Transport for London
London Underground

Access

Protecting Workers on the Track Engineering Hours

Learning information booklet

Issue 3

Effective 1st March 2015

MAYOR OF LONDON

Contents

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1 Introduction

This learning information booklet has been produced for individuals accessing the track and providing protection for themselves and others during Engineering Hours. It contains information for Protecting Workers on the Track - Engineering Hours (PWT-EH).

There are different levels of PWT, you will need to be trained and suitably certificated to work as a PWT in:

- Engineering Hours
- Traffic Hours
- depots
- a possession worksite
- Specified Areas (SA)
- Engineers Current Areas (ECA).

This learning information booklet only covers the activities of the PWT-EH. The following activities are separate modules and are not covered as part of this training:

- securing and unsecuring of points
- defining SA's/protection of possessions
- placing and removing short circuiting devices
- controlling the movement of engineer's trains and mechanised vehicles.

1.1 On successful completion of the training

On successful completion of this training you must arrange an appointment with the Access team and obtain a temporary Internal Verification (IV) number, valid for six months.

The temporary IV number enables the holder to work within a single platform plus 60 metres either end; if the individual is being mentored they can undertake the full duties of a PWT-EH.

Once you have been observed successfully carrying out the protection process on two separate occasions, by an approved assessor, you will obtain a full IV number.

2 Objectives

On completion of training the PWT-EH will be able to:

- state the documentation required to plan the work safely and effectively
- demonstrate awareness of current fire legislation
- demonstrate the correct procedures for signing in and out of a station
- state the key components of the Nightly Engineering Protection Arrangement (NEPA) maps
- demonstrate how to check for all information using the NEPA
- state the Line Clear/Line Safe procedures
- list the requirements for accessing the track (site familiar, Site Access Booking for Railway Engineering (SABRE) number, certification of work group)
- demonstrate how to check for last train information
- list the information required to complete the Line Clear/Line Safe (LC/LS) log book
- demonstrate the correct safety critical communication protocols
- demonstrate how to book on and off with the TAC
- state the information required to conduct work group safety briefing(s)
- demonstrate how to use a Current Rail Indicator Device (CRID)
- demonstrate how to use a Permanent Current Rail Indicator Device (P-CRID)
- state the correct procedures for evacuation of the operational railway
- demonstrate awareness of continuously monitoring the progress of the works against the call-back time
- state how to implement LSP arrangements.

3 Responsibilities

The PWT-EH will be responsible for:

Worksite:

- the work in progress
- discipline
- the programme of work
- plant
- materials
- first aid and emergency procedures
- general health & safety.

Protection:

- reading the relevant publications
- completing the LC/LS logbook
- booking on and off with the TAC
- confirming traction current is off
- conducting a work group safety briefing
- ensuring staff remain in the area of protection
- remaining in communication with any additional Site Person(s) in Charge (SPC(s))/PWT-EH(s)
- monitoring the time for call back purposes
- keeping a mobile phone/hand held portable radio switched on, if using one
- ensuring points are secured if using a track trolley
- checking the status of the current on each new traction current section if protecting a moving worksite
- making sure staff are aware of any special features, if working adjacent to Network Rail (NR) infrastructure
- providing personnel with additional briefing(s) as required.

It must be considered at the planning stage if one PWT-EH can undertake the activities of both safely managing the worksite and provide the protection or whether to use a separate PWT-EH dedicated to provide the protection. A PWT-EH can be a working member of the work group, as long as this does not interfere with the ability to safely manage the worksite and/or carry out the protection duties.

There may be situations involving a single job, multi task or multi job, where a 'Lead' PWT-EH is appointed for the overall accountability for the whole worksite and designated PWT-EH's accountable for single specialist tasks.

On completion of the work the designated PWT-EH must:

- report back to the 'Lead' PWT-EH with the overall accountability for the worksite
- confirm the specific task area is safe for people walking and to a standard required for trains to run.

A 'Lead' PWT-EH with the overall accountability for a worksite must ensure that:

- satisfactory protection arrangements are provided when necessary
- the person providing the protection gives a full work group safety briefing, detailing the protection arrangements
- communications with the person providing the protection are maintained if necessary, by appointing designated PWT-EH's in a multi task worksite
- the overall worksite is left safe for people walking and to a standard required for trains to run.

