA			Circuit Rating MVA	
From	To	No.	km	R	X	B	Summer	Winter
CF	ARI T	1	56.0	0.069	0.189	0.019	107	126
CF	CL	1	5.5	0.006	0.018	0.002	137	164
CF	COR	1	61.5	0.064	0.205	0.021	107	126
CF	GOL T	1	25.1	0.039	0.086	0.008	107	126
CF	LET	1	58.8	0.092	0.205	0.019	72	103
CF	SLI	1	57.1	0.078	0.194	0.019	107	126
CHA	KLN	1	36.9	0.057	0.127	0.012	72	103
CHA	MAL	1	22.5	0.035	0.077	0.007	72	103
CKM	FAS E	1	7.5	0.011	0.026	0.002	107	126
CKM	FAS W	2	7.5	0.011	0.026	0.002	107	126
CLN	CLN T	1	0.5	0.001	0.002	0.000	107	126
CLW	KLS	1	5.4	0.008	0.019	0.002	107	126
CLW	KLS	2	5.3	0.008	0.018	0.002	72	103
CLW	PLS	1	40.6	0.063	0.139	0.013	107	126
CLW	STR T	1	17.6	0.027	0.061	0.006	107	126
COL	FIN	1	4.2	0.003	0.012	0.012	120	140
COL	MUL	1	72.5	0.090	0.243	0.030	72	103
COR	EKN	1	27.5	0.043	0.095	0.002	107	126
COR	GWE	1	10.9	0.015	0.037	0.004	107	126
COS	ARI T	1	20.7	0.022	0.069	0.007	120	128
COS	FLA	1	3.4	0.005	0.012	0.001	107	126
COS	FLA	2	3.3	0.005	0.011	0.001	107	126
COW	CVW T	1	12.2	0.019	0.042	0.004	107	126
COW	OLD A	1	2.3	0.004	0.008	0.001	107	126
COW	OLD B	1	2.2	0.003	0.008	0.001	107	126
COW	RAF	1	7.0	0.009	0.023	0.003	107	126
COW	WHI	1	17.8	0.027	0.061	0.006	72	103
COL	MUL	1	72.5	0.090	0.243	0.030	72	103
CRA	WEX	1	21.3	0.033	0.073	0.007	72	103
CRO	IA	1	6.8	0.010	0.023	0.002	107	126
CRO	KBY	1	11.5	0.019	0.042	0.004	107	126
CSH	CLN T	1	22.5	0.035	0.077	0.007	107	126
CSH	ENN	1	54.3	0.084	0.187	0.017	72	103
CSH	GAL	1	13.8	0.021	0.047	0.004	107	126
CSH	GAL	2	11.3	0.018	0.039	0.004	107	126
CSH	GAL	3	11.3	0.018	0.039	0.004	107	126
CSH	SOM T	1	45.0	0.070	0.155	0.014	107	126
CUL	WAT	1	14.0	0.021	0.048	0.006	107	112
CUS	BLK T	1	27.4	0.028	0.091	0.009	137	164
CUS	PLS	1	41.5	0.043	0.138	0.014	137	164
CVW	CVW T	1	5.3	0.008	0.018	0.002	107	126
CVW	DKL	1	0.4	0.001	0.001	0.000	107	126
DAL	DAL T	1	12.2	0.019	0.042	0.004	107	126
DDK	LOU	2	16.0	0.025	0.055	0.005	72	103
DDK	MLN	1	7.5	0.009	0.026	0.002	107	126

Table B-1(c) Characteristics of Existing 110kV Lines and Cables (continued)

110kV Circuits			Length	Impedance p.u. on 100 MVA			Circuit Rating MVA	
From	To	No.	km	R	X	B	Summer	Winter
DFR	DFR T	1	0.1	0.000	0.000	0.000	107	126
DGN	CUL	1	36.9	0.057	0.127	0.012	107	126
DMY	BLI	1	27.4	0.042	0.094	0.009	107	126
DMY	MAC	1	26.2	0.041	0.090	0.008	107	126
DRU	ENN	1	17.2	0.027	0.059	0.006	107	126
DRY	FIN	1	41.2	0.064	0.142	0.013	107	126
DRY	LOU	1	31.9	0.050	0.111	0.010	107	126
DRY	NAV	1	22.3	0.035	0.077	0.007	107	126
DRY	PLA	1	5.6	0.009	0.019	0.002	107	126
ENN	SH	1	84.3	0.131	0.290	0.027	72	103
ENN	TBK T	1	43.6	0.068	0.150	0.014	107	126
FIN	GLA	1	14.2	0.022	0.049	0.005	107	126
FIN	GLA	2	14.2	0.022	0.049	0.005	107	126
FIN	GRA	1	13.2	0.005	0.012	0.236	119	119
FIN	KIL	1	6.0	0.003	0.010	0.038	140	140
FIN	MCE	1	8.9	0.009	0.030	0.007	111	143
FIN	PLA	1	33.5	0.052	0.115	0.012	107	126
FLA	GIL	1	10.6	0.016	0.036	0.003	107	126
FLA	LA	1	30.7	0.048	0.105	0.010	107	126
FLA	SLI	1	50.7	0.079	0.174	0.016	107	126
GAL	DLT	1	52.0	0.081	0.179	0.017	107	126
GCA	NAN	1	1.82	0.001	0.003	0.012	140	140
GCA	NAN	2	1.74	0.001	0.003	0.011	140	140
GI	KKY	1	49.2	0.076	0.169	0.016	107	126
GI	WAT	1	11.8	0.018	0.043	0.004	107	126
GI	WAT	2	12.9	0.020	0.044	0.004	107	126
GI	WEX	1	34.5	0.054	0.119	0.011	107	126
GOL	GOL T	1	3.9	0.006	0.013	0.001	107	126
GRA	KIL	1	6.0	0.003	0.010	0.038	140	140
GRI A	GRI T	1	1.0	0.002	0.004	0.000	107	126
GRI B	MAY	1	2.2	0.003	0.008	0.001	107	126
GRI T	GCA	1	6.2	0.007	0.021	0.002	111	143
HAU B	RAF	1	6.2	0.007	0.021	0.002	93	126
IKE	IKE T	1	0.2	0.000	0.001	0.000	93	131
INC	GCA	1	0.7	0.007	0.023	0.002	111	143
INC	GCA	2	0.7	0.007	0.023	0.002	111	143
KBY	KRA	1	11.9	0.014	0.040	0.004	107	126
KBY	KRA	2	12.4	0.018	0.043	0.004	107	126
KBY	MAC	1	34.5	0.054	0.119	0.011	107	126
KBY	MAL	1	29.2	0.045	0.100	0.009	72	103
KBY	MR	1	4.4	0.004	0.015	0.005	69	118
KBY	MR	2	4.4	0.004	0.015	0.005	69	118
KER	MAC	1	53.0	0.082	0.182	0.017	107	126
KER	OUG T	1	22.6	0.035	0.078	0.007	107	126
KIN	DFR T	1	23.4	0.018	0.077	0.008	120	164

