ERL MAINTENANCE SUPPORT SDN BHD

(Company No. 498574-T)

E-MAS

Effective Railway Operations; Reliable System Maintenance

SAFETY AND SECURITY DEPARTMENT

SAFETY PROCEDURE

Ref. No. G00.OMZ.M11451.NP.0006.I

Release

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Amendments or additions to this procedure must be indicated with a vertical black line in the adjacent left margin.

Change Record and Configuration Control

I	10.12.2018	Revised of the whole document with additional items which are Safety Critical Work, Safe Lifting Procedure, Working at Height and Confined Space.	
H	02.01.2014	Revision of the entire documents including additional information, comments by SPAD.(G00.OMZ.M11451.NP.0006.G)	
G	26.06.2013	Revised related to KLIA2/revised the whole procedure	
F	05.02.2008	Revised the Whole Procedure	
E	09.03.2006	Revised the Appendix 2 Safety & Health Policy Statement	
D	23.09.2004	Removed 7.2 and First Para of 8.2	
C	17.06.2002	Issue for E-MAS only	
B	23.05.2002	Incorporation of Access Aspects	
A	19.0.2002	NEW	
Revision	**Date**	**Modification**	**Name**

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Issues To Consider	**Checked** ***(Please mark X)***				**Remarks**
1) Are there any negative impact?	YES		NO	X	
2) Will the integrity of QEMS be affected?	YES		NO	X	
3) Resources available?	YES	X	NO		
4) Allocation or relocation of responsibilities and authorities required?	YES		NO	X	

TABLE OF CONTENTS **Page**

1 Purpose 5
2 Scope, Distribution & Access 5
3 Abbreviations / Definition 5
4 Routes and Walkways 6
5 Personal Protective Equipment (PPE) 6
6 Operational Hazards 6
6.1 Danger Area (Structural Gauge) 6
6.2 Bi-directional Train Runs 6
6.3 Access to the lines and the Traction Power Substation 6
6.4 Precautions on or near the Line (Track site) 7
6.5 Precautions on Trains & Track Vehicles 8
6.6 Stopping Trains in Emergency 8
6.7 Overhead Catenary Line (OCL) 8
6.8 Earthing 9
7 Safety Critical Work. 9
7.1 List of Safety Critical Work 9
7.1.1 List of Function Track & Structures. 9
7.1.2 Train Control & Operational Communications Systems. 10
7.1.3 Electrification. 10
7.1.4 Plant. 10
7.1.5 Traction & Rolling Stock. 10
7.1.6 Train Operations. 11
7.1.7 Protection of Person Working on or Near the Line. 11
8 Safety Lifting Procedure. 11
8.1 Use of Lifting Slings. 11
8.2 Tips for Manual Lifting. 12
9 Working at Height. 12
10 Confined Spaces. 12
11 Access to Kompleks Rel Udara and the Non-paid areas of Stations 12
12 Safety Obligations of Employees 13
12.1 Wearing of Helmet 13
12.2 Alcohol & Drugs 13
12.3 Housekeeping 14
13 Reporting 14
13.1 Notification. 14
14Appendices 14

1 Purpose

The objective of this procedure is to inform staff and contractors working on the KLIA Ekspres and KLIA Transit System of the basic requirement of safety precautions in order to perform operations and maintenance work in a safe manner and in safe working conditions.

2 Scope, Distribution & Access

This procedure is accessible to all E-MAS employees and is applicable to all employees, visitors, contractors, subcontractor and third parties.

Safety precaution measures and warnings that are imposed to employees apply equally to visitors, contractors, subcontractors and third parties, without special mentioning.

3 Abbreviations / Definition

He / His	Implies both the masculine and feminine gender
HODs	Head of Departments
SAS	Safety & Security
EDMS	Electronic Document Management System
KRU	Kompleks Rel Udara
ERLSB	Express Rail Link Sdn Bhd (375839–H)
E-MAS	ERL Maintenance Support Sdn Bhd (498574–T)
TPSS	Traction Power Sub-Station
ERL	Express Rail Link
CRS	Commuter Rail Service
DOSH	Department of Occupational Safety and Health
FMA	Factories and Machinery Act
MWS	Main Workshop
PPE	Personal Protective Equipment
UFWL	Under Floor Wheel Lathe
DGS	Dangerous Good Store
OCC	Operations Control Centre
OCL	Overhead Catenary Line
ATP	Automatic Train Protection
Stations	Kuala Lumpur Sentral, Bandar Tasik Selatan, Putrajaya/Cyberjaya, Salak Tinggi, Kuala Lumpur International Airport, Kuala Lumpur International Airport 2
TPR	Track Possession Request
PICOP	Person In Charge of Possession
PIC	Person-in-charge (Supervisor or team leader)
SPYTL	Syarikat Pembenaan Yeoh Tiong Lay

