

1. SCOPE

This document lists the underground cables and cable accessories which are Approved for connection to the SP Distribution ltd, SP Manweb plc and SP Transmission ltd networks. The categories of equipment covered by this document include the following: -

Cables

Jointing & Terminating Accessories and consumables

Ducts, Warning Tapes and Tiles

Users should always ensure that they are referring to the latest issue of this document.

2. ISSUE RECORD

This is a maintained document.

Issue Date	Issue No	Author	Amendment Details
February 2002	Issue 1	Paul Cunningham	Original issue
July 2005	Issue 2	Paul Cunningham	Updated to include new equipment.
March 2007	Issue 3	Jim Livie	Addition of MV Re-enterable Resin
June 2007	Issue 4	Paul Cunningham	Detail added for 132kV and above
May 2008	Issue 5	Paul Cunningham	Approved ducting updated and other minor changes.

3. ISSUE AUTHORITY

Author	Owner	Issue Authority
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4. REVIEW

This document will be reviewed as required by Approval of new equipment and materials or as items are removed from the Approved list.

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5. REFERENCES

5.1 Energy Networks Technical Specifications

CAB-03-020	Technical Specification for power cables up to and including 33kV and associated auxiliary cables.
CAB-03-021	Polyurethane Resin Compounds for use in Cable Joints.
CAB-03-023	11kV Joints and Terminations
CAB-03-024	33kV Joints and Terminations
CAB-03-027	Technical Specification for Joints & Terminations on 11kV Polymeric Insulated cables.
CAB-03-618	Plumbing metals and solders.
CAB-03-623	Plastic cable ducts and associated accessories.

5.2 Energy Networks Drawings

00012642	Service cable lead-in tube (Hockey stick).
00031148	Hockey stick details (D.C.M. version).
00180154	Plumbing metal and solder sections.
00247207	Arrangement of polythene insulated telephone cables ScottishPower.

5.3 British Standards (BS)

BS 219	Soft solders.
BS 441	Specification of purchasing requirements for flux-cored and solid soft solder wire.
BS 801	Specification for the composition of lead and lead alloy sheaths of electric cables.
BS 874	Methods for determining thermal insulating properties.
BS 4109	Specification of copper for electrical purposes.
BS 5625	Specification of purchasing requirements and methods of test for fluxes for soft soldering.
BS 6234	Specification for polyethylene insulation and sheaths of electric cables.
BS 6346	Specification for armoured electric cables having PVC insulation.
BS 6480	Specification for impregnated paper insulated lead or lead alloy sheathed electric cables of rated voltage up to and including 33,000V.
BS 6910	Cold pour resin compound and heatshrink cable joints in the voltage range up to 1000 volts AC and 1500 volts DC.
BS 7870	LV and MV polymeric insulated cables for use by distribution and generation utilities (Implementation of HD 603, 604, 605, 620, 622, 626 and 627).

BS 7888 LV and MV accessories for power cables with rated voltage from 0.6/1 kV up to and including 20.8/36 kV.

BS EN 29453 Soft solder alloys. Chemical composition and forms.

5.4 Electricity Association Technical Specifications (EATS)

EATS 09-6 Auxiliary multi-core and multi-pair cables.

EATS 09-12 Impregnated paper insulated corrugated aluminium sheathed 6350/11000 volt cable.

EATS 09-17 Single core cable for use in substations having extruded insulation and rated voltages of 6350/11,000 volts and 19,000/33,000 Volts.

EATS 12-23 Polyethylene warning tape and protection tape for buried electricity supply cable.

EATS 12-24 Plastic ducts for buried electrical cables.

5.5 Electricity Association Engineering Recommendations (ER)

ER C79 Type Approval tests for connectors and terminations for Aluminium conductors of insulated power cables.

ER C81 Type approved tests for joints for 600/1000 volt cable systems.

ER C89 Performance specification for terminations on polymeric insulated cables rated at 12 kV and 36 kV maximum system voltage.

ER C93 Type approval tests for mechanical connections to metallic sheaths of cables.

6. GLOSSARY

For the purpose of this document the following definitions shall apply:

<i>Company:</i>	Refers to SP Distribution ltd, SP Transmission ltd and SP Manweb plc.
<i>EnergyNetworks:</i>	SP EnergyNetworks Ltd, operator of network assets on behalf of the Company.
<i>SP Distribution ltd:</i>	The Distribution Licence Holder for the distribution service area formally known as ScottishPower.
<i>SP Transmission ltd:</i>	The Transmission Licence Holder for the transmission service area formally known as ScottishPower.
<i>SP Manweb plc:</i>	The Distribution Licence Holder for the distribution service area formally known as Manweb.

7. EQUIPMENT APPROVAL CATEGORIES

Cables and cable accessories listed in the Approved Equipment Register may, where appropriate, have been assigned particular Approval categories. The categories are defined below:

Category S – Category S equipment is that for which approval has been granted only for a specific contract or site.

Category A – Category A equipment is that which is fully Approved for use on the SP Distribution ltd, SP Manweb plc and SP Transmission ltd networks.

Where no approval category is indicated in the attached tables then Category A approval may be assumed.

8. STANDARD REQUIREMENTS

Only equipment listed as Approved in the Appendices to this document may be installed on the Company's networks. Items not listed in the Appendices may be considered for Approval by the Company, however, the Approval process may take some time and a charge for this work may be made.

8.1 33kV, 11kV, Low Voltage, Multicore and Multipair Cables

Shall comply with the requirements of SP EnergyNetworks Technical Specification CAB-03-020 which makes reference to the Standards and Specifications listed below.

CENELEC Documents

HD 308, HD 605.