4 Preparation

The equipment or information the PWT-EH needs to have access to:

- site familiar information
- time piece
- LC/LS log book
- NEPA maps and NEPA document
- CRID or P-CRID.

4.1 Planning the work

When planning the work, the following must be considered:

- type and location of work
- SABRE number
- documentation
- tools, equipment and materials
- toolbox briefing and communication
- environmental aspects
- protection arrangements.

Type and location of work

You are on or near the track, if you are:

- within two metres of any rail
- on the permanent way
- on a platform ramp.

You are not on or near the track, if you are:

- on a station platform
- in an area guarded by a physical barrier.Physical barriers

Line Clear areas

Line Clear areas cover all LU track in the sub-surface sections and the tube sections, except:

- non- electrified track
- track within depots or sidings where traction current is normally on at all times.

Some open sections can be in the Line Clear area.

Line Safe areas

Line Safe areas cover all LU track not in the Line Clear areas, except:

- non- electrified track
- track within depots or sidings where traction current is normally on at all times.

Line Clear/Line Safe procedures do NOT cover areas of non-electrified track.

4.2 Station platforms

A site and task specific risk assessment must be carried out before working on a station platform. It must be considered that trains are running and traction current is 'on' at all times, unless otherwise confirmed through appropriate protection procedures.

4.3 Stations fitted with Platform Edge Doors

When working at stations fitted with Platform Edge Doors (PEDs), it is the responsibility of the PWT-EH to:

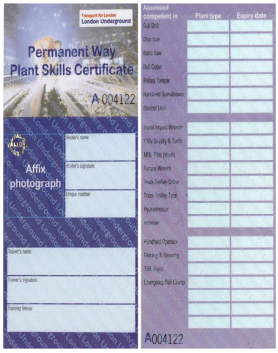
- first book on with the TAC as the station supervisor will require confirmation the PWT-EH has done so
- arrange access to a tunnel with the station supervisor.

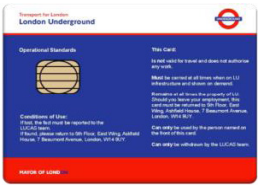
If there is an engineer's train working at a station fitted with PEDs the PWT-EH must:

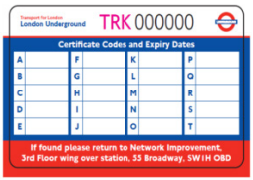
- sign the key log book, take responsibility for the RKL 220 key and the platform edge doors
- be present on the platform and stop any staff who are not working with the train from entering the track.

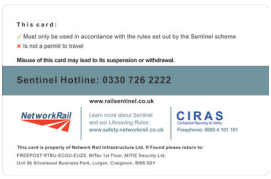
4.4 Certification

It is the responsibility of the PWT-EH to ensure that all personnel in the work group are suitably certificated for the tasks they are undertaking, tools and equipment they are using and the areas of track they are working in.









4.5 London Underground and Network Rail boundaries

Personnel must be certificated and competent to Network Rail (NR) standards before accessing any area of the operational railway which is designated as being under NR rules.

The areas where NR certification is required are:

- Richmond to west of Turnham Green (owned by NR)
- Harrow and Wealdstone to north of Queen's Park (owned by NR but LU certification is valid within Stonebridge Park depot)
- Wimbledon to west of Putney Bridge (owned by LU but NR rules apply due to NR signalling system).

LU certification is not valid for work on either the tracks or the platforms in these areas. If you need to enter these areas, you must have NR certification.

Lines running close to Network Rail lines

Areas where LU and NR property boundaries run close together:

District line:

- Upminster to Campbell Road Junction WB
- around Kensington (Olympia).

Central line:

- West Ruislip to North Acton EB
- West Acton to Ealing Broadway WB.

Metropolitan and Circle line:

- Kings Cross to Farringdon IR
- Harrow on the Hill to Finchley Road NB Met and NB Fast Met.

