

Company Directive

STANDARD TECHNIQUE: SD8B/3 (Part 4)

Relating to 66kV Underground Cable Ratings

Policy Summary

This document contains 66kV cable ratings of the various types of 66kV cables used within Western Power Distribution South West and South Wales areas. It assumes that the cables will be subjected to the cyclic load as given by the load curve shown in figure one. If other load curves are required contact the Company Cable Engineer.

This Standard Technique should be used when designing any 66kV electricity distribution network that has underground cables in it.

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Approved by 

Policy Manager

Date: 30-03-09

All references to Western Power Distribution or WPD must be read as National Grid Electricity Distribution or NGED

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1.0 INTRODUCTION

This Standard Technique replaces Standard Technique ST: SD 8B/2.

This Part 4 document of ST: SD 8B sets out the all the WPD, 66kV underground cable Sustained ratings and Cyclic ratings for winter, spring, summer and autumn which are to be applied. These ratings are based on Crater for HV polymeric Cables, Crater for Oil filled Cables.

2.0 UNDERGROUND CABLES

The main factors governing the rating of underground cables are: -

Maximum depth of lay;

Soil thermal resistivity T_r (g);

Ground ambient temperature ($^{\circ}\text{C}$);

Air ambient temperature ($^{\circ}\text{C}$);

Cyclic loading conditions;

Maximum permissible conductor temperature;

Proximity to other cables;

Whether the cable is laid direct in the ground, in ducts or in air.

Duct dimensions and duct type

3.0 CRITERIA

3.1 General criteria for 66kV cables (applies to Oil filled, EPR and XLPE cables)

A winter soil resistivity of 0.9°Cm/W and a summer soil resistivity of 1.2°Cm/W are considered realistic for the South West and South Wales, although the possibility of localised higher values may need to be taken into account. To control the thermal resistivity of the surrounding medium then the best example would be to use cement bound sand (CBS) backfill for a cable route, but this is expensive. Generally crushed Limestone dust or crushed Granite dust 3mm to dust is suitable as this gives a T_r of 1.2°Cm/W .

Ground ambient temperatures across the South West and South Wales vary between 7°C in the winter and 15°C in the summer. These values apply in most locations, but winter ground temperatures in the city centres such as Bristol, Cardiff, Exeter, Plymouth and Swansea will be about 2°C higher.

3.2 The current ratings quoted in this document are maximum values based on balanced loads.

- 3.3 The current ratings quoted apply to cables supplying loads, during the requisite season.
- 3.4 The current ratings specified are to be adjusted where the conditions are known to vary from those quoted in this instruction i.e. high summer loads or grouping.
- 3.5 The maximum conductor temperature for oil filled cable is 85°C. The maximum conductor temperature for EPR and XLPE cables is 90°C.
- 3.6 When two or more cables or trefoil groups are laid in the same trench then a derating factor needs to be applied to both circuits. The amount of derating is dependant upon the spacing of the circuits. All spacing distances quoted in this document are **centre-to-centre** spacing's of the cables or trefoil groups.
- 3.7 Only 66kV Ratings are now included in this document.
- 3.8 The ratings are detailed as **Sustained** - Winter, Spring, Summer and Autumn; **Cyclic** - Winter, Spring, Summer and Autumn; for each of the cable types included in this document.
- 3.9 Each cable type for which ratings have been generated the typical assumed installation conditions are given in the formation shown below: -

Depth of lay 1m;

Soil resistivity of 0.9°Cm/W;

Ground ambient temperature of 10°C;

Maximum conductor temperature of 85°C for 66kV for 3 core oil filled cables and 85°C for 66kV single core oil filled cables. All polymeric cables e.g. EPR and XLPE have a maximum conductor temperature of 90°C.

No allowance made for grouping of cable circuits.

4.0 DEFINITIONS

All 66kV EPR single core circuits, for the purpose of this document, have been assumed to be three single-core polymeric cables laid touching, throughout their length, in trefoil formation. That the copper wire screens or the lead sheaths of the cables have been solidly bonded together and earthed at both ends of the circuit.

It should be noted that when triplex or single core cable, which has been laid in trefoil, a maximum of 12% of the TOTAL ROUTE LENGTH, can be laid in flat space configuration without affecting the trefoil rating. If more than 12% of the Total Route Length is laid in flat space configuration then high circulating currents will flow in the copper wire screens or the lead sheath of the single core cables. This must be avoided. If the 12% cannot be achieved then contact the Company Cable Engineer at Avonbank.

4.1 **Sustained, Continuous or Steady-State rating**

The sustained rating is the maximum current that can be carried, in defined conditions, without the assumed maximum conductor temperature being exceeded.

4.2 **Cyclic rating**

A cyclic rating is the maximum current that maybe carried during the prolonged application of a succession of identical 24-hour load cycles, without the assumed maximum conductor temperature being exceeded.

4.3 **Utilisation factor**

This does not apply for 66kV cables.

4.4 **Load Factor**

The ratio of the number of units supplied during a given period, to the number of units that would be supplied, had the maximum demand been maintained throughout that period. This is usually expressed as a percentage.

4.5 **Soil thermal conductivity**

The soil thermal conductivity is the thermal transmission in unit time through unit area of homogeneous soil of unit thickness, when unit difference of temperature is established between its surfaces.

4.6 **Soil thermal resistivity**

The ratings given are calculated for a damp thermal resistivity, which is suitable for rating cables for winter-peak loads.

4.7 **Ground ambient temperature**

Where a cable circuit carries a sustained load and does not have a seasonal variation it should be rated for the maximum summer value of ground temperature.

4.8 **Ducts**

A duct up to 15m in length can be used without derating the cable. Two or more duct lengths can be used on a section, provided that there is no more than 30m of duct in a particular 250m cable section and that there is a minimum of 10m separation between each duct length. See the example given below.

