Circuit From:		**Circuit To:**	
Circuit No:		**Job No:**	
Asset Owner:		**Client:**	
Cable details (Type etc.)			

Ambient Temperature ……°C Humidity……%

Initial Polarisation Test (PI)

CONNECTION	Test Voltage (kV)	INSULATION RESISTANCE (Ω)		POLARISATION INDEX (Reading after 10 mins) ÷ (Reading after 1 min)
		1 Minute	10 Minutes	
A to (B+C+E)				
B to (C+A+E)				
C to (A+B+E)				

Initial Step Voltage Test (SVT)

Note: An 11 kV cable which gives an okay or better PI and a satisfactory SVT does not need any further testing. An XLPE insulated cable in excellent condition can give a PI of 1.0. Therefore on 11 kV cables if the PI on a XLPE cable is less than 2.0 but the SVT is satisfactory no further testing is required. If the PI test returns a value of 2.0 or less and the SVT gives a poor result then a VLF test shall be carried out as per relevant standard, if required –followed by a final SVT and PI.

CONNECTION	INSULATION RESISTANCE (Ω)					CAPACITANCE (µF)	% DIFFERENCE BETWEEN STARTING AND FINISH (GAIN)
	1 Min	2 Min	3 Min	4 Min	5 Min		
A to (B+C+E)	0				0		#DIV/0!
B to (C+A+E)	0				0		#DIV/0!
C to (A+B+E)	0				0		#DIV/0!

Very Low Frequency (VLF) Test

(All sub-transmission Cables and 11 kV XLPE which have failed a PI and SVT)

ENSURE CABLE IS DISCHARGED FOR THE SAME DURATION AS THE PRESSURE (VLF) TEST

Cable Sheath Testing

Cable semi-conductive boot or termination test

	Resistance (Ω)
R to E	

Y to E	
B to E	

Final Polarisation Test

CONNECTION	Test Voltage (kV)	Insulation Resistance (Ω)		POLARISATION INDEX (Reading after 10 mins) ÷ (Reading after 1 min)
		1 Minute	10 Minutes	
A to (B+C+E)				
B to (C+A+E)				
C to (A+B+E)				

Final Step Voltage Test

CONNECTION	INSULATION RESISTANCE (Ω)					CAPACITANCE (µF)	% DIFFERENCE BETWEEN STARTING AND FINISH (GAIN)
	1 Min	2 Min	3 Min	4 Min	5 Min		
A to (B+C+E)	0				0		#DIV/0!
B to (C+A+E)	0				0		#DIV/0!
C to (A+B+E)	0				0		#DIV/0!

Phasing Checks

Phases	Tested From	Tested Towards
Red		
White (Yellow)		
Blue		
Comments		

Note: Equipment phase references: L1, L2, L3 or A, B, C or a, b, c or colour marks…

Test Equipment

Test Equipment	FUNCTION	Next Expiry Calibration Date	SERIAL No. / Asset No.

Observation and Conclusion

Sign Off Required

Test Completed by *Full Name:* _____

Signature: _____ **Test Date:** _____

Test Reviewed for Completeness by *Full Name:* _____

Signature: _____ **Date:** _____

Controlled Document

VLF Test Voltage and Duration Based on Cable Age - as per Vector ENS-0028 & Northpower NSM 14.1.05

Age of XLPE cable	Rated voltage (kV)	Test duration (Minutes)	VLF test voltage to earth (RMS)	VLF test voltage to earth (Peak) Northpower Network Only
New	11	30	15kV	19kV (peak)
	22	30	30kV	
	33	30	45kV for We* 42kV for Vector	57kV (peak)
Up to 10 years	11	15	12kV	19kV (peak) for 30 mins
	22	15	25kV	
	33	15	38kV	57kV (peak) for 30 mins
Over 10 Years	11	15	9kV	19kV (peak) for 30 mins
	22	15	19kV	
	33	15	28kV	57kV (peak) for 30 mins

ENSURE CABLE IS DISCHARGED FOR THE SAME DURATION AS THE PRESSURE TEST

Polarisation Index Results		Step Voltage Test Results	
POLARISATION INDEX	INSULATION CONDITION	STEP VOLTAGE %	INSULATION CONDITION
<1	POOR	Reduction in resistance of more than 25 % between starting and finish values	POOR
1-2	QUESTIONABLE		
2-4	OKAY	Reduction in resistance of less than 25 % between starting and finish values	SATISFACTORY
>4	GOOD		

Note:
Phasing is checked during the jointing/termination process and as a final overall check before livening
Check phasing should be carried out between the points where the cable is terminated where possible, i.e. switch to switch, switch to pole termination, transformer to switch etc.
If this check does not produce the correct result, the connections must be disconnected and re-terminated correctly in accordance with local Network requirements

Document Review History

Version Number	Date	Revision Notes (reason for change)
1.0		New Document Release
2.0	14/11/13	Included lower VLF test voltages as per Vector and Northpower requirements
3.0	11/05/2015	% Gain formula for difference between 1min and 5min inserted into tables
4.0	19/07/2021	Transferred to new template
5.0	17/02/2025	Added leakage column to cable sheath testing matrix, added phasing check matrix and note, test equipment matrix added expiry date, calculating formulas updated, Reference to WE* Network Standards removed.