Metro Trains Sydney

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Electricity networks annual safety performance report
Reporting period July 2019- June 2020

A Annual safety performance reporting

A.1 Tier 1 – Major incidents

Tier 1 incidents are defined as a 'Major Incident' in accordance with the *Electricity networks reporting manual – Incident reporting* (Reporting Manual - Incident Reporting).[8] Table A.1 provides a template for the minimum reporting requirements.

Table A.1 Major incidents

ESSNM Objective		Description of each major incident reported under the Reporting Manual - Incident Reporting requirements
Safety of members of the public		Nil
Safety of persons working on network		Nil
Protection of property	Third party property	Nil
	Network property[a]	Nil
Safety risks arising from loss of electricity supply[b]		Nil

a Network property losses are not reportable under IPART's Reporting Manual - Incident Reporting requirements. For the purpose of this Reporting Manual, a network operator is to report each event in which losses exceed $500,000 in relation to damage caused to *electricity works* as defined in the *Electricity Supply Act 1995*.

b As defined for major reliability incidents in IPART's Reporting Manual – Incident Reporting.

A.2 Tier 2 – Incidents

Tier 2 incidents are defined as an 'Incident' in accordance with the Reporting Manual - Incident Reporting. Table A.2 provides a template for the minimum reporting requirements.

Table A.2 Incidents

ESSNM Objective	Description of each incident reported under the Reporting Manual - Incident Reporting requirements
Safety of members of the public	Nil
Safety of persons working on network	Nil
Protection of third party property	Nil
Safety risks arising from loss of electricity supply[a]	Nil

a As defined for reliability incidents in IPART's Reporting Manual – Incident Reporting.

A.3 Tier 3 – control failure near miss

Table A.3 Network assets failures

Performance measure	Population	5-year average annual functional failures	Annual functional failures (for reporting period)					
			Unassisted[a]			Assisted[a]		
			No fire	Fire		No fire	Fire	
				Contained	Escaped		Contained	Escaped
Towers	-	-	-	-	-	-	-	-
Poles (including street lighting columns/poles & stay poles)	-	-	-	-	-	-	-	-
Pole-top structures[b]	-	-	-	-	-	-	-	-
Conductor – Transmission OH[c]	-	-	-	-	-	-	-	-
Conductor – Transmission UG[c]	1km	-	-	-	-	-	-	-
Conductor – HV[d] (including sub-transmission) OH	-	-	-	-	-	-	-	-
Conductor – HV (including sub-transmission) UG	146km	-	1	-	-	-	-	-
Conductor – LV[d] OH	-	-	-	-	-	-	-	-
Conductor – LV UG	-	-	-	-	-	-	-	-
Service line[e] OH	-	-	-	-	-	-	-	-
Service line[e] UG	-	-	-	-	-	-	-	-
Power transformers[f]	5	-	-	-	-	-	-	-
Distribution transformers	53	-	-	-	-	-	-	-
Reactive plant[g]	-	-	-	-	-	-	-	-
Switchgear – zone / subtranmission/transmission substation	1	-	-	-	-	-	-	-

Performance measure	Population	5-year average annual functional failures	Annual functional failures (for reporting period)					
			Unassisted[a]			Assisted[a]		
			No fire	Fire		No fire	Fire	
				Contained	Escaped		Contained	Escaped
Switchgear – distribution (OH	-	-	-	-	-	-	-	-
Switchgear – distribution (Ground based)	58	1	1	-	-	-	-	-
Protection relays or systems	62	-	-	-	-	-	-	-
Zone / subtransmission/transmission substation SCADA system	30	-	-	-	-	-	-	-
Zone / subtransmission/transmission substation Protection Batteries	30	-	-	-	-	-	-	-
(insert additional rows as required)	n/a	-	-	-	-	-	-	-

a See Glossary for definitions of unassisted failures and assisted failures.

b Pole top structures/components are any structure that is attached to a pole to support electricity mains and apparatus.

c OH means ‘overhead’; and UG means ’underground’. Transmission and sub-transmission voltages are generally 33kV AC nominal and above. Transmission conductors form part of a transmission network. Sub-transmission conductors form part of a distribution network.

d HV means ‘high voltage’, and LV means ‘low voltage’. High voltage are voltages 1kV AC nominal and above. Low voltage are voltages below 1kV AC nominal.

e Overhead service and underground service as defined in the NSW Service and Installation Rules.

f Power Transformers are transformers where the secondary/output voltage is 5kV nominal or above.

g Reactive plants are reactors and capacitors.