Example of two 15m-duct lengths in a 250m-cable section.

The correct duct rating shall be used if 15m or more of continuous duct is installed on a particular 250m-cable section. This rating is dependant upon the type of ducting used, for this reason the ratings given in the tables contain values for both smooth walled "PVC" and "Rigiduct" (Rigiduct is a twin walled duct) type ducting.

The rating of the cable section can be restored if the ducts are bentonited after the cables have been installed. To ensure the thermal equivalence to the direct buried parts of the route, the ducts shall be completely filled with a bentonite-sand-cement mixture.

The filling medium shall be prepared by adding 20 parts of sand and 8 parts of cements, by weight, to 100 parts of a 10:1 water/bentonite mixture.

Note: - Provided the bentonite is sealed into the duct with duct seals, and then the bentonite forms a gel, which is stabilized by the cement, and the addition of sand increases the load-bearing properties of the mixture. Should it be necessary to remove this mixture, it may be flushed out of the ducts by using high-pressure water jets.

Ducts, which are filled with a bentonite mixture, shall be installed wherever possible in a concrete surround but if not, any joints in the duct run must be effectively sealed. At the duct ends, the gap around the cable must be effectively sealed to prevent migration of the bentonite mixture and preserve its moisture content under service conditions.

In general duct lengths of up to 100m can be filled where a standard 150mm nominal bore duct is installed.

4.9 Cables exposed to the sun

To reduce the effect of solar radiation it is recommended that cables should be shielded from direct rays of the sun without restriction of ventilation.

4.10 Effects of grouping of cables

No allowance has been made for grouping in the ratings listed in the tables. Use the correction factors given in Table 1 for various grouping arrangements.

When two or more circuits of the same voltage are laid in close proximity the ratings of the cables must be reduced by multiply the group-rating factor given in Table 1 with the relevant cable rating selected from this document. It should be noted that if thermally independence of both the circuits is required, then the circuits need a centre-to-centre spacing of 2.5m.

All spacing quoted in Table 1, are a centre-to-centre spacing for the relevant circuits.

4.11 Loading Conditions

All the ratings listed in this document are calculated for a particular typical domestic/commercial daily load curve, having a loss load factor of 0.5. See Figure 1 for the load curve.

Ratings given for cables installed in air and clipped direct to a wall are the steady-state ratings. Cables installed in this manner DO NOT have a Cyclic rating just their sustained or steady state rating.

5.0 FURTHER GUIDANCE

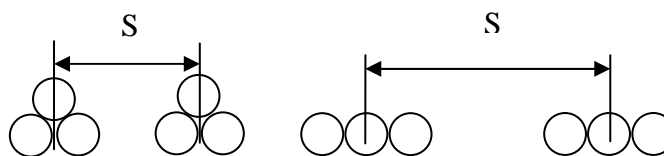
If required, further guidance should be sought from the Company Cable Engineer, Policy Section, Avonbank, Feeder Road, Bristol where necessary.

5.1 INDEX

TABLE	DESCRIPTION
Table 1	Group Derating Factors for Circuits.
Figure 1	Typical Load Curve G.
A1 win	66kV XLPE Lead Sheath and MDPE oversheath - WINTER – Sustained and Cyclic Current Ratings.
A2 spr	66kV XLPE Lead Sheath and MDPE oversheath - SPRING – Sustained and Cyclic Current Ratings.
A3 sum	66kV XLPE Lead Sheath and MDPE oversheath - SUMMER – Sustained and Cyclic Current Ratings.
A4 aut	66kV XLPE Lead Sheath and MDPE oversheath - AUTUMN – Sustained and Cyclic Current Ratings.
B1 win	66kV EPR Cu. Wire Screen and MDPE oversheath - WINTER – Sustained and Cyclic Current Ratings.
B2 spr	66kV EPR Cu. Wire Screen and MDPE oversheath - SPRING – Sustained and Cyclic Current Ratings.
B3 sum	66kV EPR Cu. Wire Screen and MDPE oversheath - SUMMER – Sustained and Cyclic Current Ratings.
B4 aut	66kV EPR Cu. Wire Screen and MDPE oversheath - AUTUMN – Sustained and Cyclic Current Ratings.
C1 win	66kV Three core, oil filled ducted lead sheath cable - WINTER – Sustained and Cyclic Current Ratings.
C2spr	66kV Three core, oil filled ducted lead sheath cable - SPRING – Sustained and Cyclic Current Ratings.
C3 sum	66kV Three core, oil filled ducted lead sheath cable - SUMMER – Sustained and Cyclic Current Ratings.
C4 aut	66kV Three core, oil filled ducted lead sheath cable - AUTUMN – Sustained and Cyclic Current Ratings.
D1 win	66kV Three core, oil filled ductless corrugated Al sheath cable - WINTER – Sustained and Cyclic Current Ratings.
D2 spr	66kV Three core, oil filled ductless corrugated Al sheath cable - SPRING – Sustained and Cyclic Current Ratings.
D3 sum	66kV Three core, oil filled ductless corrugated Al sheath cable - SUMMER – Sustained and Cyclic Current Ratings.
D4 aut	66kV Three core, oil filled ductless corrugated Al sheath cable - AUTUMN – Sustained and Cyclic Current Ratings.
E1 win	66kV Single core, oil filled lead sheath cable - WINTER – Sustained and Cyclic Current Ratings.
E2 spr	66kV Single core, oil filled lead sheath cable - SPRING – Sustained and Cyclic Current Ratings.
E3 sum	66kV Single core, oil filled lead sheath cable - SUMMER – Sustained and Cyclic Current Ratings.
E4 aut	66kV Single core, oil filled lead sheath cable - AUTUMN – Sustained and Cyclic Current Ratings.
F1 win	66kV Single core, oil filled corrugated Al sheath cable - WINTER – Sustained and Cyclic Current Ratings.
F2 spr	66kV Single core, oil filled corrugated Al sheath cable - SPRING – Sustained and Cyclic Current Ratings.
F3 sum	66kV Single core, oil filled corrugated Al sheath cable - SUMMER – Sustained and Cyclic Current Ratings.
F4 aut	66kV Single core, oil filled corrugated Al sheath cable - AUTUMN – Sustained and Cyclic Current Ratings.

