Generic Maintenance Plan

Summary

This generic maintenance plan is provided as a high level indication of typical maintenance requirements. TransGrid publishes this information under clause 5.2A.5 of the National Electricity Rules.

Document Control

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Contents

1. Introduction 3

2. Typical Maintenance Intervals (Routine and Inspections) 3

2.1 Asset Type Substation 3

2.2 Transmission Lines and Cables 4

2.3 Automation 4

2.4 Metering 5

2.5 Telecommunications 6

2.6 Network Property 7

1. Introduction

This generic maintenance plan is provided as a high level indication of typical maintenance requirements and is based on existing TransGrid Maintenance Plans developed. In developing maintenance plans and managing assets generally, TransGrid applies ISO5500: Asset Management principles and strives for industry best practice in all areas.

Aspects of the maintenance plan will vary depending on operating duty and environment and cannot be finalised until the selection, configuration and utilisation of the installed assets is understood.

The list of assets below is not exhaustive, but reflects the significant assets requiring maintenance. Minor asset maintenance is generally carried out with the more significant asset for efficiency. Not all assets listed below will be required at all sites.

2. Typical Maintenance Intervals (Routine and Inspections)

2.1 Asset Type Substation

Substations	Activity	Maintenance Interval
Substation	General inspection	6 Monthly
	Switchyard vermin management	6 Monthly * (High Rabbit Risk, or 12 monthly for Medium)
	Thermographic Survey for current carrying plant equipment	1 Year
Power Transformer	Oil Sample and exercise tap changer	1 Year *(6 Year Major)
	Tap changer maintenance	Varies with manufacturer
Circuit Breaker	Operational checks	1 Year
	Detailed inspection	6 Years
	Minor service	2 Years *(Major and Minor Cycle)
Oil Filled Instrument transformers	Visual inspection	6 Monthly *(Annual Inspection with Substation)
	Maintenance	6 Years
Disconnector/Earth Switch	Minor maintenance requirements	4 Years *(With CB/bay maintenance 4 or 6 years)
Capacitor Bank	Servicing Intervals	2 or 4 Yearly with Switch bay maintenance
Power Reactor	Oil quality and moisture sample	1 Year
Oil Filled Auxiliary Transformers	Oil quality and moisture sample	2 Years
Major steelwork	Substation structures, footings and holding down bolts inspection	5 Years
Earth Grid	Inspection of the earthing system	10 Years
Substation Buildings	Indoor substation inspection	6 Monthly
Surge Diverters	Service	4 years *(Typical 8 years for others)

Substations	Activity	Maintenance Interval
Power Cables	Maintenance	Same Interval as connected Plant Equipment
Oil Containment	Switchyard Drainage facilities inspection	10 Years

2.2 Transmission Lines and Cables

Transmission Lines and Cables	Activity	Maintenance Interval
All Transmission Line	Aerial inspection	1 Year
Steel Tower, Steel Pole, Concrete Pole	Ground & Climbing inspection	5 Years
	Foundation inspection	5 Years
Wood Pole	Ground & Climbing inspection	3-6 Years
	Under Ground inspection	3-6 Years
Selected Lines	Compliance inspection	1-2 Years *(high bushfire risk)
	Structure Earthing testing	10 years *(close to publicly frequented areas)
	OPGW Hanger bracket climbing inspections	5 Years
	Thermographic inspection	3-12 Years
	Aircraft Warning Light inspection	6 Monthly
Thermographic Inspections	Significant heating of problem areas, Typical Winter Daytime Load >500Amps per conductor	3 Yearly *(6 & 12 Yearly for lower Load Current)
Easement and Vegetation Inspection	Scheduled easement inspection & vegetation maintenance	1-3 Years *(Constrained)
	Condition based	1-3 Years *(Hot Spot)
	LIDAR	1-3 Years
Cable Route Maintenance	Above ground structures	1 Year
	Easement & Access track inspections	6 Monthly
	Property owner information	1 Year

2.3 Automation

Automation	Activity	Maintenance Interval
Transmission Line and Cable Protection	Self-checking protection relays Current Differential, Distance	8 Years
	Non-self-checking protection relays Current Differential, Distance,	6 Years