Note: The network operator may provide more detailed information when reporting failures. These can be added under the headline metrics.

Table A.4 Vegetation contact with conductors

Performance measure[a]	Event count - Current reporting period 2019 – 20	Event count - Last reporting period 2018-19	Event count - Two periods ago 2017-18	Event count - Three periods ago 2016-17	Event count - Four periods ago 2015-16	Comments
Fire starts – grow-in	0	0	0	0		Network first energised 23rd June 2017
Fire start – fall-in and blow-in	0	0	0	0		
Interruption[b] – grow-in	0	0	0	0		
Interruption – fall-in and blow-in	0	0	0	0		

a Vegetation hazard definitions as per the Industry Safety Steering Committee *Guide for the Management of Vegetation in the Vicinity of Electricity Assets* (ISSC3).

b Includes momentary interruptions.

Table A.5 Unintended contact, unauthorised access and electric shocks

Detail	Event Count Current reporting period 2019-20	Event Count Last reporting period 2018-19	Event Count Two periods ago 2017-18	Event Count Three periods ago 2016-17	Event Count Four Periods ago 2015-16	Comments
Electric shock[a] and arc flash incidents[b] originating from network assets[c] including those received in customer premises						
Public	0	0	0	0		Network first energised 23rd June 2017
Public worker	0	0	0	0		
Network employee / network contractor[d]	0	0	0	0		
Accredited Service Provider	0	0	0	0		
Livestock or domestic pet	0	0	0	0		
Contact with energised overhead network asset[e] (e.g. conductor strike)						
Public road vehicle[f]	0	0	0	0		
Plant and equipment[g]	0	0	0	0		
Agricultural and other[h]	0	0	0	0		
Network vehicle	0	0	0	0		

Detail	Event Count Current reporting period 2019-20	Event Count Last reporting period 2018-19	Event Count Two periods ago 2017-18	Event Count Three periods ago 2016-17	Event Count Four Periods ago 2015-16	Comments
Contact with energised underground network asset[e] (e.g. conductor strike)						
Plant and equipment	0	0	0	0		Network first energised 23rd June 2017
Person with handheld tool	0	0	0	0		
Unauthorised network access (intentional)						
Zone / BSP / Transmission substation / switching station	0	0	0	0		
Distribution substation	0	0	0	0		
Towers / poles	0	0	0	0		
Other (e.g. communication sites)	0	0	1[1]	0		1 – intentional conduit damage
Safe Approach Distance (SAD)[i]						
Network employee / network contractor	0	0	0	0		
Accredited Service Provider	0	0	0	0		
Public	0	0	0	0		
Public Worker	0	0	0	0		

a All electric shocks are to be reported except those resulting from static discharge, defibrillators, where the system is nominally extra low voltage or involving the DC rail traction system.

b Incidents that result in a burn or other injury requiring medical treatment and result from exposure to an arc.

c Events caused by network assets, network asset defects or network activities, including shocks received inside customer installations, are to be reported. Customer installation events not associated with network assets are not to be reported.

d Includes all classes of authorised persons (network employee and network contractor). Accredited Service Provider employees are not included.

e Would not normally include contact with a pole, pillar, distribution substation etc, unless the contact results in subsequent contact with an energised asset.

f Including plant and equipment packed up for travel (ie, plant and equipment travelling on a public road to or from worksite).

g Cranes, elevated work platforms, cherry pickers, excavators, hand held tools, etc.

h Examples include agricultural equipment, aircraft and watercraft.

i Encroachment into the applicable Safe Approach Distance for the type of individual involved.

Table A.6 Reliability and Quality of Supply[a]

Performance measure	Event count - current reporting period 2019-20	Event count - last reporting period 2018-19	Event count - two periods ago 2017-18	Event count - three periods ago 2016-17	Event count - four periods ago 2015-16	Comments
High voltage into Low voltage[b]	0	0	0	0		Network first energised 23rd June 2017
Sustained voltage excursions outside emergency range[c]	0	0	0	0		
Reverse polarity	0	0	0	0		
Neutral integrity due to poor workmanship or incorrect procedure	0	0	0	0		
Neutral integrity due to asset defect or failure	0	0	0	0		

a Reporting is required by distribution network operators only.

b May also be referred to as HV LV intermix or HV injection.

c As defined by network operator with reference to the measurement methodologies used in Australian Standard AS61000.3.100.