TABLE 1

GROUP DERATING FACTORS FOR CIRCUITS OF THREE SINGLE-CORE CABLES, IN TREFOIL or LAID FLAT, HORIZONTAL FORMATION, LAID DIRECT.



Type of Cable	No. of Circuits	Spacing of Circuits – Metre (S).					
		Touching		0.15	0.20	0.3	0.45
		Trefoil	Laid Flat				
66kV Cables	2	0.78	0.80	0.81	0.82	0.85	0.88
	3	0.66	0.69	0.71	0.73	0.76	0.80
	4	0.60	0.63	0.65	0.67	0.72	0.76
	5	0.55	0.58	0.61	0.63	0.68	0.73

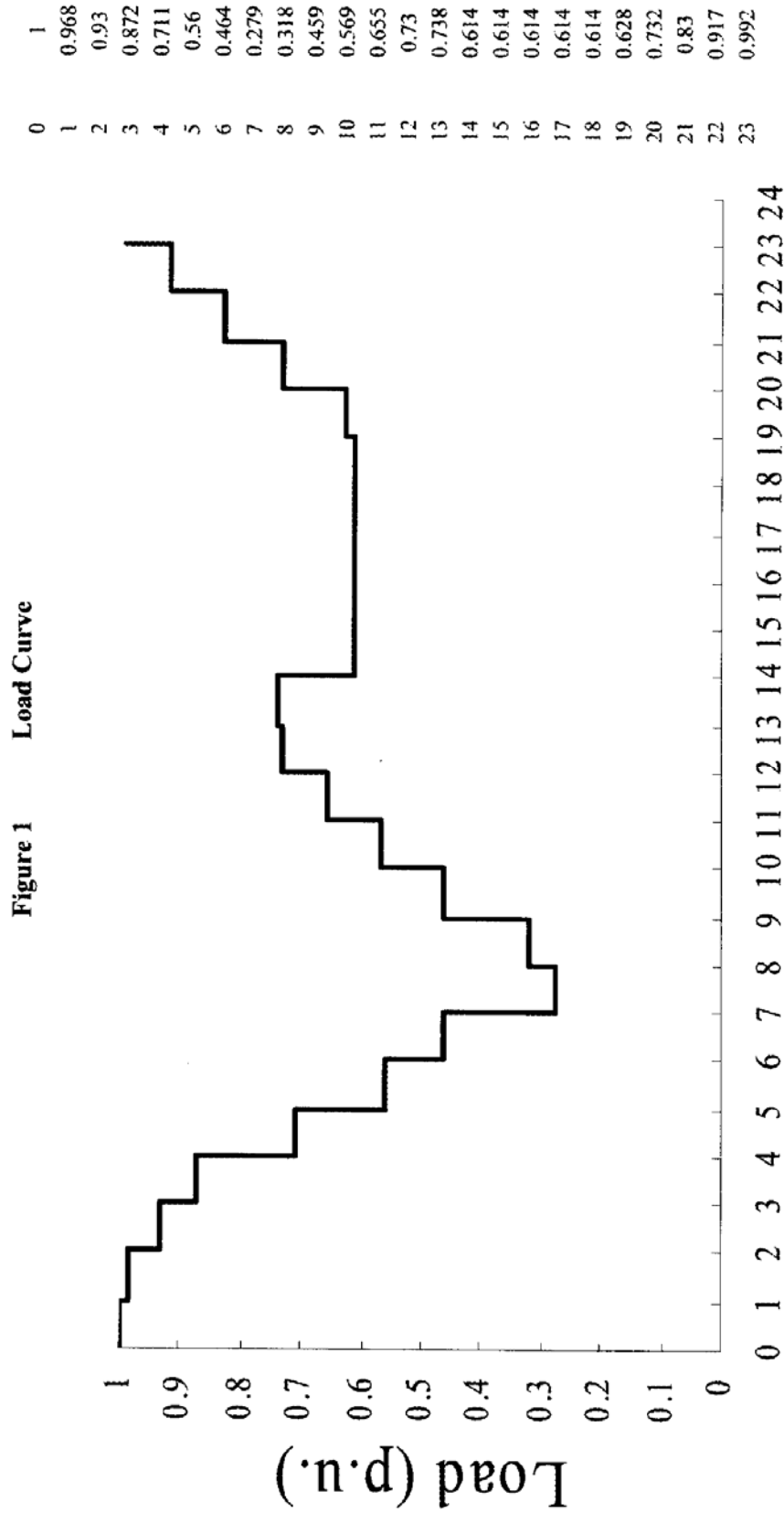


Figure 1

**66kV SINGLE CORE X.L.P.E. INSULATED LEAD SHEATH & M.D.P.E. OUTER
SHEATH CABLES, LAID IN TREFOIL.** (Dry design)

Winter *SUSTAINED* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	SUSTAINED CURRENT RATINGS-AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
185mm ² Copper	520	472	455	598
240mm ² Copper	600	534	514	702
300mm ² Copper	671	590	565	796
400mm ² Copper	757	654	624	911
500mm ² Copper	851	724	689	1044

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	0.9°C m/W
Ground Ambient Temperature	10°C
Air Ambient Temperature	10°C
Maximum Conductor Temperature	90°C
Ratings based on Crater for HV polymeric cables.	