British Standards

BS 4066, BS 6234, BS 6346, BS 6360, BS 6724, BS 7655, BS 7870.

Electricity Association Technical Specifications

EATS 09-6, EATS 09-12, EATS 09-17.

8.2 Plastic Ducts for Underground Cables

Shall comply with the requirements of in SP EnergyNetworks Technical Specification CAB-03-623 (due to be superseded in April 2005), which makes reference to the Standards and Specifications listed below.

Electricity Association Technical Specifications (EATS)

EATS 12-24

ScottishPower Drawings

HQST-0319 and 0012642

8.3 Plastic warning tapes and tiles

Shall comply as appropriate with the requirements of EATS 12-23.

8.4 33kV Joints and Terminations

Shall comply with the requirements of EnergyNetworks Technical Specification CAB-03-024, which makes reference to the Standards and Specifications listed below.

British Standards (BS)

BS 6480, BS 7870 and BS 7888.

Engineering Recommendation (ER)

ER C89 and ER C93.

8.5 11kV Joints and Terminations

Shall comply with the requirements of EnergyNetworks Technical Specification CAB-03-23 for joints for paper cables and CAB-03-027 for joints on polymeric cables and transitions from polymeric to paper cables. These specifications make reference to the Standards and Specifications listed below.

British Standards (BS)

BS 6480, BS 7870 and BS 7888.

Electricity Association Technical Specifications (EATS)

EATS 09-12.

Electricity Association Engineering Recommendations (ER)

ER C79, ER C81 and ER C93.

8.6 Twin Foil Polyurethane Resin Packs

Shall comply with the requirements of EnergyNetworks Technical Specification 72/0650/11, which makes reference to the Standards and Specifications listed below.

British Standards

BS 874 and BS 6910.

Electricity Association Engineering Recommendation

ER C81.

8.7 Solder

Shall comply with the requirements of EnergyNetworks Technical Specification CAB-03-618, which makes reference to the Standards and Specifications listed below.

British Standards (BS)

BS EN 29453, BS 219, BS 441 and BS 5625.

Drawings 00180154.

APPENDICES

9. APPROVED CABLES UP TO AND INCLUDING 33KV

9.1 Approved Manufacturer References

Single or multiple “Approved Manufacturer” References are listed for each cable type in sections 10.2 to 10.9 below. This table is a key to the Approved Manufacturer References used.

Reference	Manufacturer	Manufacturing location	Note
ABB-F	ABB (Wessel)	Finglas, Dublin	
AEI-B	AEI Cables	Birtley	
CCC-B	Copper Cable Company	BFK Plant, Poland	
Nex-H	Nexans	Hanover, Germany	This factory has 3 extrusion lines, only cable manufactured on the extrusion line designated “S119” is Approved for use.
Nex-N	Nexans	Namsos, Norway	
NKT-A	NKT	Asnaes, Denmark	
NKT-C	NKT	Cologne, Germany	
Pir-W	Pirelli	Wrexham, Clwyd	
Trat-PSS	Tratos	Pieve San Stefano, Italy	

9.2 33kV Cables

9.2.1 XLPE Insulated Single Core with 50mm² Copper Wire Screen to EnergyNetworks Technical Specification CAB-03-020.

EnergyNetworks Stock Code	Description	Approved Manufacturer References (see section 10.1 for key)
C09463191	150mm ² circular stranded copper 33kV XLPE single core	Nex-H*, Nex-N, NKT-A, NKT-C, Pir-W
	185mm ² circular stranded copper 33kV XLPE single core	
	240mm ² circular stranded copper 33kV XLPE single core	
	300mm ² circular stranded copper 33kV XLPE single core	
	400mm ² circular stranded copper 33kV XLPE single core	Nex-H*, NKT-A, NKT-C, Pir-W
C09463161	500mm ² circular stranded copper 33kV XLPE single core	Nex-H*, NKT-C, Pir-W
	630mm ² circular stranded copper 33kV XLPE single core	

* The Nexans, Hanover factory has 3 extrusion lines. Only cable manufactured on the extrusion line designated “S119” is Approved for use.

9.3 11kV Cables

9.3.1 XLPE Insulated Single Core cables to EnergyNetworks Technical Specification CAB-03-020

EnergyNetworks Stock Code	Description	Approved Manufacturer References (see section 10.1 for key)
C09550955	95 mm ² circular solid Aluminium 11kV single core with red oversheath.	CCC-B, NKT-A, Pir-W
C09550956	185 mm ² circular solid Aluminium 11kV single core with red oversheath.	
C09550957	300 mm ² circular solid Aluminium 11kV single core with red oversheath.	
	300 mm ² circular stranded Copper 11kV single core with red oversheath.	CCC-B, NKT-A, Pir-W
	500 mm ² circular stranded Copper 11kV single core with red oversheath.	
	630 mm ² circular stranded Copper 11kV single core with red oversheath.	

9.3.2 XLPE Insulated Three Core cables to EnergyNetworks Technical Specification CAB-03-020

EnergyNetworks Stock Code	Description	Approved Manufacturer References (see section 10.1 for key)
C0946200	95 mm ² circular solid Aluminium 11kV 3-core with 70mm ² copper wire screen and red oversheath.	NKT-A
C0946201	185 mm ² circular solid Aluminium 11kV 3-core with 95mm ² copper wire screen and red oversheath.	
C0946202	300 mm ² circular solid Aluminium 11kV 3-core with 95mm ² copper wire screen and red oversheath.	

9.3.3 XLPE Insulated 3-core and 1-core cables with LSOH Oversheath to EnergyNetworks Technical Specification CAB-03-020

Under consideration – refer to SP EnergyNetworks for latest information.