Table B-1(c) Characteristics of Existing 110kV Lines and Cables (continued)

110kV Circuits			Length	Impedance p.u. on 100 MVA			Circuit Rating MVA	
From	To	No.	km	R	X	B	Summer	Winter
KLN	LIM	1	9.0	0.014	0.031	0.003	107	126
KLN	LIM	2	11.3	0.016	0.038	0.007	86	111
KLS	KKY	1	34.3	0.053	0.118	0.011	107	126
KRA	BAR T	1	19.4	0.020	0.065	0.007	137	164
KRA	CVW T	1	2.1	0.003	0.007	0.001	107	126
KRA	DGN	1	53.7	0.084	0.185	0.017	107	126
KRA	MID	1	10.7	0.017	0.037	0.004	107	126
KTL	KTL T	1	1.3	0.002	0.005	0.000	107	126
KTL T	MON	1	9.3	0.010	0.031	0.003	111	143
KUR	NAV	1	6.0	0.009	0.021	0.002	107	126
LA	CLN T	1	64.4	0.094	0.220	0.021	93	126
LA	MUL	1	46.0	0.071	0.158	0.015	72	103
LA	RIC	1	14.8	0.023	0.050	0.006	107	126
LET	GOL T	1	38.6	0.060	0.133	0.012	72	103
LET	KTY A	1	4.9	0.006	0.017	0.002	107	126
LET	KTY B	1	5.3	0.007	0.018	0.002	107	126
LET	SBN	1	22.3	0.035	0.076	0.007	107	126
LET	TLK	1	35.0	0.054	0.120	0.011	107	126
LIB A	MR	1	2.7	0.001	0.004	0.017	119	119
LIB A	MR	2	1.3	0.001	0.001	0.023	119	119
LIM	MTN	1	6.5	0.007	0.022	0.002	107	126
LIM	RAT	1	28.6	0.044	0.097	0.012	107	112
LIS	LOU	1	40.4	0.063	0.139	0.013	107	126
LIS	SKL	1	39.3	0.061	0.135	0.013	107	126
LOU	MLN	1	13.0	0.018	0.045	0.004	107	126
LOU	MTH	1	15.0	0.023	0.052	0.005	107	126
LOU	SKL	1	51.7	0.080	0.177	0.018	107	126
LSN	THU	1	10.5	0.016	0.036	0.003	107	126
MAY	BLK T	1	30.9	0.032	0.104	0.010	137	164
MAY	GRI T	1	2.2	0.002	0.007	0.002	111	140
MAY	KTL T	1	24.9	0.026	0.085	0.008	137	164
MAY	RH	2	43.3	0.028	0.140	0.019	112	112
MAY	RNW	1	7.4	0.008	0.026	0.002	107	126
MAY	RYB	1	12.5	0.013	0.042	0.004	111	143
MCE	RYB	1	14.6	0.015	0.049	0.005	111	143
MID	WHI	1	22.0	0.033	0.076	0.007	107	126
MON	NEW	1	13.0	0.014	0.043	0.005	111	143
MOY	SLI	1	60.7	0.094	0.209	0.019	107	126
MOY	TAW A	1	8.3	0.013	0.028	0.003	107	126
MOY	TAW B	1	8.4	0.013	0.029	0.003	107	126
MP	TBK T	1	6.6	0.010	0.023	0.002	107	126
MR	TBG	1	3.2	0.004	0.005	0.042	79	79
MR	TBG	2	2.9	0.002	0.003	0.027	79	79
MTN	MUN A	1	0.7	0.001	0.002	0.000	107	126
MTN	MUN B	1	0.7	0.001	0.002	0.000	107	126