Hammersmith and City line:

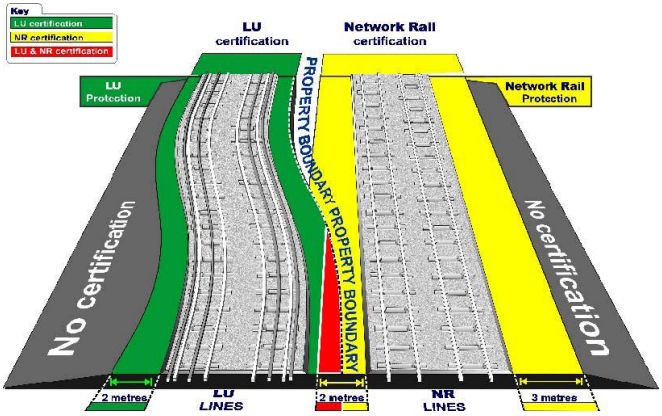
- Paddington to Westbourne Park
- Barking to Campbell Road Junction WB.

Victoria line:

- Northumberland Park depot road 48.

For working in these areas, LU certification and protection applies if personnel:

- remain on LU property
- do not get closer than 2 metres laterally to the nearest NR running rail.



NR certification and protection is required if, at any time on:

- LU property, personnel are working within 2 metres laterally from the nearest NR running rail
- NR property, personnel are working within 3 metres laterally from the nearest NR running rail.

NR certification is also required when you require access through or across NR areas to get to LU assets and come within 3 metres of the nearest NR running rail.

When working during Engineering Hours if the work is close to the through running boundary with NR and protection has to be provided from the NR side, a possession will be required.

If you are not sure your work group's safety on the track certification is valid at a particular location, you should seek advice from your manager.

4.6 Stations where Network Rail certification is required

When working on stations belonging to other train operating companies (i.e. NR), whether or not LU certification and protection are valid depends on the location of the worksite.

Other train operating companies station locations:

- District line: Barking, Upminster, Kensington (Olympia)
- Central line: Stratford
- Bakerloo line: Queen's Park.

The stations owned by LU where other train operating companies operate are:

Metropolitan and Circle line:

- Barbican and Farringdon.

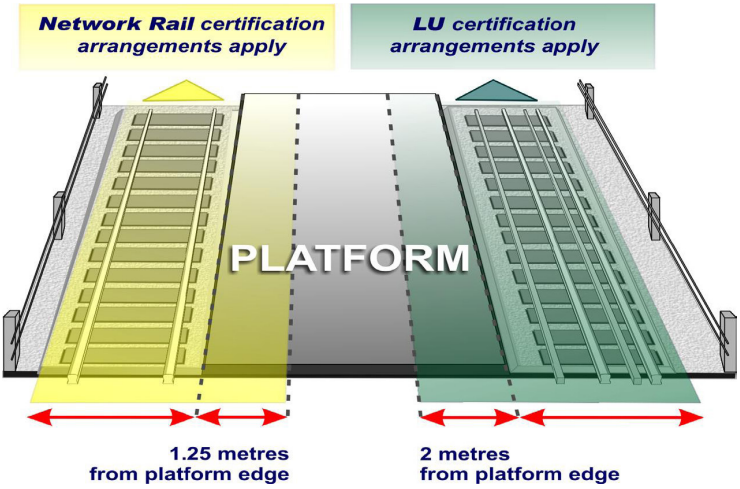
Victoria line:

- Highbury and Islington.

At these stations, LU certification and protection arrangements apply on:

- LU track
- LU equipment on platforms - unless the work is within 1.25 metres of the NR platform edge.

For work within 1.25 metres of the NR platform edge, NR certification and protection arrangements apply.



4.7 Overhead Line Equipment

When on a section of line which is adjacent to or passes over NR lines electrified by 25kv (A.C.) Overhead Line Equipment (OLE) system, always:

In an emergency involving OLE the following procedure must be followed:

- contact the LU Controller
- give the location and structure number
- give the nature of emergency
- wait for further instructions.

When work during Engineering Hours is near NR tracks the following must be considered during planning:

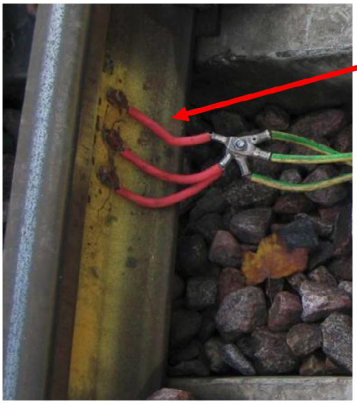
- whether NR possession or protection is required
- any adjacent OLE and if an isolation is required
- walking routes to and from the worksite
- the track certification of the work group
- any other relevant factors.