9.4 Low Voltage Cables

9.4.1 3 - Core & 4-core Waveform cable with copper CNE or Earth conductor to EnergyNetworks Technical Specification CAB-03-020

EnergyNetworks Stock Code	Description	Approved Manufacturer References (see section 10.1 for key)
C09859986	3-core 95mm ² solid sectoral aluminium waveform cable.	NKT-A, Pir-W
C09859998	3-core 185mm ² solid sectoral aluminium waveform cable.	
C09859999	3-core 300mm ² solid sectoral aluminium waveform cable.	
C09850028	4-core 95mm ² solid sectoral aluminium waveform cable.	
C09850030	4-core 185mm ² solid sectoral aluminium waveform cable.	
C09850016	4-core 240mm ² solid sectoral aluminium waveform cable.	

9.4.2 3 – core & 4 – core LSOH mains cable with helical copper CNE or Earth conductor to EnergyNetworks Technical Spec CAB-03-020

EnergyNetworks Stock Code	Description	Approved Manufacturer References (see section 10.1 for key)
	3-core 95mm ² Cu concentric N/E with LSOH oversheath.	Pir-W
	3-core 185mm ² Cu concentric N/E with LSOH oversheath.	
	3-core 300mm ² Cu concentric N/E with LSOH oversheath.	
	4-core 95mm ² Cu concentric N/E with LSOH oversheath.	
	4-core 185mm ² Cu concentric N/E with LSOH oversheath.	
	4-core 240mm ² Cu concentric N/E with LSOH oversheath.	



9.4.3 LV Substation Cables, Single Core to Energy Networks Technical Specification CAB-03-020

Energy Networks Stock Code	Description	Approved Manufacturer References (see section 10.1 for key)
C09851616	480mm ² circular solid sectoral aluminium, armoured	Pir-W
C09851628	600mm ² circular solid sectoral aluminium, un-armoured	
C09851640	740mm ² circular solid sectoral aluminium, armoured	

9.4.4 Service Cables to EnergyNetworks Technical Specification CAB-03-020

EnergyNetworks Stock Code	Description	Approved Manufacturer References (see section 10.1 for key)
C09851088	1-phase CNE 25mm ² aluminium straight concentric	ABB-F, Pir-W
	1-phase CNE 35mm ² aluminium straight concentric	
	3-phase CNE 25mm ² aluminium straight concentric	
	3-phase CNE 35mm ² aluminium straight concentric	
C09851112	1-phase SNE 4mm ² copper split concentric	
C09851094	1-phase SNE 25mm ² aluminium split concentric	
	1-phase SNE 35mm ² aluminium split concentric	
	3-phase SNE 25mm ² aluminium split concentric	
C09851082	3-phase SNE 35mm ² aluminium split concentric	
C09851010	3-phase SNE 35mm ² copper split concentric	

9.4.5 LSOH Service cables to EnergyNetworks Technical Specification CAB-03-020

EnergyNetworks Stock Code	Description	Approved Manufacturer References (see section 10.1 for key)
	1-phase CNE 35mm ² aluminium straight concentric with LSOH oversheath.	Pir-W
	3-phase SNE 35mm ² aluminium split concentric with LSOH oversheath.	
	1-phase SNE 35mm ² aluminium split concentric with LSOH oversheath.	
	3-phase SNE 35mm ² aluminium split concentric with LSOH oversheath.	
	3-phase SNE 35mm ² copper split concentric with LSOH oversheath.	

9.5 Multi Core Cables to EnergyNetworks Technical Specification CAB-03-020

EnergyNetworks Stock Code	Description	Approved Manufacturer References (see section 10.1 for key)
C09278011	3-core cable with 2.5mm conductors	Pir-W, CCC-B, AEI-B
C09278023	4-core cable with 2.5mm conductors	
C09278035	7-core cable with 2.5mm conductors	
C09278047	7-core composite metering cable	
C09278059	12-core cable with 2.5mm conductors	
C09278060	19-core cable with 2.5mm conductors	

9.6 Multi Pair Cables to EnergyNetworks Technical Specification CAB-03-020

EnergyNetworks Stock Code	Pairs	Conductor	Remarks	Approved Manufacturer References (see section 10.1 for key)
C09279289	6	1/1.12mm	Self supporting aerial cable ("hardex")	Pirelli, Erith
C09279313	7	1/0.8mm	Filled. Induced voltage < 5kV	Pir-W, Trat-PSS
C09279301	7	1/0.8mm	Filled. Induced voltage >5kV <15kV	
C09342382	10	1/0.8mm	Unfilled	
C09279325	19	1/0.8mm	Filled	
C09279331	24	1/0.9mm	Unfilled	
	37	1/0.8mm	Unfilled	



9.7 General Wiring Cables

Approved Supplier	Type	Size (csa)	Colour	Remarks	SP EnergyNetworks Part Number
Cable Express Cables & Flexibles Strathclyde Cables Copper Cable Company	37/2.03	120mm ²	brown	Double Insulated	C09117325
			blue	Double Insulated	C09117337
	19/2.14	70mm ²	brown	Double Insulated	C09117301
			blue	Double Insulated	C09117313
			green/yellow	Non Sheathed	C09116047
	19/1.78	50mm ²	blue	Double Insulated	C09117283
	19/1.53	35mm ²	brown	Double Insulated	C09117246
			blue	Double Insulated	C09117258
			green/yellow	Non Sheathed	C09115845
	19/1.35	25mm ²	brown	Double Insulated	C09117210
			blue	Double Insulated	C09117222
	7/1.70	16mm ²	brown	Double Insulated	C09117180
			blue	Double Insulated	C09117192
			green/yellow	Non Sheathed	C09115640
	7/1.35	10mm ²	brown	Double Insulated	C09117155
			blue	Double Insulated	C09117167
			green/yellow	Non Sheathed	C09115547



General Wiring Cables (cont.)