Table A.7 Reliability and Quality of Supply – Critical infrastructure incidents

Type of critical infrastructure[a] (e.g. hospital, tunnel)	Minutes of supply lost[b]	Cause	Consequential safety impacts associated with supply issue
(insert additional rows as required)	n/a	n/a	n/a

a Critical infrastructure as identified in the network operator's formal safety assessment in relation to the safety risks associated with loss of supply.

b Number of minutes that the critical infrastructure was without a network supply.

Note: Incidents include outages and supply quality events that adversely impact critical infrastructure.

Table A.8 Network-initiated Property damage events

Detail	Event count - current reporting period 2019-20	Event count - last reporting period 2018-19	Event count - two periods ago 2017-18	Event count - three periods ago 2016-17	Event count - four periods ago 2015-16	Comments
Third party property (assets including vehicles, buildings, crops, livestock)						
Damage (e.g. Fire, Physical impact or Electrical)	0	0	0	0		Network first energised 23rd June 2017
Network property (including non-electrical assets including vehicles, buildings)						
Damage (e.g. Fire, Physical impact or Electrical)	0	0	1[2]	0		2 – Voltage transformer failure at BSP

Note: Event counts should include any event where there is a reasonable likelihood that damage was caused by *electricity works*.

A.4 Tier 4 Control implementation

Table A.9 Amendments and improvements to Formal Safety Assessments (FSA) or Associated Risk Treatments[a]

FSA	Amendments / improvements
(insert additional rows as required)	

a Adjustment or modifications made by the network operator to formal safety assessments, or risk treatment action plans, including those changes informed by consideration of the results of the investigation and analysis of incidents, near misses or asset failures, where the network operator has assessed that existing assessments or risk treatments do not eliminate or reduce risk so far as is reasonably practicable.

Table A.10 Design, construction and commissioning

Performance measure[a]	Current reporting period 2019-20	Last reporting period 2018-19	Two reporting periods ago 2017-18	Three reporting periods ago 2016-17	Four reporting periods ago 2015-16
Designs for which Safety in Design (SiD) Reports have been completed	0	1	0	0	
Designs for which Safety in Design (SiD) Reports have been audited	0	1	0	0	
Contestable designs certified[b]	0	0	0	0	
Contestable level 1 project safety reviews performed[c]	0	0	0	0	
Contestable level 2 project safety reviews performed[c]	0	0	0	0	
Non-contestable project safety reviews performed[c]	0	0	0	0	
Project closeout reports completed for contestable projects	0	0	0	0	
Project closeout reports completed for non-contestable projects	0	0	0	0	
Project closeout reports audited for contestable projects	0	0	0	0	
Project closeout reports audited for non-contestable projects	0	0	0	0	

a The unit of measure is the number of designs/projects.

b The network operator is to advise where no contestable designs have been performed.

c A safety review would include checking that work on or near the network is being performed safely.

Table A.11 Inspections (assets)

Performance measure[a]	Inspection tasks				Corrective action tasks				Comments
	Planned inspection tasks[b]	Achieved[c]	Open[d]	Outstanding[d]	Tasks identified (all categories)[c]	Achieved	Open	Outstanding[e]	
Transmission Substations	0	0	0	0	0	0	0	0	
Zone Substations	12	38	0	0	0	0	0	0	Additional inspections completed by MTS engaged 3rd party
Distribution Substations	1709	1691	0	18	18	0	0	18	MTS identified that they did not have suitably skilled resources engaged to resolve the outstanding items, however, are currently procuring resources to resolve this gap.
Transmission OH	0	0	0	0	0	0	0	0	MTS does not operate transmission OH assets
Transmission UG	0	0	0	0	0	0	0	0	
Distribution OH	0	0	0	0	0	0	0	0	MTS does not operate distribution OH assets
Distribution UG	0	0	0	0	0	0	0	0	

Note: The network operator may provide more detailed information when reporting tasks. These can be added under the headline metrics. Field captured inspection data may require additional processing to identify the appropriate corrective action tasks.

a Table A.11 should not include activities reported in Table B.3 (Vegetation tasks) and Table B.4 (Asset tasks).

b Includes all 'Open' and 'Outstanding' tasks from the previous reporting period.

c Inspection tasks must only be reported as 'Achieved' when all associated corrective action tasks to address the faults of a particular asset have been identified.

d 'Open' and 'Outstanding' tasks are those tasks categorised as such at the end of the reporting period.

e The network operator must provide commentary to explain how it is managing risk associated with outstanding tasks and when the outstanding tasks are expected to be completed.