4 Routes and Walkways

Employees and other persons who are given approval to access the KLIA Ekspres and KLIA Transit System shall use the approved or designated access points. E-MAS personnel shall accompany non-staff to access the KLIA Ekspres and KLIA Transit System when required.

5 Personal Protective Equipment (PPE)

Staff must wear the specified and approved PPE where safety regulations require them to do so. SAS shall provide safety briefing to third-parties contractors and sub-contractors, by emphasizing on the application of PPE whenever their work required.

PIC must ensure the appropriate PPE specified for the nature of work and locations; are worn at all times. For visitors, PPE is applicable depending on area visited.

Immediate supervisors must ensure that their staffs are provided with the necessary PPE required for their work and trained on how to use them. PIC must ensure that theirstaffs comply with the usage of the required PPE without fail.

REMINDER

Employees non-compliance to wear approved PPE shall result in disciplinary action.

When a user detects any PPE damage or malfunction, he shall immediately inform his immediate supervisor/foreman to have the defective item replaced before carrying out any work.

6 Operational Hazards

6.1 Danger Area (Structural Gauge)

The space, including the projection outwards, which is 2.5 metres from the centre line of the track, is identified as the Structural Gauge.

No person shall enter the structural gauge of any time unlessrequired by his duties and that necessary safety arrangements have been made to ensure safety. The diagram of the Structural Gauge is given in **Appendix 1**.

6.2 Bi-directional Train Operations

Bi-direction train operations are train movement on a track in both directions. The systems allows for bi-directional train operation. Therefore, anyone who is working at track site must always be aware that trains may run on any track in any direction and at anytime.

6.3 Access to the lines and the Traction Power Substation

All railway rail network/system, all technical rooms, TPSS and stations are off limits to all except for authorized personnel. Access to these areas requires a special security profile.

6.4 Precautions on or near the Track Site

Access into the structural gauge is not allowed unless protected by a valid track possession. A person in charge of possession (PICOP) must supervise the track possession. Persons on or near track site shall take the following safety precautions:

DO

- *Wear high visibility vests (orange colour) when going on or near the track*
- *Walk & stand clear of the structural gauge*
- *Use walkways, overpasses & pedestrian crossing to cross tracks where provided*
- *Be continuously watchful for approaching track vehicles at all times on any track and in any direction*
- *Look in both directions & immediately leave structural gauge upon the approach of track vehicles*
- *Lay down tools away from passing track vehicles. Any items shall be stored along the track side at a safety distance at least 2.5 metres from stationary track vehicles.*

DON'T

- *Never sit, stand or walk on top of the rail or between rails*
- *Never step or stand on the moveable parts of turnouts*
- *Do not cross the tracks immediately after a track vehicle has passed, wait until adjacent tracks can be clearly observed in both directions for a safe distance.*
- *Do not cross too close with stationary track vehicles. Be cautious and observe the clearance of adjacent tracks.*
- *Do not cross the tracks between track vehicles by climbing over or by crawling pass under the vehicles or the crossing track vehicles couplings.*
- *Do not cross the track in between two or more stationary track vehicles unless the gap between the track vehicles is at least 5 metres wide apart*
- *Do not touch or work on running rails during lightning and thunderstorm*
- *Working with OCL or attaching equipments is only allowed with a Valid TPR and under the supervision of a PICOP*

6.5 Precaution on Trains & Track Vehicles

Whenever on or near trains or track vehicles the following rules must be observed

CAUTIONS

- Unauthorised persons are not allowed to remain on trains or track vehicles without permission or accompanied by train driver or track vehicles operator or authorized technicians
- Do not board or leave any trains or track vehicles while it is in motion
- Do not walk from one track vehicle to another while trains or the track vehicle is in motion and where gangways and safety chains are not in place
- Do not stand on a running board, roof or loads while a train or track vehicle is in motion
- Do not physically attempt to stop trains or track vehicles in motion
- Before leaving trains or track vehicles make sure it is safe to do so
- Do not lean on or out of trains or track vehicles at anytime
- Do not throw or drop items out of trains or track vehicles
- Do not stand in front of trains or vehicles unless safety precautions have been taken

6.6 Stopping Trains In Emergency

Any employee may stop track vehicles in cases of an emergency such as:

- Life threatening
- Danger to the safety of operations

During these situations, when the train is not in sight, the employee must immediately call the Operations Control Centre (OCC) to inform the urgency of the situation and incident location. This shall be relayed to the OCC preceded with the words **"Emergency".** The Controller will either give instructions via train radio, put the signal to danger or any other means necessary to stop all train services.