Manufacturer & Approved Factory	Type	Size (csa)	Colour	Remarks	SP EnergyNetworks Part Number
Cable Express Cables & Flexibles Strathclyde Cables Copper Cable Company	7/1.04	6mm ²	brown	Double Insulated	C09117120
			blue	Double Insulated	C09117131
			green/yellow	Non Sheathed	C09115444
	7/0.85	4mm ²	brown	Double Insulated	C09117090
			blue	Double Insulated	C09117106
			green/yellow	Non Sheathed	C09115341
	1/1.78	2.5mm ²	brown	Double Insulated	C09117064
			blue	Double Insulated	C09117076
			green/yellow	Non Sheathed	C09115249

10. APPROVED DUCTS, WARNING TAPES AND TILES

10.1 Plastic Ducts & Accessories for Underground Cable

Emtelle Product Code	Emtelle Description	Scottish Power Description	Scottish Power Stock Code	Resistance To Deformation	Length
5846	BLACK HDPE 38/32MM X 100M COIL	32mm id ducting suitable for trenchless installation (38mm OD)	C23783308	Class 2	100m Coils
5847	BLACK HDPE 58/50MM X 100M COIL	50mm id ducting suitable for trenchless installation (58mm OD)	C23780265	Class 2	50m or 100m Coils
9676	90MM PE100 SDR11 X 100M BLACK	74mm id ducting suitable for trenchless installation(90mm OD SDR 11)	C23783320	Class 1	100m Coils
9676S	90MM PE100 SDR11 X 50M BLACK	74mm id ducting suitable for trenchless installation(90mm OD SDR 11)	C23783333	Class 1	50m coils
9667 (9677)	110MM PE100 SDR11 X 100M BLCK	90mm id ducting suitable for trenchless installation (110mm OD SDR 11)	C23783324	Class 1	100m Coils
9667S	110MM PE100 SDR11 X 50M BLACK	90mm id ducting suitable for trenchless installation (110mm OD SDR 11)	C23783334	Class 1	50m Coils
9678	125MM HDPE SDR11 X 100M BLK	110mm id ducting suitable for trenchless installation (125mm OD SDR 11)	C23783323	Class 1	100m coils
9678S	125MM HDPE SDR11 X 50M BLACK	110mm id ducting suitable for trenchless installation (125mm OD SDR 11)	C23783335	Class 1	50m Coils
9679	160MM HDPE SDR11 X 100M BLK	125mm id ducting suitable for trenchless installation (160mm OD SDR 11)	C23783322	Class 1	100m coils
9679S	160MM HDPE SDR11 X 50M BLACK	125mm id ducting suitable for trenchless installation (160mm OD SDR 11)	C23783336	Class 1	50m Coils
9680	200MM HDPE SDR11 X 100M BLK	180mm id ducting suitable for trenchless installation (200mm OD SDR 11)	C23783332	Class 1	100m coils
9680S	200MM HDPE SDR11 X 50 BLACK	180mm id ducting suitable for trenchless installation (200mm OD SDR 11)	C23783338	Class 1	50m Coils
9681	180MM HDPE SDR11 X 100M BLK	147mm id ducting suitable for trenchless installation (180mm OD SDR 11)	C23783321	Class 1	100m coils
9681S	180MM HDPE SDR11 X 50M BLACK	147mm id ducting suitable for trenchless installation (180mm OD SDR 11)	C23783337	Class 1	50m coils
9494	CABLE GUARD 3M X 25MM	Guard Cable PVC 25*3.0m	C43850637	n/a	3m
9495	CABLE GUARD 3M X 55MM	Guard Cable PVC 50*3.0m	C43850649	n/a	3m
9496	CABLE GUARD 3M X 80MM	Guard Cable PVC 80*3.0m	C43850650	n/a	3m

Emtelle Product Code	Emtelle Description	Description	Scottish Power Stock Code	Resistance To Deformation	length
5848	BLACK 110MM 3M 750N ELECTRIC	100mm id straight duct, single socket end (110mm OD uPVC Duct)	C23780329	Class 1	3m effective length
5884	BLACK 110MM X 3M 450N ELECTRIC	100mm id straight duct, single socket end (110mm OD uPVC Duct)	C23780334	Class 2	3m effective length
5849	BLACK 160MM 3M 750N ELECTRIC	150mm id straight duct, single socket end (160mm OD uPVC Duct)	C23780330	Class 1	3m effective length
5885	BLACK 160MM X 3M 450N ELECTRIC	150mm id straight duct, single socket end (160mm OD uPVC Duct)	C23780335	Class 2	3m effective length
5850	BLACK 38MM HOCKEYSTICK BEND	House service entry tube c/w integral socket to suit 32mm duct (38mm OD)	C23780322	Class 2	n/a
4044 (5851)	CONN SLEEVE 110MM BLACK	Duct Couplers as required. PVC cable duct coupler 100mm id straight duct	C23780331	n/a	n/a
3748	CONN SLEEVE 160MM BLACK	Duct Couplers as required. PVC cable duct coupler 150mm id straight duct	C23780332	n/a	n/a
5853	DOUBLE COUPLER 32MM BLACK	Duct Couplers as required. PVC cable duct – 32mm	C23780321	n/a	n/a
5854	BLACK 110MM 11.25 C1 700 RAD	100mm ID x 11.25 Degree bend	C23783325	Class 1	n/a
5855	BLACK 110MM 22.5 C1 700 RAD	100mm ID x 22.5 Degree bend	C23783326	Class 1	n/a
5856	BLACK 110MM 45DEG C1 560 RAD	100mm ID x 45 Degree bend	C23783329	Class 1	n/a
5886	BLACK 110MM 90DEG C1 450 RAD	100mm ID 90 x Degree bend	C12055561	Class 1	n/a
5858	BLACK 160MM 11.25 C1 1200 RAD	150mm ID x 11.25 Degree bend	C23783328	Class 1	n/a
5859	BLACK 160MM 22.5 C1 1200 RAD	150mm ID x 22.5 Degree bend	C23783327	Class 1	n/a
5860	BLACK 160MM 45DEG C1 560MM RAD	150mm ID x 45 Degree bend	C23783330	Class 1	n/a
5861	BLACK 160MM 90DEG C1 560MM RAD	150mm ID x 90 Degree bend	C23783331	Class 1	n/a
9710 (5862)	BEND 90 DEG 50MM ID	Bend 90 Deg PVC Duct 50mm	C23780266	Class 1	n/a