Table B-1(c) Characteristics of Existing 110kV Lines and Cables (continued)

110kV Circuits			Length	Impedance p.u. on 100 MVA			Circuit Rating MVA	
From	To	No.	km	R	X	B	Summer	Winter
NAV	PLA	1	23.1	0.036	0.079	0.007	107	126
NEW	PLS	1	42.7	0.055	0.145	0.014	93	126
OUG	OUG T	1	11.0	0.017	0.038	0.004	107	126
PA	STR T	1	22.4	0.035	0.077	0.007	72	103
PLS	DAL T	1	54.7	0.040	0.179	0.019	72	103
RAF	RSY	1	2.1	0.003	0.007	0.001	72	103
RAF	TBG	1	9.3	0.014	0.032	0.004	107	126
RAF	TBG	2	12.0	0.019	0.041	0.004	107	126
RAT	TB	1	33.7	0.040	0.113	0.011	137	164
RH	KIN	1	14.8	0.012	0.049	0.005	120	164
RH	TSB	1	19.8	0.031	0.068	0.006	107	126
RNW	DFR T	1	29.7	0.022	0.097	0.010	107	126
SH	DAL T	1	12.0	0.019	0.041	0.006	72	103
SH	IKE T	1	53.8	0.056	0.179	0.018	93	112
SH	SOM T	1	13.5	0.021	0.047	0.004	107	126
SOM	SOM T	1	2.0	0.003	0.007	0.001	107	126
STR	STR T	1	2.0	0.003	0.007	0.001	107	126
TB	TRI	1	20.5	0.024	0.069	0.007	107	126
TB	TRL	1	42.1	0.063	0.144	0.014	93	126
TBK	TBK T	1	2.8	0.004	0.010	0.001	107	126
THU	IKE T	1	25.9	0.027	0.086	0.009	93	131
TRL	OUG T	1	11.3	0.018	0.039	0.004	107	126
TRL	TRI	1	21.2	0.033	0.073	0.007	107	126

Table B-2 Characteristics of Existing Grid Transformers

Transformer	MVA Rating	HV/LV kV	Impedance p.u. on 100 MVA		Voltage Ratio Tapping Range	
			R	X	+	-
Arklow T2101	63	220/110	0.007	0.188	22%	18%
Arklow T2102	125	220/110	0.002	0.124	9%	18%
Carrickmines T2101	250	220/110	0.001	0.065	9%	17%
Carrickmines T2102	250	220/110	0.001	0.065	9%	17%
Cashla T2101	250	220/110	0.000	0.063	9%	18%
Cashla T2102	175	220/110	0.002	0.133	22%	18%
Cullenagh T2101[10]	250	220/110	0.001	0.064	9%	17%
Dunstown T4201	500	400/220	0.000	0.032	1%	15%
Finglas T2101	250	220/110	0.001	0.065	9%	20%
Finglas T2102	250	220/110	0.001	0.065	9%	20%
Finglas T2103[11]	250	220/110	0.001	0.064	9%	17%
Finglas T2104	250	220/110	0.001	0.064	9%	17%
Flagford T2101	125	220/110	0.003	0.128	9%	18%
Flagford T2102	125	220/110	0.001	0.133	9%	18%
Great Island T2101	125	220/110	0.003	0.133	9%	18%
Great Island T2102	125	220/110	0.002	0.124	22%	18%
Inchicore T2101	250	220/110	0.001	0.056	9%	17%
Inchicore T2102	250	220/110	0.001	0.056	9%	17%
Kellis T2101	125	220/110	0.001	0.124	9%	18%
Kellis T2102	125	220/110	0.001	0.124	9%	18%
Killonan T2101	63	220/110	0.006	0.245	22%	18%
Killonan T2102	63	220/110	0.009	0.247	22%	18%
Killonan T2104	125	220/110	0.001	0.123	9%	18%
Knockraha T2101	250	220/110	0.001	0.065	9%	17%
Knockraha T2102	250	220/110	0.001	0.065	9%	17%
Louth AT1	300	275/220	0.001	0.030	18%	13%
Louth AT2	600	275/220	0.000	0.015	18%	13%
Louth AT3	300	275/220	0.001	0.030	18%	13%
Louth T2101	125	220/110	0.002	0.133	22%	18%
Louth T2102	125	220/110	0.002	0.132	23%	18%
Louth T2103	125	220/110	0.002	0.132	22%	18%
Louth T2104[12]	250	220/110	0.001	0.064	9%	17%
Maynooth T2101	125	220/110	0.002	0.134	22%	18%
Maynooth T2102	250	220/110	0.001	0.064	9%	17%
Maynooth T2103	125	220/110	0.002	0.132	22%	18%
Moneypoint T4201	500	400/220	0.000	0.033	1%	15%
Poolbeg TF3	250	220/110	0.001	0.059	8%	17%
Poolbeg TF4	250	220/110	0.001	0.061	8%	17%
Raffeen T2101	250	220/110	0.001	0.064	9%	17%
Raffeen T2102	250	220/110	0.000	0.056	9%	17%
Shannonbridge T2101	125	220/110	0.001	0.124	9%	18%
Shannonbridge T2102	125	220/110	0.001	0.124	9%	18%
Tarbert T2101	250[13]	220/110	0.001	0.055	9%	17%
Tarbert T2102	250[13]	220/110	0.001	0.055	9%	17%
Woodland T4202	500	400/220	0.000	0.032	1%	15%