If a train is in sight, employees must make the effort to give the emergency stop signal to the track vehicle driver.

To stop an approaching train in case of emergency

- A red flag or red light must be exhibited so that it will be clearly seen by the driver.
- If a red flag or red light is not available, both arms must be raised above the head during daylight or a light with any colour at night and waved violently.

Throughout this process, the person shall ensure of their safety at track side.

6.7 Overhead Catenary Line (OCL)

The OCL must be considered as energized at all times unless the relevant line section is connected to the ground between earthing poles. The minimum distance to be kept from any active parts of the OCL is **2.5 metres** radius in all direction.

D A N G E R

BE AWARE THAT THE OCL AND POWER SUPPLY EQUIPMENT MUST BE CONSIDERED ACTIVE AT ALL TIMES UNLESS THE 'SAFETY RULES' HAVE BEEN APPLIED.

THE SAFETY RULES:

- It must be ensured that the section concerned and all attached equipment is switched off.
- The section concerned must be secured against unintended and automatic restoration of power.
- The section concerned must be checked to be certain that the power is switched off.
- The section concerned must be connected to earth. Only the section between two earthing poles is electrically safe.
- Protect against adjacent life parts by covers or barriers and fit a suitable warning notice.

6.8 Earthing

No person is allowed to approach the OCL, whether they are intact or broken, unless the power has been certainly switched off and ensure that all the safety rules mentioned above has been applied including earthing device installation at the place of work.

7 Safety Critical Work

Safety critical work is works that can lead to major hazards if performed incorrectly due to lack of technical skills or knowledge or due to behaviour attributes.

7.1 List of Safety Critical Work

The following list shows the scope of the safety critical work in the ERL-CRS System. This list is for reference and understanding and is not exhaustive. See your immediate supervisor if clarification is required.

7.1.1 List of Work Track and Structures

- Maintenance, alteration, renewals or repair work on track system components where errors in the work could affect track geometry gauge.
- Cutting, joining, welding or re-profiling rails.
- Lifting or slewing track.
- Excavation of ballast or soil under or adjacent track.
- Maintenance, alteration or repair work on structures supporting or adjacent to the track that could affect the load bearing capabilities of the structure or clearance for passing trains.
- Demolition or erection of structures adjacent to the track where error could result in obstruction of the line.

7.1.2 Train Control & Operational Communications Systems

- System & equipment provided for the safe movement, spacing and routing of trains.
- Mobile communication equipment, radio and ATP.
- Train Borne Communication equipment, radio and ATP.

7.1.2.1 Activities associated with the above include:

- Maintenance
- Replacement/reinstatement
- Fault investigation & rectification
- Testing following maintenance, replacement, reinstatement, fault rectification
- Testing & commissioning

7.1.3 Electrification

- OCL, associated cabling
- Electrification system fault detection
- Electrification circuit breakers
- Electrification system bonding
- Signalling power supply equipment

7.1.4 Plant

- Standby signaling power supplies
- Operating road/track vehicles or track mounted machines
- Operating track machines

7.1.5 Traction & Rolling Stock

a. Examination to declare it is safe to operate on the track
b. Repairs, modifications or maintenance to components listed as below:

7.2.1.1 Wheel sets, bogies & suspensions
7.2.1.2 Brakes
7.2.1.3 Wheel slip/slide control equipment
7.2.1.4 Power controls
7.2.1.5 Speed indicating systems
7.2.1.6 Couplers
7.2.1.7 Pantograph
7.2.1.8 Doors
7.2.1.9 Deadmans/Driver safety Device
7.2.1.10 Head & tail lamps
7.2.1.11 Windscreen washers & wipers
7.2.1.12 Fire Safety System
7.2.1.13 Roof hatches, side skirts or covers which prevent equipment from becoming detached
7.2.1.14 Safety Interlocks