10.2 Warning tapes and tiles

Type	Voltage	Remarks	SP EnergyNetworks Part Number	Manufacturer
LV Warning tape	LV	0.1mm thick, 365m rolls	12802302	Boddingtons
11kV Protection Tape	11kV	2.5mm thick, 40m rolls	12802300	Centriforce
33kV protection Tiles	33kV	1000mm x 244mm x 12mm	12050012	Centriforce

11. APPROVED JOINTS & TERMINATIONS

11.1 33kV Joints

11.1.1 Joints for 33kV Polymeric Single Core Cables

Manufacturer/Supplier	Description	Approved Joint	Remarks	EnergyNetworks Part Number
Pirelli Components	Straight joint for 150mm ² cables	SJ1430D-Wire185SP	Including Jointing Instructions and Petri M95-240 connector.	C12051503
	Straight joint for 500/630mm ² cables	SJ1430D-Wire630SP	Including Jointing Instructions.	C12051504
	Pot end for 150mm ²	PE-01SP	Including Jointing Instructions and Petri M95-240 connector.	C12051505
3M	Straight joint for 150mm ² cables		Including Jointing Instructions and connector.	
	Straight joint for 500/630mm ² cables		Including Jointing Instructions.	
Tyco	Breech joint for 150mm ²	EPKB 36B1XU2XU	Including jointing instructions and connector	

11.1.2 Joints for Transitions between 33kV Polymeric Single Core Cables and the following Paper Insulated Cables

Manufacturer/Supplier	Description	Approved Joint	Remarks	EnergyNetworks Part Number
Pirelli Components	Single core PILC (185mm ²)	JSCPX33CSP	Including Jointing Instructions and Petri M95-240 connector.	C12051500
	Three core "H" type PILC	JTPX33LRSP	Including Jointing Instructions and Petri M95-240 connector.	C12051501
	Three core "HSL" type PILC	JHLX33LRSP	Including Jointing Instructions and Petri M95-240 connector.	C12051502
Petri	Connector for up to 300mm ²	M185-400		C12051511

11.2 Terminations for 33kV Single Core Polymeric Cables

11.2.1 Indoor Terminations

Manufacturer/Supplier	Description	Approved Termination	Remarks	SP EnergyNetworks Part Number
Tyco	Indoor terminations for 150mm ² including lugs	EPKT36D1XI		12050023
	“Oil barrier” terminations for 150mm ² including compression lugs	SMOE61889		12051452
	Bushing insulation kit for 150mm ² in cable boxes with CB3 type bushings	SMOE50383		12051455

11.2.2 Separable (“outside cone”) Connectors

11.2.3 "Inner cone" Connectors

Cable sizes	Plug sizes	Approved Manufacturer
70 – 800 mm ²	1 to 4	Pfisterer



11.2.4 Outdoor Terminations

Manufacturer/Supplier	Description	Approved Termination	Remarks	SP EnergyNetworks Part Number
Tyco	Outdoor termination for 150mm ² including lugs	EPKT36D1XO		12050021
	Outdoor termination for 500mm ²	EPKT36E1XO		12051456
	Outdoor termination for 630mm ²	EPKT36F1XO		12051457
3M	Outdoor termination for 150mm ² including lugs			
	Outdoor termination for 500mm ²			
	Outdoor termination for 630mm ²			

11.3 11kV Joints

11.3.1 11kV Joint Kits for Jointing 3-core XLPE to 3-core XLPE Cables

Supplier	Description	Approved Joint	Remarks	SP EnergyNetworks Part Number
Sicame	Straight joint for up to 185mm ² including jointing instructions and connectors	MV3CS1/SP		C12051600
	Straight joint for up to 300mm ² including jointing instructions and connectors	MV3CS2/SP		C12051604
	Breech joint for up to 185mm ² including jointing instructions and connectors	MV3C		C12051605
	Loop joint for up to 300mm ² including jointing instructions and connectors			C12051607
	Stop end for up to 185mm ² including jointing instructions and connectors	MV3CSE1/SP		C12051602
	Stop end for up to 300mm ² including jointing instructions and connectors	MV3CSE2/SP		C12051606

11.3.2 11kV Joint Kits for Jointing 3-core XLPE to 1-core XLPE Cables

Supplier	Description	Approved Joint	Remarks	SP EnergyNetworks Part Number
Sicame	Trifurcating joint for XLPE cables up to and including 185mm ² including jointing instructions and connectors	MVTRFS1/SP		C12051608
	Trifurcating joint for XLPE cables up to and including 300mm ² including jointing instructions and connectors	MVTRFS2/SP		C12051609

11.3.3 11kV Joint Kits for Jointing 1-core XLPE to 1-core XLPE cables

Supplier	Description	Approved Joint	Remarks	SP EnergyNetworks Part Number
Sicame	1-core straight joint for up to 185mm ² including jointing instructions and connectors	MVSCS1/SP		C1205
	1-core straight joint for up to 300mm ² including jointing instructions and connectors	MVSCS2/SP		C1205
	1-core straight joint for up to 500mm ² including jointing instructions.			