Before allowing personnel to work or walk near NR tracks the PWT-EH must make sure that they are briefed on the hazards specific to the area and whether any additional protection is in place.

4.8 Heathrow Express and London Overground

The Heathrow Express and London Overground have been equipped by NR with 25kv OLE for traction supply purposes.

Where LU's infrastructure is in close proximity of these two lines, measures have been taken to immunise the LU's infrastructure against any electrical hazards that could possibly emanate from the OLE, and these take the form of red, green and yellow bonds.



Immunisation bonds are found on LU lines that run adjacent to certain NR lines.

Your manager or supervisor must fully brief you on the safety procedures that you must follow in these areas.

Warning signs indicate the 'immunised' areas. In these areas bonds are attached to many lines and structures:

- do not remove, cut, connect or disconnect any of the bonds unless authorised to do so
- make sure you are familiar with the area before working there.

The areas are:

Hammersmith & City lines:

- Westbourne Park to Paddington (Suburban), both roads.

Central line

- Ealing Broadway to Bridge D29, both roads
- NR bridge which crosses over LU lines at North Acton.

District line:

- Ealing Broadway, all roads from the platform buffer stop end to the ends of Nos. 24 and 25 sidings roads east of the station
- West end of Earl's Court station to Kensington (Olympia)
- Turnham Green to Gunnersbury, both roads.

District and Piccadilly lines:

- Bridge D29 at Hanger Lane Junction.

Metropolitan and Jubilee lines

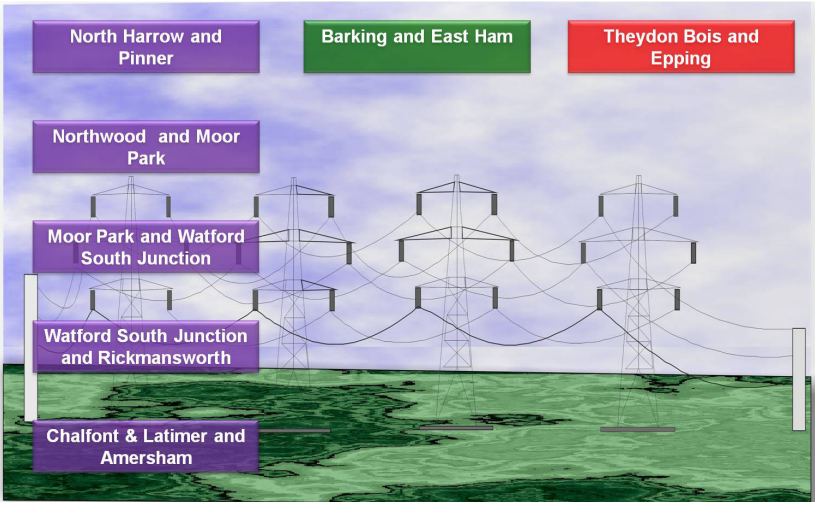
- Bridge MR10 and MR10A between West Hampstead and Kilburn.

Bakerloo line:

- At Queen's Park.

If the work is closer than 2.75 metres to OLE, or a damaged or disconnected bond is discovered, or arranging for the isolation of OLE, the LU Controller must be contacted.

4.9 High voltage power lines (National Grid)



If any personnel see a line obstructed by fallen wires, they must:

- immediately stop any train from approaching
- maintain a safe distance from the lines at all times
- contact and inform the LU controller.

4.10 Special arrangements at Amersham and Harrow-on-the-Hill

Special arrangements apply at Amersham, south of the maintenance boundary on the Up Line and at Harrow-on-the-Hill, north of the boundary on the Northbound Main Line.

At both of these locations the PWT-EH must also be certificated by NR as a Controller of Site Safety (COSS).

For further information refer to leaflet OS No LF09 available on the Network Improvement website.

5 Site Access Booking for Railway Engineering

When accessing the track, an approved SABRE number for the work being carried out, is required:

- a SABRE number is produced from the booking system to control access to LU infrastructure
- a PWT-EH will be given a valid SABRE number by the company they work for
- for urgent work the PWT-EH must contact the Fault Reporting Centre (FRC) or Duty Engineer, If granted, a FRC number will be issued.

5.1 Documentation

Method statement and work instructions

The following is the information that can be contained in a method statement:

- resources
- risk assessments
- control measures
- Personal Protective Equipment (PPE)
- emergency requirements
- monitoring and compliance.

