

Appendix K - Performance Measurement Indicators

	Key Performance Indicator	Description	Measure	Target
Leading	Asset life	<i>This monitors the maintenance history and interventions on critical assets through their life. Other data recorded is component creation, usage information (hours/miles operated) and scrappage date. Assets considered are not limited to Wheelsets, bogies, engines, motors, AWS/TPWS, etc.</i>	Preventive Planning	Extend maintenance periodicities
	Wheel wear rate	<i>To monitor/compare the rate of wheel wear in different seasons, for a better understanding of seasonal impact to units. Also helps to prioritize planned maintenance.</i>	Preventive Planning	Uptime & Industrial Wheels measurement limit
	Unavailability of mandatory exam kit per period	<i>Availability checklist of all the required tools, parts & components for scheduled maintenance. Parts are usually made available to fitters as Kits placed by the side of the maintenance road. This should record:</i> <i>Total number of deficient kits per shift</i> $\frac{\text{Total number of deficient kits per shift}}{\text{Total number of Kits per shift}} \times 100$	Maintenance Scheduling	<10%
	Open work orders	<i>Monitors all open work orders for a depot across all the fleets per period as a percentage of total volume of work raised. eg wheel lathe, HVAC, Doors, etc.</i>	Maintenance Scheduling	<20%
	Available for services	<i>Records of all units ready/available for services on daily/weekly base. This should be measured at a particular time of day, prior to morning and evening service peaks, eg at 05:30. Example TOC operates 300 trains per week and 240 trains are available. $\frac{240}{300} \times 100 = 80\%$</i>	Uptime	% of the total fleet
	Repeat defects	<i>Measures number of reported incidents linked to a known fault per period. Repeat defects show that the underlying root cause has not been identified.</i>	Maintenance strategy	<5
	Delays due to defect	<i>Reports total primary delay attributed to a sub system per period and displayed as a Pareto so engineers can see which sub system is having the largest impact on service. It helps to show which sub systems need more work/fault finding.</i>	Maintenance strategy	<10 delay incident per device per period
	Outstanding defects	<i>Monitors reported issues, defects which have not been attended/instigated e.g. Any isolation done by drivers, logged in the book but not raised as a work order.</i>	Maintenance Scheduling	<5 per unit per week
	Degraded Mode	<i>Monitors volume of trains per period entering service with an allowable degraded mode as per TOCs DOTE.</i>	Performance	<5 per unit

Lagging	Technical issues per period	<i>Records total number of technical defects per unit per period including MTIn and other non-service affecting defects. It shows which unit is performing worse.</i>	Performance	No of defect per unit
	Number of days taken to repair	<i>Monitors how many days, it takes to repair/attend to a reported defect.</i>	Execution	<3days
	Tweet (fault reported by customers)	<i>Monitors how long it takes to repair/feedback on faults/issues report by passengers on social media. This issue must be reported/mentioned more than a 5 time by at least 5 different passengers</i>	Execution	<5days
	Late on	<i>Monitors the sum of unit lateness per period to the depot for planned maintenance and examination. It shows how much maintenance time is lost due to the unit lateness as a sum of the minutes.</i>	Punctuality	>3mins
	Off-depot lateness measure	<i>Monitors the sum of unit lateness per period off the depot for operation. It shows how much operational time is lost due to the unit lateness as a sum of the minutes.</i>	Punctuality	>3mins
	Maintenance induced failure	<i>Monitors the number of issues raised after maintenance or light or heavy maintenance work. Some unit comes back worse than before (something missed or incorrectly added during the scheduled maintenance)</i>	Performance	Total per period