11.3.4 11kV Joint Kits for Jointing XLPE to Paper Cables

Supplier	Description	Approved Joint	Remarks	SP EnergyNetworks Part Number
Sicame	Trifurcating transition joint for 3-core PICAS/PILC to 3x1-core XLPE - 95mm ² c/w connectors and jointing instructions.	MV3CTRT1/SP		C12051629
	Trifurcating transition joint for 3-core PICAS/PILC to 3x1-core XLPE - 185mm ² c/w connectors and jointing instructions.	MV3CTRT2/SP		C12051630
	Trifurcating transition joint for 3-core PICAS/PILC to 3x1-core XLPE - 300mm ² c/w connectors and jointing instructions.	MV3CTRT3/SP		C12051631
	Transition joint for 3-core PICAS/PILC to 3-core XLPE - 95mm ² c/w connectors and jointing instructions.	MV3CST1/SP		C12051628
	Transition joint for 3-core PICAS/PILC to 3-core XLPE - 185mm ² c/w connectors and jointing instructions.	MV3CST2/SP		C12051610
	Transition joint for 3-core PICAS/PILC to 3-core XLPE - 300mm ² c/w connectors and jointing instructions.	MV3CST3/SP		C12051613

11.3.5 Build up, Earthing and screening kits for XLPE to XLPE and XLPE to PICAS/PILC joints

Supplier	Description	Approved Joint	Remarks	SP EnergyNetworks Part Number
Sicame	Build up kit for paper cables up to 35mm ²	PILCSO/SP		C12051650
	Screen termination kit for screened paper cables	SPM/SP		C12051640
	Earth kit for PILC cable up to 35mm ²	MEHV0/SP		C12051624
	Earth kit for PILC cable 50mm ² to 95mm ²	MEHV1/SP		C12051619
	Earth kit for PILC cable 120mm ² up to 300mm ²	MEHV2/SP		C12051620
	Earth kit for 95mm ² PICAS cable	MEHV3/SP		C12051617
	Earth kit for 185mm ² and 300mm ² PICAS cable	MEHV4/SP		C12051618



11.3.6 11kV Joint Kits for Jointing Paper to Paper Cables

Manufacturer	Description	Approved Joint	Remarks	SP EnergyNetworks Part Number
WT Henley	Straight joint for up to 185mm ² including jointing instructions and connectors	52464-22		12051300
	Breech joint for up to 185mm ² including jointing instructions and connectors	52464-24		12051301
	Stop end for up to 300mm ² including jointing instructions and connectors	52464-17		12051302
	Loop joint for up to 185mm ² including jointing instructions and connectors	52464-18		12051303
	Straight joint for up to 300mm ² including jointing instructions and connectors	52464-23		C12051304
	Breech joint for up to 300mm ² including jointing instructions and connectors	52464-25		C12051305
	Loop joint for up to 300mm ² including jointing instructions and connectors	52464-19		C12051306

11.3.7 Lead Sheath Earthing, Build Up and screen termination Kits for WT Henley Joints

Manufacturer	Description	Approved Accessory	Remarks	SP EnergyNetworks Part Number
WT Henley	Lead sheath earthing kit for up to 185mm ²	52484-44		12051923
	Lead sheath earthing kit for up to 300mm ²	52484-45		12051926
	Build up kit for conductors <95mm ²	52484-43		12051920
	Screen termination kit for screened paper cables	52481-05		C12051307



11.4 11kV Terminations

11.4.1 Indoor Terminations

Manufacturer/Supplier	Description	Approved Accessory	Remarks	SP EnergyNetworks Part Number
3M	Indoor termination for 95/185mm ² including mechanical earth connection and lugs		Also marketed as Pirelli "modulus"	
	Indoor termination for 300mm ² including mechanical earth connection and lugs			
Tyco	Bushing protection boots, kit of 3	RCAB 4020		

11.4.2 Separable "Elbow" & "T" Connectors

11.4.3 Outdoor Terminations

Manufacturer/Supplier	Description	Approved Accessory	Remarks	SP EnergyNetworks Part Number
Tyco	Outdoor termination for 95/185mm ² including mechanical earth connection and lugs	EPKT 17C3MOH2		12051463
	Mounting steelwork	EXRM 0969-39		12051464

12. APPROVED RESINS

12.1 Twin Foil Polyurethane Resin Packs

Manufacturer/Supplier	Type	Kit Size (Litres)	Remarks	SP EnergyNetworks Part Number
WT Henley	Mk 6/3 3 Part Polyurethane Resin	1.8		12051200
		2.5		12051201
		8.0		12051204

12.2 Isocyanate-Free Resins

Manufacturer/Supplier	Type	Kit Size (Litres)	Remarks	SP EnergyNetworks Part Number
Pirelli Components	JEM	0.5	LV & 11kV polymeric transition joints only. Must be used in conjunction with ABS shells.	
		2.0		

12.3 MV Re-Enterable Resins

Manufacturer/Supplier	Type	Kit Size (Litres)	Remarks	SP EnergyNetworks Part Number
TYCO	MV Guroflex	5.0	11kV and 33kV cable boxes previously bitumen/G38 filled	
		10.0		