7.2.1.15 Security of items to the under frame and safety traps
7.2.1.16 Air reservoir
7.2.1.17 Warning Horns

7.1.6 Train Operations

- Shunting
- Coupling/uncoupling
- Securing vehicles to prevent run away
- Protection of train in the event of accident, incident etc
- Preparation of train for movement
- Controlling movements in/out of workshop
- Hand signaling

7.1.7 Protection of person working within the structural gauge

- Setting up safe system of work
- Acting as “Look Out Man”

8 Safe Lifting Procedure

It is the responsibility of respective department supervisors’ to ensure the implementation and application of this procedure for lifting equipments. Operator/user shall follow the safe handling of slings as referenced in 8.1 and to report immediately any unsafe condition of lifting equipment to SAS.

SAS shall conduct inspections together with representatives from DOSH at a regular intervals of 15 months in accordance with regulation 14 of FMA & Regulations – Factories and Machinery (Notification, Certificate of Fitness and Inspection) Regulations, 1970, Part III – Inspection.

8.1 Use of Lifting Slings

Safe Operating Practices – Whenever any slings are used, the following practices shall be observed:

- Slings that are damaged or defective shall be removed at once from any use and replaced.
- Using knots or wire rope clips shall not form eyes in wire rope slings.
- Slings shall not be shortened with knots, bolts, or other makeshift devices.
- Slings legs shall not be kinked.
- Slings shall not be loaded in excess of their rated capacities.
- Slings used in a basket hitch shall have the loads balanced to prevent slippage.
- Slings shall securely attach to their loads.
- Slings shall be padded or protected from any sharp edges of their loads.
- Suspended load shall be kept clear of all obstructions.
- All persons shall be kept clear of loads about to be lifted or suspended loads.
- Hands and fingers shall be kept clear of loads about to be lifted or suspended loads.
- **SHOCK LOADING IS PROHIBITED.**
- A sling shall not be pulled from under a load when the load is resting on the sling.
- Areas of lifting activities shall be cordoned or kept off-limit for other than operating employees.

Welded end attachment or knots shall not be used unless certified proof-tested by the manufacturer or equivalent entity at twice their rated capacity prior to initial use. The user shall retain a certificate of the proof test and make it available for examination by SAS or DOSH.

Welding end attachment, except covers to thimbles, shall be performed prior to the assembly of the sling.

8.2 Tips for Manual Lifting

- Get a firm footing
- Place feet about shoulder width apart
- Bend at the knees to grasp the weight
- Keep back as straight as possible
- Get a firm hold/ grip
- Lift gradually by straightening the legs
- Don't twist your back to turn. Move your feet to turn around
- When weight is too heavy or bulky to lift comfortably – **GET HELP**
- When putting the load down, reverse the above steps

Note: If lifting stacked materials, materials should be carefully piled and stable piles should not be stacked as to impair your vision or unbalance the load. Materials should not be stacked on any object (i.e. floor rags, platform, rack, shelf, floor) until the strength of supporting members has been checked.

9 Working at Height

Whenever a staff is required to work at a higher place (distance of more than 3 metres), from which, he will be liable to fall, safety harness are required. The diagram of the Safety Harness is given in the **Appendix 2**.

10 Confined Space

Confined space is a place which is substantially enclosed (though not always entirely), and where serious injury can occur from hazardous substances or conditions within the space or nearby. The example of confined space is shown in **Appendix 3**.

Examples of confined spaced identified in E-MAS are as follows:

- Pit
- Manhole
- Tank

11 Access to Kompleks Rel Udara and the Non-paid areas of Stations

Access control is implemented and observed as both a safety & security functions. Access control is to ensure the safety of all persons on the ERL-CRS System by granting access only when authorized by relevant HOD and relevant safety procedures are made known to these persons. This is to ensure the security of persons and assets from prohibited unlawful acts. Access is controlled by means of identification passes.

The entire KRU is a limited access area. In addition to the general E-MAS policies, the access to the following areas requires a special security profile and authorization:

- OCC
- MWS & Warehouse
- Under Floor Wheel Lathe(UFWL)
- Spray Cabin
- Auxillary Workshop & DGS
- All technical rooms
- Server Rooms
- Washing Plant

12 Employee Safety Obligation

Employees must familiarize themselves with the specific safety regulations that are applicable to the specific restricted access areas.