66kV SINGLE CORE X.L.P.E. INSULATED LEAD SHEATH & M.D.P.E. OUTER SHEATH CABLES, LAID IN TREFOIL. (Dry design)

Winter CYCLIC Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	CYCLIC CURRENT RATINGS-AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
185mm ² Copper	598	547	529	598
240mm ² Copper	694	624	601	702
300mm ² Copper	780	693	666	796
400mm ² Copper	884	774	741	911
500mm ² Copper	1001	864	825	1044

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	0.9°C m/W
Ground Ambient Temperature	10°C
Air Ambient Temperature	10°C
Maximum Conductor Temperature	90°C
Ratings based on Crater for HV polymeric cables.	

**66kV SINGLE CORE X.L.P.E. INSULATED LEAD SHEATH & M.D.P.E. OUTER
SHEATH CABLES, LAID IN TREFOIL.** (Dry design)

Spring *SUSTAINED* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	SUSTAINED CURRENT RATINGS-AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
185mm ² Copper	486	447	433	598
240mm ² Copper	559	505	487	702
300mm ² Copper	626	557	536	796
400mm ² Copper	704	616	591	911
500mm ² Copper	791	682	651	1044

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.05°C m/W
Ground Ambient Temperature	12°C
Air Ambient Temperature	12°C
Maximum Conductor Temperature	90°C
Ratings based on Crater for HV polymeric cables.	

TABLE A2 – Spr

66kV SINGLE CORE X.L.P.E. INSULATED LEAD SHEATH & M.D.P.E. OUTER SHEATH CABLES, LAID IN TREFOIL. (Dry design)

Spring *CYCLIC* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	CYCLIC CURRENT RATINGS-AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
185mm ² Copper	564	525	508	598
240mm ² Copper	654	597	577	702
300mm ² Copper	734	662	638	796
400mm ² Copper	831	738	709	911
500mm ² Copper	939	822	787	1044

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.05°C m/W
Ground Ambient Temperature	12°C
Air Ambient Temperature	12°C
Maximum Conductor Temperature	90°C
Ratings based on Crater for HV polymeric cables.	

TABLE A3 - Sum

**66kV SINGLE CORE X.L.P.E. INSULATED LEAD SHEATH & M.D.P.E. OUTER
SHEATH CABLES, LAID IN TREFOIL.** (Dry design)

Summer *SUSTAINED* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	SUSTAINED CURRENT RATINGS-AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
185mm ² Copper	453	422	409	598
240mm ² Copper	521	476	461	702
300mm ² Copper	582	524	506	796
400mm ² Copper	655	579	557	911
500mm ² Copper	735	640	614	1044

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.2 C m/W
Ground Ambient Temperature	15°C
Air Ambient Temperature	15°C
Maximum Conductor Temperature	90°C
Ratings based on Crater for HV polymeric cables.	

TABLE A3 - Sum

66kV SINGLE CORE X.L.P.E. INSULATED LEAD SHEATH & M.D.P.E. OUTER SHEATH CABLES, LAID IN TREFOIL. (Dry design)

Summer *CYCLIC* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	CYCLIC CURRENT RATINGS-AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
185mm ² Copper	531	500	485	598
240mm ² Copper	614	568	550	702
300mm ² Copper	690	629	608	796
400mm ² Copper	780	701	674	911
500mm ² Copper	880	779	748	1044

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.2 °C m/W
Ground Ambient Temperature	15°C
Air Ambient Temperature	15°C
Maximum Conductor Temperature	90°C
Ratings based on Crater for HV polymeric cables.	

TABLE A4 - Aut

**66kV SINGLE CORE X.L.P.E. INSULATED LEAD SHEATH & M.D.P.E. OUTER
SHEATH CABLES, LAID IN TREFOIL.** (Dry design)

Autumn *SUSTAINED* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	SUSTAINED CURRENT RATINGS-AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
185mm ² Copper	477	441	427	598
240mm ² Copper	549	498	481	702
300mm ² Copper	614	549	529	796
400mm ² Copper	691	607	583	911
500mm ² Copper	777	672	642	1044

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.1 C m/W
Ground Ambient Temperature	12°C
Air Ambient Temperature	12°C
Maximum Conductor Temperature	90°C
Ratings based on Crater for HV polymeric cables.	

66kV SINGLE CORE X.L.P.E. INSULATED LEAD SHEATH & M.D.P.E. OUTER SHEATH CABLES, LAID IN TREFOIL. (Dry design)

Autumn *CYCLIC* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	CYCLIC CURRENT RATINGS-AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
185mm ² Copper	556	519	504	598
240mm ² Copper	644	591	571	702
300mm ² Copper	724	655	632	796
400mm ² Copper	819	730	702	911
500mm ² Copper	925	813	779	1044

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.1 °C m/W
Ground Ambient Temperature	12°C
Air Ambient Temperature	12°C
Maximum Conductor Temperature	90°C
Ratings based on Crater for HV polymeric cables.	

**66kV SINGLE CORE EPR INSULATED COPPER WIRE SCREEN & M.D.P.E.
OUTER SHEATH CABLES, LAID IN TREFOIL.** (Wet design)

Winter *SUSTAINED* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	SUSTAINED CURRENT RATINGS-AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
185mm ² Copper	479	423	409	533
240mm ² Copper	552	476	458	625
300mm ² Copper	616	522	501	708
400mm ² Copper	691	574	550	809
500mm ² Copper	777	635	606	929

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	0.9°C m/W
Ground Ambient Temperature	10°C
Air Ambient Temperature	10°C
Maximum Conductor Temperature	90°C
Ratings based on Crater for HV polymeric cables.	