Table A.12 Inspections (vegetation) Aerial/Ground based

Bushfire risk category	Population (spans / poles)	Target	Achieved	Outstanding	Comments
Aerial					
(insert additional rows as required)					MTS electricity network consists of underground cable and substations wholly contained within buildings mitigating aerial vegetation risks
Total	0	0	0	0	
Ground-based					
(insert additional rows as required)					MTS electricity network consists of underground cable and substations wholly contained within buildings mitigating ground-based vegetation risks
Total	0	0	0	0	

Note: Table A.12 should not include activities reported in Table B.3 (Vegetation tasks) and Table B.4 (Asset tasks).

Table A.13 Public electrical safety plans and activities[a]

Network operator public safety programs / campaigns	Details
(insert additional rows as required)	

a Network operator to provide details on the plans and other activities that the network operator undertook to provide safety information to the public. Examples may include a publication of a Public Electrical Safety Awareness Plan, advertisements associated with electrical safety and awareness, publication of a bushfire risk management plan, shocks and tingles awareness program, etc.

Table A.14 Internal audits performed on any aspect of the ENSMS (as per AS 5577[a] clause 4.5.4)

Audit scope	Identified non-compliances	Actions
(insert additional rows as required)		

Note: Network operators are only required to report internal audit non-compliances that are related to ENSMS or safety issues.

a AS 5577 is the Australian Standard *Electricity network safety management systems*, *2013*, published by Standards Australia.

Table A.15 External audits performed on any aspect of the ENSMS (as per AS 5577 clause 4.5.4)

Audit scope	Identified non-compliances	Actions
(insert additional rows as required)		

Glossary

Assisted failure	Any functional failure of a piece of equipment (component of an asset or asset) where the equipment was subject to an external force or energy source against which the network operator's standards for design and maintenance do not attempt to control.
Fire	A state, process, or instance of combustion in which fuel or other material is ignited and combined with oxygen, giving off light, heat and flame. This includes 'smouldering' or 'smoke' events, and LV wires down events resulting in burning around the point of contact on a combustible surface. Excludes LV wires down arcing events on non-combustible surfaces. Network Scope: Applicable to any fire caused by, or impacting, a network asset.
Functional failure	Performance of a piece of equipment (or component of an asset or asset) that represents a reduction below acceptable limits of the specification for a piece of equipment resulting in reduced capability required for service. In general, a functional failure is represented by a defect condition where the equipment that is required for service can no longer perform its expected function and which results in an unplanned maintenance action to restore condition to an acceptable limit. Note: operation of protection equipment (e.g. fuse) within its design characteristics is not a functional failure.
Incident	Defined in accordance with IPART's *Electricity networks reporting manual - Incident reporting*, available on the IPART website.
Major incident	Defined in accordance with IPART's *Electricity networks reporting manual - Incident reporting*, available on the IPART website.
Network worker	A person who has been authorised by the network operator to plan or conduct work on or near the network. Includes persons employed by the network, persons engaged under a contract by the network operator, and persons authorised by the network operator and working for an Accredited Service Provider.
Open (with respect to defects / tasks)	A defect / task that has not been rectified by the network operator but where the time that has elapsed since being identified has not exceeded the standard time that the network operator has set for having the defect rectified.
Outstanding (with respect to defects / tasks)	A defect / task that has not been rectified by the network operator where the time that has elapsed since being identified has exceeded the standard time that the network operator has set for having the defect rectified.
Public worker	A party or parties that are conducting work that is not directly associated with the electricity network such as building work, landscaping, landfill work, excavations, road works and includes the construction, maintenance, adjustment or dismantling of mobile plant and scaffolding.
Unassisted failure	Any functional failure of a piece of equipment (component of an asset or asset) where the cause of the failure is of a type for which the network operator's design and maintenance standards include specific controls to mitigate against the risk of failure and which is neither an assisted failure nor a maintenance induced failure. These failures are generally caused by a deterioration of the condition of the equipment and also include overhead connection failures and vegetation within the mandatory vegetation clearance window.