10 Final connection of these transformers was expected before March 2003, but is delayed until later this year.

11 This transformer was installed in 2002, and named T2103. The original T2103 was renamed T2104.

12 All R and X values for each transformer are given in per unit on the system MVA base (100MVA).

Table B-2 Characteristics of Existing Grid Transformers (continued)

Transformer	MVA Rating	HV/LV kV	Impedance p.u. on 100 MVA		Phase Angle Tapping Range	
			R	X	+	-
Carrickmines PST	350	220/220	0.000	0.030	15.3°	15.3°

Table B-3 Characteristics of Existing Reactive Compensation

Station	Bus	Plant	Mvar Capability	
			Gen	Absorb
Bandon	BAN 110	1 Capacitor	15	
Bellacorrick	BK 110	1 Capacitor	10	
Cahir	CAH 110	4 Capacitors	60	
Carrickmines[14]	CKM 220	1 Shunt Reactor		100
Cashla	CSH 110	2 Capacitors	80	
Castlebar	CBR 110	1 Static Var Compensator	0-60	
Castlebar	CBR 110	1 Capacitor	15	
Cathaleen's Fall	CF 110	1 Capacitor	15	
Dalton	DLT 110	1 Capacitor	15	
Doon	DOO 110	1 Capacitor	15	
Dunmanway	DMY 110	1 Capacitor	15	
Dunstown[15]	DSN 400	1 Shunt Reactor		80
Gortawee	GWE 110	1 Capacitor	15	
Letterkenny	LET 110	1 Capacitor	15	
Letterkenny	LET 110	1 Static Var Compensator	0-30	
Moy	MOY 110	2 Capacitors	30	
Raffeen	RAF 110	1 Capacitor	60	
Sligo	SLI 110	1 Capacitor	15	
Thurles	THU 110	1 Capacitor	15	
Tralee	TRL 110	1 Capacitor	30	
Trien	TRI 110	1 Capacitor	30	
Wexford	WEX 110	2 Capacitors	30	
Woodland[16]	WOO 400	1 Shunt Reactor		80

14 Completion of this project was expected before March 2003, but is delayed until later this year.
15 This shunt reactor is on the Moneypoint-Dunstown 400kV line at the Dunstown end.
16 This shunt reactor is on the Moneypoint-Woodland 400kV line at the Woodland end.

B.2 CHANGES IN CIRCUIT CHARACTERISTICS

Table B-4(a) Changes in Circuit Characteristics between Summer 2003 and Winter 2003/4

Change	Volt kV	From	To	No.	Length km	Impedance p.u. on 100 MVA			Circuit Rating MVA	
						R	X	B	Summer	Winter
Add	400	**MP1**	**OST**	**1**	105.0	0.002	0.023	0.530	1424	1713
Add	400	**OST**	**WOO**	**1**	125.0	0.002	0.028	0.631	1424	1713
Add	400/220	**OST**	**OST**	**1**	...	0.000	0.031	...	500	500
Add	220	**OST**	**CSH**	**1**	55.0	0.006	0.048	0.072	431	518
Delete	400	**MP1**	**WOO**	**1**	...	...	...	...	...	...
Add	220	**CLA**	**KRA**	**1**	45.0	0.005	0.039	0.059	431	518
Add	220	**CLA**	**TB**	**1**	97.3	0.011	0.084	0.127	431	518
Add	220/110	**CLA**	**CLA**	**1**	...	0.001	0.124	...	125	215
Add	110	**CLA**	**KER**	**1**	43.0	0.067	0.148	0.014	107	126
Add	110	**CLA**	**MAC**	**1**	10.0	0.016	0.034	0.003	107	126
Delete	220	**KRA**	**TB**	**1**	...	...	...	...	...	...
Delete	110	**MAC**	**KER**	**1**	...	...	...	...	...	...
Add	220/110	**INC**	**INC**	**3**	...	0.001	0.064	...	250	250
Add	110	**CBR**	**CLN**	**1**	55.0	0.086	0.189	0.018	107	126
Add	110	**CLN**	**CSH**	**1**	23.0	0.036	0.079	0.007	107	126
Add	110	**CLN**	**LA**	**1**	62.9	0.092	0.215	0.020	93	126
Delete	110	**CLN**	**CLN T**	**1**	...	...	...	...	...	...
Delete	110	**CSH**	**CLN T**	**1**	...	...	...	...	...	...
Delete	110	**LA**	**CLN T**	**1**	...	...	...	...	...	...
Add	110	**CAH**	**TIP**	**1**	27.0	0.042	0.093	0.009	107	126
Add	110	**KLN**	**TIP**	**1**	41.0	0.064	0.141	0.013	107	126
Delete	110	**CAH**	**KLN**	**1**	...	...	...	...	...	...
Amend	110	**BK**	**MOY**	**1**	...	...	...	...	107	126
Amend	110	**KBY**	**MR**	**1**	...	...	...	...	111	143
Amend	110	**KBY**	**MR**	**2**	...	...	...	...	111	143

Table B-4(b) Changes in Circuit Characteristics between Winter 2003/4 and Summer 2006