The method statement should include the name and address of the department or company carrying out the work.

5.2 Risk assessments

A risk assessment is simply a careful examination of what, in your work, could cause harm to people, so that you can decide whether you have taken enough precautions or should do more to prevent harm.

The five steps to a risk assessment are:

- identify the hazards
- decide who might be harmed and how
- evaluate the risk and decide on precautions
- record your findings and implement them
- review the risk assessment.

Specific risk assessments

Specific risk assessments regarding manual handling and Control of Substances Hazardous to Health (COSHH) will also be required, and will be contained in the method statement:

- all chemicals/substances must have a COSHH assessment prior to use
- hazardous materials e.g. Asbestos, Lead, Anthrax, Polychlorinated biphenyl (PCB) and Mercury.

5.3 Permits and licenses required for the work

Permit to work

In general you always require a Permit to Work for work on LU premises. Its purpose is to ensure work can be undertaken safely and that all staff can be accounted for in any emergency evacuation.

The Permit to Work procedure MUST be used when working at height on roofs or in areas which are confined spaces such as platform inverts.

The only exceptions are:

- emergency work arrange with the FRC
- work shown on a Possession, Business Unit or Station Works Plan.

The PWT-EH's main responsibilities concerning the Permit to Work are to:

- fill in a Permit to Work form before arriving at the location of work
- be in possession of the appropriate licenses to carry out the work
- supervise all staff covered by the Permit to Work form
- clear the worksite after work has finished
- make sure the area is safe and clear.

5.4 Fire legislation

All premises within LU are covered by one of the following legislation:

- The Regulatory Reform (Fire Safety) Order 2005
- The Fire Precautions (Sub-surface Railway Stations) (England) Regulations 2009.

The fire legislation covering sub-surface railway stations is The Fire Precautions (Sub-surface Railway Stations) (England) Regulations 2009.

To ensure the highest standards, staff training is a priority. Anyone who is employed to work on stations other than a member of the station staff must be given instructions in the fire precautions to

be observed in the course of their work, and action to be taken by them in case of fire alert and evacuation of the premises.

Regulation 7 states:

- all parts of station premises must be kept clear of any accumulation of combustible refuse or other combustible matter
- any area set aside for storing combustible refuse in station premises pending disposal must be separated from other parts of the premises by fire-resisting construction.

The Regulatory Reform (Fire Safety) Order 2005 states:

- Where necessary in order to safeguard the safety of relevant persons, the responsible person must ensure that routes to emergency exits from premises and the exits themselves are kept clear at all times.

Contraventions of the Fire Regulations:

- rubbish being allowed to accumulate
- the means of escape is obstructed
- evidence of smoking
- smoke detector being covered
- fire alarm notice missing or defaced
- holes knocked into compartmented walls and not filled with fire resistant material
- door closers disconnected or faulty
- fire door notice missing.

5.5 Permit for hot works

Any work involving cutting, grinding, welding or burning is not allowed in any location other than a Depot, without a permit for hot works:

- the permit is submitted by the Project Manager, and authorised by the accountable manager
- the project manager must submit permit applications at least one week prior to the work
- the single location must be sufficiently compact to be observable by the Fire Watchperson at all times
- the permit has a unique identifying number, and is valid for one calendar month
- isolation of fire protection equipment details must be indicated on the permit
- the authorised permit top copy must be clearly displayed at the worksite.

Isolations of fire detection equipment may only be carried out by qualified personnel. Isolations during Engineering Hours are at a request by the project manager to the FRC.

The permit requires a trained Fire Watchperson equipped with appropriate fire fighting apparatus, to be in attendance at all times whilst the hot working is being carried out.

5.6 Fire Watchperson

The Fire Watchperson must, before work:

- be provided by whoever is doing the work
- book in separately with the Station Supervisor and the PWT-EH
- be aware of others working in the area
- carry a hand held radio
- advise the adjacent station(s) when hot working in tunnels
- carry out safety checks
- have at least 2x 9 litre AFFF plus 1x 2Kg C02 extinguishers and 1 fire blanket.

The worksite:

- must be sufficiently compact to observe easily (an additional Fire Watchperson may be needed)
- access to the rear of the walls and partitions is necessary in order to monitor and control the effects of hot working (heat, fumes)
- flammable materials must be at least 15 metres from the worksite
- fire extinguishers must be placed in a prominent position on the exit route.