All employees must observe the following safety obligations:

REMINDER

- Obey the safety rules, regulations and procedures while working
- Use all appropriate PPE required for their place of works and tasks
- Report any damages to buildings, equipments and vehicles that could be a potential hazard
- Support supervisor/foreman in creating maximum awareness of work safety
- Report every incident, accident or unsafe practices to the immediate superior

12.1 Wearing of Helmet

All E-MAS employees using motorcycle shall wear their safety helmet while riding within KRU compound area. All HODs shall ensure that their personnel comply and non-compliance shall result in disciplinary action.

12.2 Alcohol & Drugs

- When an employee feels unfit to carry out work in a safe manner due to medication, immediately notify their immediate supervisor.
- Employees shall not be in possession or consume any alcohol or drugs while on duty. Doing so are considered as misconducts.

12.3 Housekeeping

Work areas must be kept free of debris and waste material. Spillages must be cleaned up immediately and protruding objects must be either removed or the area to be cordoned off. After usage, all equipments/tools shall be stored away at the appropriate storage and must not be lying around unattended.

Food and combustible waste materials must be placed in the appropriate containers provided and safely separated. Employees must report to their superiors the presence of vermin such as cockroaches, ants, mice, and rats in the system. The superior and immediate supervisor shall immediately report to SAS, who will take necessary actions.

13 Reporting

Employees shall be encouraged to report any incident, accidents or safety related matters.

IMPORTANT

- Inform OCC and notify superior, immediately after the incident/accident.
- Submission of written incident/accident report shall be made within 24 hours after the occurrence.

The respective department HOD shall prepare a report and send directly to the SAS HOD for further action. The report is important for investigations to be carried out (if required), to identify the root cause(s) and to recommend the necessary corrective actions.

13.1 Notification

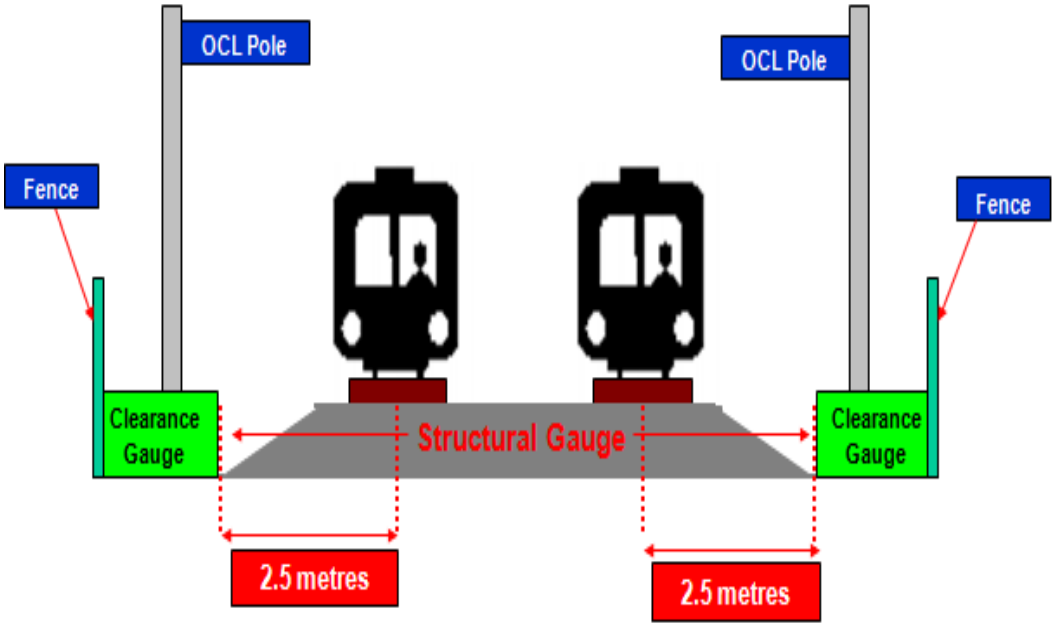
Once an incidents or accident is reported, the OCC shall take the necessary actions based on the nature of the report and create a notification in SAP under “Safety Notifications”.

Appendices

Appendix 1 : Structural Gauge
Appendix 2 : Safety Harness
Appendix 3 : Confined Spaces

Appendix 1

Structural Gauge



Appendix 2

Safety Harness

Appendix 3

Confined Spaces