TABLE B1 - Win

66kV SINGLE CORE EPR INSULATED COPPER WIRE SCREEN & M.D.P.E. OUTER SHEATH CABLES, LAID IN TREFOIL. (Wet design)

Winter *CYCLIC* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	CYCLIC CURRENT RATINGS-AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
185mm ² Copper	544	487	472	533
240mm ² Copper	631	552	535	625
300mm ² Copper	708	611	589	708
400mm ² Copper	800	679	653	809
500mm ² Copper	906	758	727	929

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	0.9°C m/W
Ground Ambient Temperature	10°C
Air Ambient Temperature	10°C
Maximum Conductor Temperature	90°C
Ratings based on Crater for HV polymeric cables.	

TABLE B2 - Spr

**66kV SINGLE CORE EPR INSULATED COPPER WIRE SCREEN & M.D.P.E.
OUTER SHEATH CABLES, LAID IN TREFOIL.** (Wet design)

Spring *SUSTAINED* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	SUSTAINED CURRENT RATINGS-AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
185mm ² Copper	449	402	390	533
240mm ² Copper	516	451	436	625
300mm ² Copper	575	494	476	708
400mm ² Copper	644	543	521	809
500mm ² Copper	723	599	573	929

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.05°C m/W
Ground Ambient Temperature	12°C
Air Ambient Temperature	12°C
Maximum Conductor Temperature	90°C

Ratings based on Crater for HV polymeric cables.

TABLE B2 - Spr

66kV SINGLE CORE EPR INSULATED COPPER WIRE SCREEN & M.D.P.E. OUTER SHEATH CABLES, LAID IN TREFOIL. (Wet design)

Spring *CYCLIC* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	CYCLIC CURRENT RATINGS-AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
185mm ² Copper	515	467	454	533
240mm ² Copper	596	530	514	625
300mm ² Copper	669	585	565	708
400mm ² Copper	754	648	625	809
500mm ² Copper	852	722	694	929

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.05°C m/W
Ground Ambient Temperature	12°C
Air Ambient Temperature	12°C
Maximum Conductor Temperature	90°C
Ratings based on Crater for HV polymeric cables.	

TABLE B3 - Sum

**66kV SINGLE CORE EPR INSULATED COPPER WIRE SCREEN & M.D.P.E.
OUTER SHEATH CABLES, LAID IN TREFOIL.** (Wet design)

Summer *SUSTAINED* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	SUSTAINED CURRENT RATINGS-AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
185mm ² Copper	420	380	369	533
240mm ² Copper	482	426	413	625
300mm ² Copper	536	466	450	708
400mm ² Copper	600	511	492	809
500mm ² Copper	673	563	540	929

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.2 C m/W
Ground Ambient Temperature	15°C
Air Ambient Temperature	15°C
Maximum Conductor Temperature	90°C
Ratings based on Crater for HV polymeric cables.	

66kV SINGLE CORE EPR INSULATED COPPER WIRE SCREEN & M.D.P.E. OUTER SHEATH CABLES, LAID IN TREFOIL. (Wet design)

Summer *CYCLIC* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	CYCLIC CURRENT RATINGS-AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
185mm ² Copper	487	446	435	533
240mm ² Copper	562	505	491	625
300mm ² Copper	629	557	539	708
400mm ² Copper	708	616	595	809
500mm ² Copper	798	685	660	929

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.2 °C m/W
Ground Ambient Temperature	15°C
Air Ambient Temperature	15°C
Maximum Conductor Temperature	90°C
Ratings based on Crater for HV polymeric cables.	

**66kV SINGLE CORE EPR INSULATED COPPER WIRE SCREEN & M.D.P.E.
OUTER SHEATH CABLES, LAID IN TREFOIL.** (Wet design)

Autumn *SUSTAINED* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	SUSTAINED CURRENT RATINGS-AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
185mm ² Copper	442	397	385	533
240mm ² Copper	507	445	431	625
300mm ² Copper	565	487	470	708
400mm ² Copper	633	535	515	809
500mm ² Copper	710	591	566	929

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.1 C m/W
Ground Ambient Temperature	12°C
Air Ambient Temperature	12°C
Maximum Conductor Temperature	90°C

Ratings based on Crater for HV polymeric cables.

TABLE B4 – Aut

66kV SINGLE CORE EPR INSULATED COPPER WIRE SCREEN & M.D.P.E. OUTER SHEATH CABLES, LAID IN TREFOIL. (Wet design)

Autumn *CYCLIC* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	CYCLIC CURRENT RATINGS-AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
185mm ² Copper	509	463	457	533
240mm ² Copper	588	525	509	625
300mm ² Copper	659	579	560	708
400mm ² Copper	743	641	619	809
500mm ² Copper	839	714	687	929

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.1 °C m/W
Ground Ambient Temperature	12°C
Air Ambient Temperature	12°C
Maximum Conductor Temperature	90°C
Ratings based on Crater for HV polymeric cables.	

TABLE C1 - Win

66kV THREE CORE, OIL FILLED, DUCTED, LEAD SHEATH, CABLE.Winter *SUSTAINED* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	SUSTAINED CURRENT RATINGS-AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm ² Copper	580	485	455	606
<u>Aluminium conductors</u>				
350mm ² Al	528	443	415	562
<u>Imperial sizes</u>				
<u>Copper conductors</u>				
0.35in ² Copper	549	460	432	571

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	0.9°C m/W
Ground Ambient Temperature	10°C
Air Ambient Temperature	10°C
Maximum Conductor Temperature	85°C

Ratings based on Crater for Oil filled cables.