Change	Volt kV	From	To	No.	Length km	Impedance p.u. on 100 MVA R	X	B	Circuit Rating MVA Summer	Winter
Add	220	**CDU**	**FIN**	**1**	5.0	0.001	0.004	0.007	431	518
Add	220	**CDU**	**FIN**	**2**	5.0	0.001	0.004	0.007	431	518
Add	220	**CDU**	**WOO**	**1**	16.8	0.002	0.015	0.022	431	518
Add	220	**CDU**	**WOO**	**2**	16.8	0.002	0.015	0.022	431	518
Add	220/110	**CDU**	**CDU**	**1**	...	0.001	0.064	...	250	250
Add	220/110	**CDU**	**CDU**	**2**	...	0.001	0.064	...	250	250
Add	110	**CDU**	**MUL**	**1**	69.8	0.088	0.236	0.023	72	103
Add	110	**CDU**	**MCE**	**1**	5.0	0.005	0.017	0.002	111	143
Add	110	**CDU**	**FIN**	**1**	5.6	0.009	0.019	0.002	107	126
Add	110	**CDU**	**DRY**	**1**	40.0	0.062	0.138	0.013	107	126
Add	110	**CDU**	**PLA**	**1**	30.0	0.047	0.103	0.010	107	126
Add	110	**CDU**	**COL**	**1**	2.7	0.002	0.007	0.007	137	140
Delete	220	**FIN**	**WOO**	**1**	...	...	...	...	...	...
Delete	220	**FIN**	**WOO**	**2**	...	...	...	...	...	...
Delete	110	**DRY**	**FIN**	**1**	...	...	...	...	...	...
Delete	110	**FIN**	**MCE**	**1**	...	...	...	...	...	...
Delete	110	**FIN**	**PLA**	**1**	...	...	...	...	...	...
Delete	110	**COL**	**MUL**	**1**	...	...	...	...	...	...
Add	220	**GOR**	**LOU**	**1**	35.0	0.004	0.030	0.046	431	518
Add	220	**GOR**	**MAY**	**1**	44.0	0.005	0.038	0.058	431	518
Add	220/110	**GOR**	**GOR**	**1**	...	0.001	0.124	...	125	125
Add	110	**GOR**	**NAV**	**1**	3.0	0.005	0.010	0.001	107	126
Add	110	**GOR**	**NAV**	**2**	4.0	0.006	0.014	0.001	107	126
Add	110	**DRY**	**GOR**	**1**	22.0	0.034	0.076	0.007	107	126
Add	110	**GOR**	**PLA**	**1**	24.0	0.037	0.083	0.008	107	126
Delete	110	**DRY**	**NAV**	**1**	...	...	...	...	...	...
Delete	220	**LOU**	**MAY**	**1**	...	...	...	...	...	...
Delete	220	**NAV**	**PLA**	**1**	...	...	...	...	...	...
Add	220	**FLA**	**SRA**	**1**	55.0	0.006	0.048	0.072	431	518
Add	220/110	**SRA**	**SRA**	**1**	...	0.001	0.124	...	125	125
Add	110	**SLI**	**SRA**	**1**	11.1	0.017	0.038	0.004	107	126
Add	110	**SLI**	**SRA**	**2**	12.0	0.013	0.040	0.004	137	164
Add	110	**CF**	**SRA**	**1**	52.7	0.071	0.179	0.017	107	126
Add	110	**CF**	**SRA**	**2**	53.1	0.066	0.179	0.018	107	126
Add	110	**SRA**	**ARI T**	**1**	27.0	0.028	0.090	0.009	137	164
Delete	110	**CF**	**SLI**	**1**	...	...	...	...	...	...
Delete	110	**CF**	**ARI T**	**1**	...	...	...	...	...	...
Add	220	**AD**	**RAF**	**1**	27.0	0.003	0.023	0.035	431	518
Add	220/110	**AD**	**AD**	**1**	...	0.001	0.124	...	125	125
Add	110	**TB**	**TRL**	**2**	42.0	0.044	0.140	0.014	137	164

Table B-4(b) Changes in Circuit Characteristics between Winter 2003/4 and Summer 2006 (continued)