13. APPROVED LV JOINT COMPONENTS

13.1 Low Voltage Joint Shells

Manufacturer/Supplier	Type	Description	Remarks	SP EnergyNetworks Part Number
WT Henley	HIPS	Straight Joint	Henley ref 51602-04	12056182
		Straight Joint	Henley ref 51602-05	12056194
		Straight Joint	Henley ref 51602-08	12056339
		Breech Joint	Henley ref 51602-11	12056273
		Breech Joint	Henley ref 51602-13	12056236
		Straight Joint / Service	Henley ref 51602-14	12056200
		Breech Joint	Henley ref 51602-16	12056261
		Straight Joint / Service	Henley ref 51602-20	12056212
		Service / Pot end	Henley ref 51602-95	12056297
		Extended Joint	Henley ref 51602-95-Long	12056340
		Pot End	Henley ref 51603-74	12056686
		Straight Joint	Henley ref 51662-14	12056327
Sicame	2.5mm	Straight Joint	Sicame ref MST range	
		Breech Joint	Sicame ref MB range	



13.2 Mechanical Connectors

Manufacturer/Supplier	Type	Description	Remarks	SP EnergyNetworks Part Number
WT Henley	4 Core - 1 Phase Ring Connector	240mm ²		12051100
		95mm ² -185mm ²		12051093
	4 Core - 3 Phase Ring Connector	240mm ²		12051123
		95mm ² -185mm ²		12051111
	3 core - 3 phase Ring connector	300mm ²		12056390
		70-185mm ²		12056388
	3 Core - 1 Phase Ring Connector	300mm ²		12056376
		70mm ² -185mm ²		12056364
	Ring Connector 4 Way Neutral Unit	all sizes		12056470
	Ring Connector Terminal Unit	all sizes		12056455
	Ring Connector Dummy unit	all sizes		12056467
Sicame	Neutral/Earth Connector NE15	95-300mm ²		



Mechanical Connectors (cont.)

Manufacturer/Supplier	Type	Description	Remarks	SP EnergyNetworks Part Number
Sicame	Insulation Piercing Service Connector PCS1/1	For 95mm ² waveform	Approved for use in PS South area only	12050181
	Insulation Piercing Service Connector PCS1/2	For 185mm ² waveform	Approved for use in PS South area only	12050182
	Service Connector for PILC Cable US6	For 95mm ² PILC cable	Approved for use in PS South area only	12050150
	Service Connector for PILC Cable US7	For 185mm ² PILC	Approved for use in PS South area only	12050151
	Waveform/Transition Straight Connector UM95	For 95mm ² conductors		
	Waveform/Transition Straight Connector UM185	For 185mm ² conductors		
	Waveform/Transition Straight Connector UM300	For 300mm ² conductors		
	Waveform/Transition Breech Connector WB95	For 95mm ² conductors		
	Waveform/Transition Breech Connector WB185	For 185mm ² conductors		
	Waveform/Transition Breech Connector WB300	For 300mm ² /0.5in ² conductors		
	Service bridge piece for use with UM95 only			
	Service bridge piece for use with UM185 only			
	Service bridge piece for use with UM300 only			

13.3 Low Voltage Heat Shrink Components

13.3.1 Breakouts

Manufacturer & Approved Factory	Description	Approved Component	Remarks	SP EnergyNetworks Part Number
Tyco (Raychem)	For 4mm ² < 35mm ² cables	502K033-53/42		12358891
	For 35mm ² < 70mm ² cables	502K046-53/42		12358708
	For 70mm ² < 150mm ² cables	502K016-53/42		12358447
	For 185mm ² < 300mm ² cables	502K026-53/42		12358459

13.3.2 End Caps

Manufacturer & Approved Factory	Description	Approved Component	Remarks	SP EnergyNetworks Part Number
Tyco (Raychem)	For cable diameter 4mm < 8mm	102L011-135/239		12358700
	For cable diameter 8mm < 17mm	102L022-135/239		12358710
	For cable diameter 17mm < 30mm	102L033-135/239		12358733
	For cable diameter 30mm < 45mm	102L044-135/239		12358794
	For cable diameter 45mm < 65mm	102L048-37/239		12358411
	For cable diameter 65mm < 95mm	102L055-37/239		12358423



13.3.3 Standard Tubing

Manufacturer & Approved Factory	Description	Approved Component	Remarks	SP EnergyNetworks Part Number
Tyco (Raychem)	12.7/6.4mm tubing	CGPT-19/9.5-0		12052287
	19/9.5mm tubing	CGPT-12.7/6.4-0		12052263
	25.4/12.7mm tubing	CGPT-25.4/12.7-0		12052299
	32/16mm tubing	CGPT-32/16-0		12052354
	38/19mm tubing	CGPT-38/19-0		12052305
	51/26mm tubing	CGPT-51/26-0		12052457
	76/38mm tubing	CGPT-76/38-0		12052342

13.3.4 Medium Wall Tubing

Manufacturer & Approved Factory	Description	Approved Component	Remarks	SP EnergyNetworks Part Number
Tyco (Raychem)	25/8mm x 225 m/w tubing	MWTM-25/8-225/172		23783400
	35/12mm x 300 m/w tubing	MWTM-35/12-300/172		23783401
	35/12mm x 400 m/w tubing	MWTM-35/12-400/172		23783402
	50/16mm x 500 m/w tubing	MWTM-50/16-500/172		23783403
	50/16mm x 750 m/w tubing	MWTM-50/16-750/172		23783404
	75/22mm x 500 m/w tubing	MWTM-75/22-500/172		12358715
	115/34mm x 300 m/w tubing	MWTM-115/34-300/172		23783405

14. APPROVED LV LINK BOXES & SERVICE DISTRIBUTION UNITS

14.1 LV Link Boxes

Manufacturer /Supplier	Manufacturers reference	Approval Category	Remarks	EnergyNetworks Part Number
Sicame	LVD/FLB	A	2-way 3-core PME untailed	
			2-way 4-core SNE untailed	
			4-way 3-core PME untailed	
			4-way 4-core SNE untailed	

14.2 LV Service Distribution Unit

Manufacturer /Supplier	Manufacturers reference	Approval Category	Remarks	EnergyNetworks Part Number
Sicame	LVD 12S	S	Installation is restricted to Cell-phone sites where multiple services (usually 3-phase) are required at one location. Main cable – 95mm ² or 185mm ² 3-core waveform only.	
	LVD 18S	S	Service cables – 25mm ² or 35mm ² single phase or 3- three phase CNE service cables only.	