66kV THREE CORE, OIL FILLED, DUCTED, LEAD SHEATH, CABLE.Winter *CYCLIC* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	CYCLIC CURRENT RATINGS-AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm ² Copper	674	535	496	606
<u>Aluminium conductors</u>				
350mm ² Al	617	491	453	562
<u>Imperial sizes</u>				
<u>Copper conductors</u>				
0.35in ² Copper	636	507	470	571

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	0.9°C m/W
Ground Ambient Temperature	10°C
Air Ambient Temperature	10°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

66kV THREE CORE, OIL FILLED, DUCTED, LEAD SHEATH, CABLE.Spring *SUSTAINED* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	SUSTAINED CURRENT RATINGS-AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm ² Copper	540	463	436	606
<u>Aluminium conductors</u>				
350mm ² Al	492	423	397	562
<u>Imperial sizes</u>				
<u>Copper conductors</u>				
0.35in ² Copper	512	439	414	571

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.05°C m/W
Ground Ambient Temperature	12°C
Air Ambient Temperature	12°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

TABLE C2 - Spr

66kV THREE CORE, OIL FILLED, DUCTED, LEAD SHEATH, CABLE.Spring *CYCLIC* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	CYCLIC CURRENT RATINGS-AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm² Copper	635	518	481	606
<u>Aluminium conductors</u>				
350mm² Al	582	474	439	562
<u>Imperial sizes</u>				
<u>Copper conductors</u>				
0.35in² Copper	600	490	456	571

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.05°C m/W
Ground Ambient Temperature	12°C
Air Ambient Temperature	12°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

66kV THREE CORE, OIL FILLED, DUCTED, LEAD SHEATH, CABLE.**Summer *SUSTAINED* Current Ratings**

SIZE AND TYPE OF CABLE CONDUCTOR	SUSTAINED CURRENT RATINGS-AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm² Copper	502	440	416	606
<u>Aluminium conductors</u>				
350mm² Al	457	401	378	562
<u>Imperial sizes</u>				
<u>Copper conductors</u>				
0.35in² Copper	476	417	395	571

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.2°C m/W
Ground Ambient Temperature	15°C
Air Ambient Temperature	15°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

66kV THREE CORE, OIL FILLED, DUCTED, LEAD SHEATH, CABLE.**Summer *CYCLIC* Current Ratings**

SIZE AND TYPE OF CABLE CONDUCTOR	CYCLIC CURRENT RATINGS-AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm² Copper	597	497	463	606
<u>Aluminium conductors</u>				
350mm² Al	546	455	422	562
<u>Imperial sizes</u>				
<u>Copper conductors</u>				
0.35in² Copper	564	471	439	571

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.2°C m/W
Ground Ambient Temperature	15°C
Air Ambient Temperature	15°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

66kV THREE CORE, OIL FILLED, DUCTED, LEAD SHEATH, CABLE.**Autumn *SUSTAINED* Current Ratings**

SIZE AND TYPE OF CABLE CONDUCTOR	SUSTAINED CURRENT RATINGS-AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm² Copper	531	458	432	606
<u>Aluminium conductors</u>				
350mm² Al	483	418	393	562
<u>Imperial sizes</u>				
<u>Copper conductors</u>				
0.35in² Copper	503	435	410	571

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.1°C m/W
Ground Ambient Temperature	12°C
Air Ambient Temperature	12°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

66kV THREE CORE, OIL FILLED, DUCTED, LEAD SHEATH, CABLE.Autumn *CYCLIC* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	SUSTSAINED CURRENT RATINGS-AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm² Copper	626	514	478	606
<u>Aluminium conductors</u>				
350mm² Al	573	471	436	562
<u>Imperial sizes</u>				
<u>Copper conductors</u>				
0.35in² Copper	592	487	453	571

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.1°C m/W
Ground Ambient Temperature	12°C
Air Ambient Temperature	12°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

**66kV THREE CORE, OIL FILLED, DUCTLESS, CORRUGATED ALUMINIUM
SHEATH, CABLE.**

Winter *SUSTAINED* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	SUSTAINED CURRENT RATINGS - AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm² Copper	572	480	449	608
<u>Aluminium conductors</u>				
350mm² Al	526	441	412	572

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	0.9°C m/W
Ground Ambient Temperature	10°C
Air Ambient Temperature	10°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

**66kV THREE CORE, OIL FILLED, DUCTLESS, CORRUGATED ALUMINIUM
SHEATH, CABLE.**

Winter *CYCLIC* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	CYCLIC CURRENT RATINGS - AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm ² Copper	669	531	490	608
<u>Aluminium conductors</u>				
350mm ² Al	620	491	451	572

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	0.9°C m/W
Ground Ambient Temperature	10°C
Air Ambient Temperature	10°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

**66kV THREE CORE, OIL FILLED, DUCTLESS, CORRUGATED ALUMINIUM
SHEATH, CABLE.**

Spring *SUSTAINED* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	SUSTAINED CURRENT RATINGS - AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm² Copper	533	458	430	608
<u>Aluminium conductors</u>				
350mm² Al	489	420	394	572

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.05°C m/W
Ground Ambient Temperature	12°C
Air Ambient Temperature	12°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

**66kV THREE CORE, OIL FILLED, DUCTLESS, CORRUGATED ALUMINIUM
SHEATH, CABLE.**

Spring *CYCLIC* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	CYCLIC CURRENT RATINGS - AMPS		
	CABLE IN GROUND	CABLE IN DUCTS	CABLE IN AIR
		PVC	Rigiduct
<u>Metric sizes</u>			
<u>Copper conductors</u>			
260mm ² Copper	630	513	475
<u>Aluminium conductors</u>			
350mm ² Al	583	474	437

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.05°C m/W
Ground Ambient Temperature	12°C
Air Ambient Temperature	12°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

**66kV THREE CORE, OIL FILLED, DUCTLESS, CORRUGATED ALUMINIUM
SHEATH, CABLE.**

Summer *SUSTAINED* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	SUSTAINED CURRENT RATINGS - AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm ² Copper	495	434	409	608
<u>Aluminium conductors</u>				
350mm ² Al	454	398	374	572

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.2°C m/W
Ground Ambient Temperature	15°C
Air Ambient Temperature	15°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