Change	Volt kV	From	To	No.	Length km	Impedance p.u. on 100 MVA R	X	B	Circuit Rating MVA Summer	Winter
Add	110	**ATY**	**PLS**	**1**	26.6	0.041	0.092	0.009	107	126
Add	110	**ATY**	**CLW**	**1**	25.0	0.039	0.086	0.008	107	126
Delete	110	**CLW**	**PLS**	**1**	...	...	...	...	...	...
Add	110	**FIN**	**BAL T1**	**1**	12.0	0.019	0.041	0.004	107	126
Add	110	**GLA**	**BAL T1**	**1**	2.0	0.003	0.007	0.001	107	126
Add	110	**BAL**	**BAL T1**	**1**	18.0	0.019	0.060	0.006	137	164
Add	110	**FIN**	**BAL T2**	**1**	12.0	0.019	0.041	0.004	107	126
Add	110	**GLA**	**BAL T2**	**1**	2.0	0.003	0.007	0.001	107	126
Add	110	**BAL**	**BAL T2**	**1**	18.0	0.019	0.060	0.006	137	164
Delete	110	**FIN**	**GLA**	**1**	...	...	...	...	...	...
Delete	110	**FIN**	**GLA**	**2**	...	...	...	...	...	...
Add	110	**ARK**	**BEG**	**1**	25.0	0.013	0.089	0.008	137	164
Add	110	**BEG**	**CKM**	**1**	32.3	0.016	0.115	0.010	137	164
Delete	110	**ARK**	**CKM**	**1**	...	...	...	...	...	...
Add	110	**BCM**	**LIM**	**1**	3.7	0.006	0.012	0.006	107	112
Add	110	**BCM**	**RAT**	**1**	26.0	0.040	0.089	0.008	107	126
Delete	110	**LIM**	**RAT**	**1**	...	...	...	...	...	...
Add	110	**ARK**	**BOG**	**1**	22.6	0.035	0.078	0.007	107	126
Add	110	**BOG**	**CRA**	**1**	26.9	0.042	0.093	0.009	107	126
Delete	110	**ARK**	**CRA**	**1**	...	...	...	...	...	...
Add	110	**BAR**	**CAH**	**1**	44.5	0.066	0.153	0.014	107	126
Add	110	**BAR**	**KRA**	**1**	20.0	0.021	0.067	0.007	137	164
Delete	110	**KRA**	**BAR T**	**1**	...	...	...	...	...	...
Delete	110	**CAH**	**BAR T**	**1**	...	...	...	...	...	...
Delete	110	**BAR**	**BAR T**	**1**	...	...	...	...	...	...
Add	110	**CAM**	**GAL**	**1**	30.0	0.047	0.103	0.010	107	126
Add	110	**KRA**	**CVW**	**1**	8.0	0.009	0.027	0.003	107	126
Add	110	**COW**	**CVW**	**1**	17.7	0.028	0.061	0.006	107	126
Delete	110	**KRA**	**CVW T**	**1**	...	...	...	...	...	...
Delete	110	**COW**	**CVW T**	**1**	...	...	...	...	...	...
Delete	110	**CVW**	**CVW T**	**1**	...	...	...	...	...	...
Add	110	**NEW**	**GCO**	**1**	6.8	0.007	0.023	0.002	111	143
Add	110	**MON**	**GCO**	**1**	11.2	0.012	0.037	0.004	111	143
Delete	110	**NEW**	**MON**	**1**	...	...	...	...	...	...
Add	110	**CHA**	**GLE**	**1**	30.0	0.047	0.103	0.010	107	126
Add	110	**HTX**	**MAC**	**1**	4.5	0.007	0.016	0.002	107	126
Add	110	**CUN**	**MOY**	**1**	40.7	0.063	0.140	0.013	107	126
Add	110	**CUN**	**SLI**	**1**	20.0	0.031	0.069	0.006	107	126
Delete	110	**MOY**	**SLI**	**1**	...	...	...	...	...	...

Table B-4(b) Changes in Circuit Characteristics between Winter 2003/4 and Summer 2006 (continued)

Change	Volt kV	From	To	No.	Length km	Impedance p.u. on 100 MVA			Circuit Rating MVA	
						R	X	B	Summer	Winter
Add	110	**CD**	**KBY**	**1**	33.6	0.052	0.116	0.011	107	126
Add	110	**CD**	**MAC**	**1**	1.0	0.002	0.004	0.000	107	126
Add	110	**IA**	**MAC**	**1**	17.0	0.027	0.059	0.006	107	126
Delete	110	**KBY**	**MAC**	**1**	...	...	...	...	...	...
Delete	110	**CD**	**IA**	**1**	...	...	...	...	...	...
Add	110	**WAT**	**KTN**	**1**	3.4	0.005	0.012	0.001	107	126
Add	110	**BUT**	**KTN**	**1**	2.7	0.004	0.009	0.001	107	126
Delete	110	**BUT**	**WAT**	**1**	...	...	...	...	...	...
Add	110	**KLN**	**NEN**	**1**	33.6	0.052	0.116	0.011	107	126
Add	110	**CUS**	**NEW**	**1**	31.2	0.033	0.104	0.011	137	164
Add	110	**NEW**	**BLK T**	**1**	12.2	0.013	0.041	0.004	137	164
Delete	110	**CUS**	**BLK T**	**1**	...	...	...	...	...	...
Add	110	**LA**	**RIC**	**2**	14.7	0.023	0.051	0.005	107	126
Add	110	**LOU**	**RRU**	**1**	37.5	0.058	0.129	0.012	107	126
Add	110	**RRU**	**SKL**	**1**	14.5	0.023	0.050	0.005	107	126
Delete	110	**LOU**	**SKL**	**1**	...	...	...	...	...	...
Add	110	**GI**	**KMY**	**1**	7.0	0.011	0.024	0.002	107	126
Add	110	**KKY**	**KMY**	**1**	47.0	0.073	0.162	0.015	107	126
Delete	110	**GI**	**KKY**	**1**	...	...	...	...	...	...
Add	110	**FLA**	**TON**	**1**	35.0	0.054	0.120	0.011	107	126
Amend	110	**CSH**	**ENN**	**1**	...	...	...	...	107	126
Amend	110	**CF**	**LKY**	**1**	...	...	...	...	107	126
Amend	110	**LKY**	**GOL T**	**1**	...	...	...	...	107	126

Table B-4(c) Changes in Circuit Characteristics between Summer 2006 and Winter 2006/7

Change	Volt kV	From	To	No.	Length km	Impedance p.u. on 100 MVA			Circuit Rating MVA	
						R	X	B	Summer	Winter
Add	110	**MTH**	**GOR**	**1**	27.0	0.042	0.093	0.009	107	126