15. APPROVED TAPES

15.1 Tapes

Manufacturer/Supplier	Type	Description	Remarks	SP EnergyNetworks Part Number
Cable Components Ltd Winn & Coles	Anti-Corrosion Wrapping Tape			12355458
Pirelli Cable Components Ltd Scapa Tapes	Bitumen Impregnated Insulating Cotton Tape			12355203
Cable Components Ltd	Bitumen Hessian Tape - 23mm			12355215
Boddingtons	Butyl Mastic Tape			12354600
Pirelli	Crepe Paper Tape (set A)			12357728
Cable Components Ltd	Crepe Paper Tape (set B)			12357730
Pirelli Cables	Crepe Paper Tape (set C)			12357741
Cable Components Ltd Winn & Coles	Denso Tape			12355460
Pirelli Cable Components Ltd	Egyptian Tape			12355562
WT Henley	Hessian Tape - 25mm			12056753
Pirelli Cable Components Ltd	Oil Resin Impregnated Insulating Cotton Tape			12355094
'3M' Scapa Tapes	Putty Tape			12354820
Scapa Tapes	Self Amalgamating Tape (EPR)			12355689
Pirelli	Terylene Tape			12354636
'3M'	Vinyl Mastic Tape			12352809



15.2 Insulating Tapes

Manufacturer & Approved Factory	Type	Description	Remarks	SP EnergyNetworks Part Number
Advance Tapes '3M' Scapa Tapes	PVC Insulating Tape	black		12354831
		red		12354867
		yellow		12354879
		blue		12354843
		green		12354855
		green/yellow		12355161
'3M'	PVC '88' Tape	black		12056522

15.3 Phase Marking Tapes

Manufacturer & Approved Factory	Type	Description	Remarks	SP EnergyNetworks Part Number
Advance Tapes	Numbered phase marking tape	L1		
		L2		
		L3		
		N		
'3M'	Numbered phase marking tape	L1		
		L2		
		L3		
		N		



16. APPROVED SOLDERS & PLUMBING METALS

16.1 Solder and Plumbing Metal

Manufacturer / Supplier	Type	BSEN 29453 Ref.	Nominal Weight (gm)	Remarks	SP EnergyNetworks Part Number
Fry's Metals Ltd DKL Metals Ltd George W Neal Ltd Mountstar Metals Ltd	Grade "G" solder	Alloy number 5	250		15740535
	Grade "D" plumbing metal	Alloy number 15	500		15740500
	Abrasion tinning metal	SP spec 72/0650/03	250		15745820
	Grade "H" plumbing metal	Alloy number 6	500		15740540
	Grade "M" solder	No equivalent	250		15740520
	Aluminium solder	SP spec 72/0650/03	250		15745821
	Flux cored solder wire (2.5mm dia)	SP spec 72/0650/03	500		15740547 15743380

17. CABLE SYSTEMS FOR USE AT 132 KV AND ABOVE

Approvals detailed in this section are non-project specific. Listed cables and accessories are qualified as individual items, allowing them to be included in Tender submissions for future cable projects at 132kV and above.

Prior to connection to the Company's network, a further project specific assessment is required. This will consider the offered cable system design as a whole, the compatibility of the individual components and their suitability for the Project in question. This project specific assessment will be carried out post-Tender and prior to contract award.

The detail and limitations of the range of Approvals for each manufacturer is documented separately to maintain confidentiality and has been advised individually to each manufacturer.

17.1 132kV XLPE cables and associated accessories

Manufacturer	Approved Manufacturing Sites *	Approved Accessories **
ABB	Karlskrona, Sweden	Straight joints, sectionalising straight joints, outdoor terminations, gas immersed terminations.
NKT	Cologne, Germany	Straight joints, sectionalising straight joints, outdoor terminations.
Prysmian	Delft, Holland Gron, France Wrexham, UK	Straight joints, sectionalising straight joints, XLPE to oil transition joint, terminations, gas immersed terminations.

* Only specific extrusion lines are Approved for each site. The details of Approved lines have been advised to each manufacturer.

** A limited range of accessories is Approved from each Manufacturer. The details of Approved accessories have been advised to each manufacturer.

17.2 275kV XLPE cables and associated accessories

Manufacturer	Approved Manufacturing Sites *	Approved Accessories **
ABB	Karlskrona, Sweden	Straight joints, sectionalising straight joints, outdoor terminations.
NKT	Cologne, Germany	Straight joints, sectionalising straight joints, outdoor terminations.
Prysmian	Gron, France	Straight joints, sectionalising straight joints, outdoor terminations, gas immersed terminations.

17.3 400kV XLPE cables and associated accessories

Manufacturer	Approved Manufacturing Sites *	Approved Accessories **

* Only specific extrusion lines are Approved for each site. The details of Approved lines have been advised to each manufacturer.

** A limited range of accessories is Approved from each Manufacturer. The details of Approved accessories have been advised to each manufacturer.