**66kV THREE CORE, OIL FILLED, DUCTLESS, CORRUGATED ALUMINIUM
SHEATH, CABLE.**

Summer *CYCLIC* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	CYCLIC CURRENT RATINGS - AMPS		
	CABLE IN GROUND	CABLE IN DUCTS	CABLE IN AIR
		PVC	Rigiduct
<u>Metric sizes</u>			
<u>Copper conductors</u>			
260mm ² Copper	591	492	457
<u>Aluminium conductors</u>			
350mm ² Al	547	454	420

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.2°C m/W
Ground Ambient Temperature	15°C
Air Ambient Temperature	15°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

**66kV THREE CORE, OIL FILLED, DUCTLESS, CORRUGATED ALUMINIUM
SHEATH, CABLE.**

Autumn *SUSTAINED* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	SUSTAINED CURRENT RATINGS - AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm² Copper	523	453	426	608
<u>Aluminium conductors</u>				
350mm² Al	480	415	390	572

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.1°C m/W
Ground Ambient Temperature	12°C
Air Ambient Temperature	12°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

**66kV THREE CORE, OIL FILLED, DUCTLESS, CORRUGATED ALUMINIUM
SHEATH, CABLE.**

Autumn *CYCLIC* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	CYCLIC CURRENT RATINGS - AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm ² Copper	621	510	472	608
<u>Aluminium conductors</u>				
350mm ² Al	575	470	434	572

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.1°C m/W
Ground Ambient Temperature	12°C
Air Ambient Temperature	12°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

66kV SINGLE CORE, OIL FILLED, DUCTED, LEAD SHEATH, CABLE.**Winter *SUSTAINED* Current Ratings**

SIZE AND TYPE OF CABLE CONDUCTOR	SUSTAINED CURRENT RATINGS - AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm ² Copper	607	555	536	695
<u>Aluminium conductors</u>				
350mm ² Al	554	511	494	648
<u>Imperial sizes</u>				
<u>Copper conductors</u>				
0.35in ² Copper	563	512	494	640

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	0.9°C m/W
Ground Ambient Temperature	10°C
Air Ambient Temperature	10°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

66kV SINGLE CORE, OIL FILLED, DUCTED, LEAD SHEATH, CABLE.Winter *CYCLIC* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	CYCLIC CURRENT RATINGS - AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm ² Copper	703	642	617	695
<u>Aluminium conductors</u>				
350mm ² Al	645	593	571	648
<u>Imperial sizes</u>				
<u>Copper conductors</u>				
0.35in ² Copper	649	591	569	640

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	0.9°C m/W
Ground Ambient Temperature	10°C
Air Ambient Temperature	10°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

66kV SINGLE CORE, OIL FILLED, DUCTED, LEAD SHEATH, CABLE.Spring *SUSTAINED* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	SUSTAINED CURRENT RATINGS - AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm ² Copper	570	531	514	695
<u>Aluminium conductors</u>				
350mm ² Al	519	489	474	648
<u>Imperial sizes</u>				
<u>Copper conductors</u>				
0.35in ² Copper	530	490	475	640

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.05°C m/W
Ground Ambient Temperature	12°C
Air Ambient Temperature	12°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

66kV SINGLE CORE, OIL FILLED, DUCTED, LEAD SHEATH, CABLE.Spring *CYCLIC* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	CYCLIC CURRENT RATINGS - AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm ² Copper	666	622	600	695
<u>Aluminium conductors</u>				
350mm ² Al	610	575	554	648
<u>Imperial sizes</u>				
<u>Copper conductors</u>				
0.35in ² Copper	617	573	553	640

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.05°C m/W
Ground Ambient Temperature	12°C
Air Ambient Temperature	12°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

66kV SINGLE CORE, OIL FILLED, DUCTED, LEAD SHEATH, CABLE.**Summer *SUSTAINED* Current Ratings**

SIZE AND TYPE OF CABLE CONDUCTOR	SUSTAINED CURRENT RATINGS - AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm² Copper	520	493	479	695
<u>Aluminium conductors</u>				
350mm² Al	473	453	440	648
<u>Imperial sizes</u>				
<u>Copper conductors</u>				
0.35in² Copper	485	455	442	640

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.2°C m/W
Ground Ambient Temperature	15°C
Air Ambient Temperature	15°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

66kV SINGLE CORE, OIL FILLED, DUCTED, LEAD SHEATH, CABLE.Summer *CYCLIC* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	CYCLIC CURRENT RATINGS - AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm² Copper	613	584	565	695
<u>Aluminium conductors</u>				
350mm² Al	560	538	521	648
<u>Imperial sizes</u>				
<u>Copper conductors</u>				
0.35in² Copper	569	538	521	640

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.2C m/W
Ground Ambient Temperature	15°C
Air Ambient Temperature	15°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

66kV SINGLE CORE, OIL FILLED, DUCTED, LEAD SHEATH, CABLE.**Autumn *SUSTAINED* Current Ratings**

SIZE AND TYPE OF CABLE CONDUCTOR	SUSTAINED CURRENT RATINGS - AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm ² Copper	646	608	587	695
<u>Aluminium conductors</u>				
350mm ² Al	592	561	542	648
<u>Imperial sizes</u>				
<u>Copper conductors</u>				
0.35in ² Copper	599	560	541	640

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.1°C m/W
Ground Ambient Temperature	12°C
Air Ambient Temperature	12°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

66kV SINGLE CORE, OIL FILLED, DUCTED, LEAD SHEATH, CABLE.Autumn *CYCLIC* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	CYCLIC CURRENT RATINGS - AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm² Copper	551	517	501	695
<u>Aluminium conductors</u>				
350mm² Al	502	476	461	648
<u>Imperial sizes</u>				
<u>Copper conductors</u>				
0.35in² Copper	513	477	462	640

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.1°C m/W
Ground Ambient Temperature	12°C
Air Ambient Temperature	12°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