Table B-5(a) Characteristics of New Grid Transformers expected between Summer 2003 and Winter 2003/4

Transformer	100% MVA Rating	HV/LV kV	Impedance p.u. on 100 MVA		Voltage Ratio Tapping Range	
			R	X	+	-
Clashavoon	125	220/110	0.001	0.124	9%	18%
Inchicore 3	250	220/110	0.001	0.064	9%	17%
Oldstreet	500	400/220	0.000	0.031	10%	8%

Table B-5(b) Characteristics of New Grid Transformers expected between Winter 2003/4 and Summer 2006

Transformer	100% MVA Rating	HV/LV kV	Impedance p.u. on 100 MVA		Voltage Ratio Tapping Range	
			R	X	+	-
Aghada	125	220/110	0.001	0.124	9%	18%
Corduff 1	250	220/110	0.001	0.064	9%	17%
Corduff 2	250	220/110	0.001	0.064	9%	17%
Gorman	125	220/110	0.001	0.124	9%	18%
Srananagh	125	220/110	0.001	0.124	9%	18%

Table B-6 Characteristics of New Reactive Compensation expected between Winter 2003/4 and Summer 2006

Station	Bus	Plant	Mvar Capability	
			Gen	Absorb
Athlone	ATH 110	1 Capacitor	15[17]	

[17] The TSO has planned to install a 30Mvar capacitor in Athlone. At the time of data freeze it was expected that the size of the capacitor would be 15Mvar.

B.3 DESCRIPTION OF NETWORK CHANGES

Table B-7 Description of Network Changes completed since Forecast Statement 2001/2-2007/8 Supplement

Generation Connections
A 570MVA 220kV cable installed between Huntstown and Finglas 220kV stations
A 570MVA 220kV cable installed between Irishtown and Shellybanks 220kV stations
A 570MVA 220kV cable installed between Carrickmines and Irishtown 220kV stations
A 570MVA 220kV cable installed between Inchicore and Irishtown 220kV stations
Demand Connections
Dalton 110kV station connected, looped into Castlebar-Galway 110kV line
Kinnegad 110kV station connected, looped into Dunfirth-Rhode-Rinawade 110kV line
Stratford 110kV station connected, teed into Carlow-Pollaphuca 110kV line
Ballylickey 110kV station connected, tailed out of Dunmanway 110kV station
Monread 110kV station connected, looped into Kilteel-Newbridge-Maynooth 110kV line
Nangor 110kV station connected by two circuits from Grange Castle 110kV station
A second Finglas-Glasmore 110kV line constructed
Network Reinforcements
Disconnection of Inchicore–Shellybanks cable and re-connection of Inchicore-Poolbeg 2 cable
A 250MVA 220/110kV transformer installed in Finglas 220kV station
A 250MVA 220/110kV transformer installed in Raffeen 220kV station
A 125MVA 220/110kV transformer installed in Shannonbridge 220kV station, replacing a 63MVA unit
Knockraha–Whitegate 110kV line looped into Midleton, and Midleton disconnected from the Knockraha–Dungarvan 110kV line
4 x 15Mvar switched shunt capacitors installed in Cahir 110kV station
2 x 40Mvar switched shunt capacitors installed in Cashla on the 110kV bar
A 60Mvar static var compensator installed in Castlebar 110kV station
A 30Mvar switched shunt capacitor installed in Castlebar 110kV station
A 15Mvar switched shunt capacitor installed in Dalton 110kV station
A 15Mvar switched shunt capacitor installed in Doon 110kV station
A 15Mvar switched shunt capacitor installed in Moy 110kV station
A 60Mvar switched shunt capacitor installed in Raffeen on the 110kV bar
A 30Mvar switched shunt capacitor installed in Tralee 110kV station
A 30Mvar switched shunt capacitor installed in Trien 110kV station
2 x 15Mvar switched shunt capacitors installed in Wexford 110kV station
Arva–Shankill 110kV line uprated
Cahir–Doon 110kV line uprated

Table B-7 Description of Network Changes completed since Forecast Statement 2001/2-2007/8 Supplement (continued)

Network Reinforcements (continued)
Cashla–Somerset T 110kV line uprated
Castlebar–Dalton 110kV line uprated
Dalton–Galway 110kV line uprated
Drybridge–Navan 110kV line uprated
Great Island–Kilkenny 110kV line uprated
Kilkenny–Kellis 110kV line uprated
Louth–Shankill 110kV line uprated

Table B-8(a) Description of Network Changes expected to be completed by Summer (March) 2003, but delayed[18]

Demand Connections
A second Marina-Liberty Street 110kV transformer feeder installed
Kilmore 110kV station connected, tailed from Finglas station
College Park 110kV station connected, looped into Finglas-Mullingar 110kV line
Grange-Kilmore 110kV cable installed
Network Reinforcements
Construction of a 220kV station at Cullenagh, west of Waterford, with 1 x 250MVA 220/110kV transformer
Installation in Louth 220kV station of 1 x 250MVA 220/110kV transformer
Installation in Maynooth 220kV station of 1 x 250MVA 220/110kV transformer
Installation in Carrickmines 220kV station of 1 x 350MVA 220kV Phase Shifting Transformer in series with the Carrickmines–Poolbeg 220kV cable
Construction of Cahir–Killonan 110kV line
Looping of Bandon–Trabeg 110kV line into Raffeen, making Bandon-Raffeen and a second Raffeen-Trabeg lines
Installation in Carrickmines 220kV station of 1 x 100Mvar shunt reactor
Uprating of Ardnacrusha–Drumline 110kV line
Uprating of Carrigadrohid–Iniscarra 110kV line
Uprating of Coolroe–Iniscarra 110kV line
Uprating of Coolroe–Kilbarry 110kV line
Uprating of Cow Cross–Raffeen 110kV line
Uprating of Knockraha–Whitegate 110kV line
Uprating of Rathkeale–Tarbert 110kV line
Uprating of Tarbert–Trien 110kV line