Automation	Activity	Maintenance Interval
	Overcurrent, and Pilot Wire	
	All protection relays With series or shunt oil-filled reactor	With associated reactor maintenance
Capacitor	Self-checking protection relays	8 Years
	Non-self-checking protection relays	6 Years
Transformer	OIP with bushing monitor and RIP bushing)	with associated primary plant maintenance
	(except OIP and RIP bushing), SVC and Reactor - self checking protection relays	with every second associated primary plant maintenance
	(except OIP and RIP bushing), SVC and Reactor - non-self-checking protection relay	with associated primary plant maintenance
	Buchholz and Pressure mechanical protection devices	with associated primary plant maintenance
Under Frequency and Under Voltage Load Shedding, Over Voltage Protection	Self-checking protection relays	8 Years
	Non-self-checking protection relays	4 Years
Analysis Equipment	Fault Disturbance Recorders and Fault locators	8 Years
	Local storage unit filter checks	6 Monthly
Battery	DC Intertrip Batteries - battery replacement	8 Years
Protection Performance Checks	Busbar and Interzone - all protection relays	8 Years
	In Service Trip and Auto Reclose Checks	2 Years
	DC Intertrip Batteries - load test	6 Monthly
	VF Intertrips - Non-Intrusive testing	8 Years
SCADA	SCADA Transducers	5 Years
	SCADA Generators maintenance	3 Monthly (1 Year Major)
250V and 110V Battery and Charger Systems	NiCd Batteries <12 years old	2 Years *(4 Year Major)
	NiCd Batteries >12 years old	1 Year *(2 Years Major)

2.4 Metering

Metering	Activity	Maintenance Interval
Revenue and Check Meters	Electronic TUOS Meters	5 Years
	Induction	2.5 Years
	Independent checks	2.5 Years

Metering	Activity	Maintenance Interval
Temporary Meter	Portable	1 Year
	Fixed	5 Years
Market Metering	CT and VT - Accuracy tests	10 Years
	Burden and Voltage Drop check	with meter maintenance
	Inspections	2.5 Years
Data Logger Battery Replacement	Remote Interrogable meters	2.5 Years
	Built in Data loggers	5 Years
Pulse Checks	External Data loggers	6 Monthly
	Internal Data Loggers and Remote Interrogation Capability	2.5 Years

2.5 Telecommunications

Telecommunications	Activity	Maintenance Interval
Dehydrator	Dehydrator	1 Year
OTN Data Backup	OTN Data Backup	6 Monthly
Optical Fibre Testing	Corrosive joint boxes installed	6 Monthly
	Non-corrosive joint boxes installed	1 Year
Telecommunications Radio Towers	Steel, Wood, Concrete	6 Years
PLC Intertrip Terminal Equipment	Non self-checking	6 Years
	Self-checking	8 Years
PLC Carrier Coupling Equipment	Active PLC connections only	6 Years
Batteries	NiCd Batteries <12 years old	4 Years
	NiCd Batteries >12 years old	2 Years
	Lead Acid Batteries <8 years old - major maintenance	4 Years
	Lead Acid Batteries >8 years old - major maintenance	2 Years
	NiCd Batteries - minor maintenance	6 Monthly
VHF	12V Base Stations	1 Year
	Repeater/Link maintenance	1 Year

2.6 Network Property

Network Property	Activity	Maintenance Interval
Building	Annual building and site inspection	1 Year
	Gutter inspections and clearing	1 Year
	5yr condition assessment	5 Years
Cleaning & Waste Removal	High maintenance sites	1 Monthly
	Low maintenance sites	1 Year
Electrical	Main Switchboards and Distribution Boards inspection	1 Year
	RCD Pushbutton testing	6 Monthly
	RCD Operation Time testing	2 Years
	Detention Basins – maintenance	1 Year
Gardening	Buffer ground maintenance	Up to 20 times per year
	Switchyard ground maintenance	Up to 20 times per year
	Boundary property ground maintenance	Condition Only
Hydraulics	Water pump and filter maintenance	1 Year
	Test bund Sump Pump	1 Year
	Backflow Prevention Device maintenance (BFPD)	1 Year (or per council requirements if more stringent)
HVAC	A/C Maintenance	6 Monthly
Vermin control	Inspections, baiting and eradication	3 Monthly
Offsite Sewer Treatment System	AWTS	3 Monthly
	Sewer pump	6 Monthly
Waste	Bulk rubbish removal	Defect Only
Access Control	Access control systems review	1 Monthly
CCTV Systems	CCTV systems review	1 Monthly