**66kV SINGLE CORE, OIL FILLED, DUCTLESS, CORRUGATED ALUMINIUM
SHEATH, CABLE.**

Winter *SUSTAINED* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	SUSTAINED CURRENT RATINGS - AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm² Copper	586	490	470	679
<u>Aluminium conductors</u>				
350mm² Al	537	460	442	636
<u>Imperial sizes</u>				
<u>Copper conductors</u>				
0.35in² Copper	539	455	438	611

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	0.9°C m/W
Ground Ambient Temperature	10°C
Air Ambient Temperature	10°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

**66kV SINGLE CORE, OIL FILLED, DUCTLESS, CORRUGATED ALUMINIUM
SHEATH, CABLE.**

Winter *CYCLIC* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	CYCLIC CURRENT RATINGS - AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm² Copper	680	572	548	679
<u>Aluminium conductors</u>				
350mm² Al	626	538	516	636
<u>Imperial sizes</u>				
<u>Copper conductors</u>				
0.35in² Copper	621	529	508	611

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	0.9°C m/W
Ground Ambient Temperature	10°C
Air Ambient Temperature	10°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

**66kV SINGLE CORE, OIL FILLED, DUCTLESS, CORRUGATED ALUMINIUM
SHEATH, CABLE.**

Spring *SUSTAINED* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	SUSTAINED CURRENT RATINGS - AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm² Copper	550	469	451	679
<u>Aluminium conductors</u>				
350mm² Al	503	440	423	636
<u>Imperial sizes</u>				
<u>Copper conductors</u>				
0.35in² Copper	508	436	420	611

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.05°C m/W
Ground Ambient Temperature	12°C
Air Ambient Temperature	12°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

**66kV SINGLE CORE, OIL FILLED, DUCTLESS, CORRUGATED ALUMINIUM
SHEATH, CABLE.**

Spring *CYCLIC* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	CYCLIC CURRENT RATINGS - AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm² Copper	644	554	532	679
<u>Aluminium conductors</u>				
350mm² Al	592	520	500	636
<u>Imperial sizes</u>				
<u>Copper conductors</u>				
0.35in² Copper	590	513	494	611

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.05°C m/W
Ground Ambient Temperature	12°C
Air Ambient Temperature	12°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

**66kV SINGLE CORE, OIL FILLED, DUCTLESS, CORRUGATED ALUMINIUM
SHEATH, CABLE.**

Summer *SUSTAINED* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	SUSTAINED CURRENT RATINGS - AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm² Copper	502	434	419	679
<u>Aluminium conductors</u>				
350mm² Al	459	407	393	636
<u>Imperial sizes</u>				
<u>Copper conductors</u>				
0.35in² Copper	464	405	465	611

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.2°C m/W
Ground Ambient Temperature	15°C
Air Ambient Temperature	15°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

TABLE F3 – sum

**66kV SINGLE CORE, OIL FILLED, DUCTLESS, CORRUGATED ALUMINIUM
SHEATH, CABLE.**

Summer *CYCLIC* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	CYCLIC CURRENT RATINGS - AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm² Copper	592	519	499	679
<u>Aluminium conductors</u>				
350mm² Al	544	487	469	636
<u>Imperial sizes</u>				
<u>Copper conductors</u>				
0.35in² Copper	544	481	465	611

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.2°C m/W
Ground Ambient Temperature	15°C
Air Ambient Temperature	15°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

**66kV SINGLE CORE, OIL FILLED, DUCTLESS, CORRUGATED ALUMINIUM
SHEATH, CABLE.**

Autumn *SUSTAINED* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	SUSTAINED CURRENT RATINGS - AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm² Copper	532	456	439	679
<u>Aluminium conductors</u>				
350mm² Al	487	427	412	636
<u>Imperial sizes</u>				
<u>Copper conductors</u>				
0.35in² Copper	491	424	409	611

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.1°C m/W
Ground Ambient Temperature	12°C
Air Ambient Temperature	12°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

66kV SINGLE CORE, OIL FILLED, DUCTLESS, CORRUGATED ALUMINIUM SHEATH, CABLE.

Autumn *CYCLIC* Current Ratings

SIZE AND TYPE OF CABLE CONDUCTOR	CYCLIC CURRENT RATINGS - AMPS			
	CABLE IN GROUND	CABLE IN DUCTS		CABLE IN AIR
		PVC	Rigiduct	
<u>Metric sizes</u>				
<u>Copper conductors</u>				
260mm² Copper	625	541	520	679
<u>Aluminium conductors</u>				
350mm² Al	574	508	488	636
<u>Imperial sizes</u>				
<u>Copper conductors</u>				
0.35in² Copper	573	501	483	611

Parameters

Maximum depth of lay	1m
Soil Thermal Resistivity (g)	1.1°C m/W
Ground Ambient Temperature	12°C
Air Ambient Temperature	12°C
Maximum Conductor Temperature	85°C
Ratings based on Crater for Oil filled cables.	

APPENDIX A

SUPERSEDED DOCUMENTATION

This document supersedes ST:SD8B/2 dated September 2003 which should now be withdrawn.

APPENDIX B

ASSOCIATED DOCUMENTATION

ST: CA6A/2 - Relating to the Installation of Underground Cables

APPENDIX C

IMPACT ON COMPANY POLICY

This Standard Technique has been updated to add all four seasons to the cable rating document instead of just having one season as given in the previous document. In addition the document has been broken up into manageable parts, with each part being for a particular voltage level.

APPENDIX D

IMPLEMENTATION OF POLICY

This Standard Technique shall be communicated to all relevant WPD Planning and Control staff at the next Team Briefing by the relevant Team Manager.

APPENDIX E

KEY WORDS

66kV Group Derating, Sustained Rating, Cyclic Rating, Laid Direct Rating, Duct Rating, Air Rating.