18 These projects are included in the parameter tables for the existing network in Section B.1, because at the data freeze date it was expected that they would be completed by March. However, because of delays, they will not be completed until later in the year.

Table B-8(b) Description of Network Developments expected to be completed between Summer (March) 2003 and Winter 2003/4

Generation Connections
Connection of Cunghill 110kV station into the Moy-Sligo 110kV line
Connection of Ratrussan 110kV station into the Louth-Shankill 110kV line
Demand Connections
Installation in Inchicore 220kV station of 1 x 250MVA 220/110kV transformer
Connection of Tipperary 110kV station, looped into new Cahir-Killonan 110kV line
Network Reinforcements
Construction of a 400kV station at Oldstreet, south-east of Galway, with 1 x 500MVA 400/220kV transformer and of a new 220kV line from Oldstreet to Cashla 220kV station
Construction of a 220kV station at Clashavoon, near Macroom, with 1 x 125MVA 220/110kV transformer
Looping of the Cashla-Lanesboro 110kV line into Cloon 110kV station (Cloon is currently teed off this line)[19]
Construction of Castlebar–Cloon 110kV line
Uprating of Bellacorick–Moy 110kV line
Uprating of Kilbarry–Marina 1 and 2 110kV lines

[19] Since the data freeze date, the Cashla-Lanesboro 110kV line has been looped into Cloon station.

Table B-8(c) Description of Network Developments expected to be completed between Winter 2003/4 and Summer 2006

Demand Connections
Connection of Athy 110kV station, looped into Carlow-Portlaoise 110kV line
Connection of Balbriggan 110kV station, teed into both Finglas-Glasmore 110kV lines
Connection of Ballybeg 110kV station (Wicklow), looped into Carrickmines-Arklow 110kV line
Connection of Ballycummin 110kV station (Raheen), looped into Limerick-Rathkeale 110kV line
Connection of Banoge 110kV station (Gorey), looped into Arklow-Crane 110kV line
Looping of the Cahir-Knockraha 110kV line into Barrymore 110kV station (Barrymore is currently teed off this line)
Connection of Camus 110kV station (Screebe), tailed out of Galway 110kV station
Looping of the Cow Cross-Knockraha 110kV line into Castleview 110kV station (Castleview is currently teed off this line)
Connection of Great Connell 110kV station, looped into Monread-Newbridge 110kV line
Connection of Glenlara 110kV station (Newmarket), tailed out of Charleville 110kV station
Connection of Hartnett's Cross 110kV station, tailed out of Macroom 110kV station
Connection of Killoteran 110kV station (near Waterford), looped into Butlerstown-Waterford 110kV line
Connection of Nenagh 110kV station, tailed out of Killonan station
Construction of second Lanesboro-Richmond 110kV line
Connection of Kilmurry 110kV station, looped into Great Island-Kilkenny 110kV station
Connection of Tonroe 110kV station (Ballaghadreen), tailed out of Flagford station
Network Reinforcements
Construction of a 220kV station at Corduff, west of Finglas, with 2 x 250MVA 220/110kV transformers
Construction of a 220kV station at Gorman, north-east of Navan, with 1 x 125MVA 220/110kV transformer
Construction of a 220kV station at Sranangh, east of Sligo, with 1 x 125MVA 220/110kV transformer, and Flagford–Srananagh 220kV line
Construction of Aghada–Raffeen 220kV line
Installation in Aghada 220kV station of 1 x 125MVA 220/110kV transformer
Construction of Tarbert–Tralee 2 110kV line
Looping of Cushaling–Blake–Maynooth 110kV line into Newbridge, making Cushaling-Newbridge and Maynooth-Blake-Newbridge lines
Looping of Kilbarry-Macroom 110kV line into Carrigadrohid 110kV station, making Carrigadrohid-Kilbarry and Carrigadrohid-Macroom lines. Disconnection of Carrigadrohid from Iniscarra station. Construction of Iniscarra-Macroom 110kV line using old Carrigadrohid-Iniscarra line.
Installation in Athlone 110kV station of 1 x 30Mvar switched shunt capacitor
Uprating of Arklow–Crane 110kV line (will be Arklow-Banoge and Banoge-Crane)

Table B-8(c) Description of Network Developments expected to be completed between Winter 2003/4 and Summer 2006 (Continued)

Network Reinforcements
Uprating of Cashla–Ennis 110kV line
Uprating of double circuit section of Cathaleen's Fall-Letterkenny and Cathaleen's Fall-Golagh-Letterkenny 110kV lines

Table B-8(d) Description of Network Developments expected to be completed between Summer 2006 and Winter 2006/7

Demand Connections
Construction of 110kV line from Meath Hill to new Gorman station, thus looping Meath Hill