During work the Fire Watchperson must:

- carry their training certificate at all times whilst on duty
- be present throughout the duration of the work (hot work should cease immediately if they have to leave)
- not become distracted.

After the work the Fire Watchperson must:

- remain at the worksite for at least one hour after the hot working is complete, or until the fire detection equipment has been re-instated, whichever is the later
- ensure that the site is left clean and tidy, as well as safe
- book out with the Station Supervisor and the PWT-EH.

If hot working in a tunnel and the Fire Watchperson is required to remain on site for a minimum of one hour and protection is required to be removed, the PWT-EH must ensure the Fire Watchperson is briefed that they must remain on the platform once protection has been removed and if a fire is discovered or suspected, the Fire Watchperson must inform the Station Supervisor immediately.

5.7 Storage licence

The reason for storage licensing is to exercise control over the types of materials and the duration of storage at a location, for safety reasons. There are very strict constraints and penalties in place on unauthorised storage at all LU premises, therefore:

- all storage must be in accordance with current procedures
- to store any item on station premises you must first obtain a storage licence issued by the Landlord/ Manager of the premises
- storage licences must show items allowed to be stored and must be clearly displayed at the location.

5.8 Stores for hazardous materials

The three storage methods allowed are:

Permanent store

Is a storage area that is designed to contain a fire and to prevent an external fire penetrating it. It must be fitted with automatic suppression system and be compartmentalised. The design and construction must meet the specific requirements of the Fire Precautions (Sub-surface Railway Stations) (England) Regulations 2009.

Temporary store

Another room set aside, on a temporary basis that has similar fire resisting capabilities to a permanent store but might not fully meet legislative requirements in all respects, in which case an exemption must be sought.

Portable store

A container designed for the storage of flammable liquids or solids. It must meet all of the fire resisting requirements of a permanent store but will have no fire protection or automatic suppression system fitted within it. It must be located in a sprinkler- protected area.

The storage of flammable materials:

- should be kept to a minimum and restricted to essential supplies
- can be stored loose in a permanent or temporary store
- can be stored in a portable storage bin provided it does not also contain flammable liquids.

5.9 Storage of flammable liquids

Flashpoint above 55°C (except Diesel):

- unlimited storage in metal screw-topped containers.

Flashpoint between 55°C and 21°C (including Diesel):

- maximum of 75 litres, in 3 x 25 litre red, metal screw-topped containers.

Flashpoint between 21°C and 0°C:

- maximum 1 litre, in 2 x ½ litre red metal screw-topped containers.

Flashpoint below 0oC:

- no storage or use below ground.

5.10 Hazards associated with Liquefied Petroleum Gas (LPG)

There are very dangerous properties associated with LPG:

- heavier than air, sinks into pits, platform inverts and sump rooms
- extremely flammable.

Using LPG

The use of disposable cartridges on blow lamps is permitted, subject to the following conditions:

- the blow lamp must be of a design approved by the engineering client responsible for the work
- one, plus one spare cartridge may be taken underground, and all, including empty ones must be removed from underground after use. Blow lamps must never be left unattended
- the use of 4.5kg sized rechargeable cylinders is permitted, but only one can be used, no spare.

Gas cylinders

Pressurised gases (e.g. gas cylinders) may be used underground, but only during Engineering Hours and with a permit for hot works.

Under no circumstances may gas cylinders be stored underground.

These requirements are laid down in the Contract QUENCH conditions.

Movement of materials licence

Most materials used in site work at stations can damage lifts and escalators if not transported correctly. This damage may not be immediately apparent. It is a requirement of LU to obtain a Movement of Materials licence.

6 Safety Alerts and Bulletins

HSE alerts are for major faults that could result in serious or fatal injury and where immediate remedial action is required.

HSE bulletins will alert you to safety issues related to health and safety in the workplace.

Transport for London
London Underground

HSE Alert (Ref.: 19 in 2013)
Signal Relay Wrong Side Failure

Date of issue: 29 August 2013
Date of expiry 30 November 2013

ALL Glass enclosed TRACK and LINE SEVs, DEVs, JRs (N & LT, 4.5, 10, 15, 20, 30, 60, 120 seconds), Gravity Biased and 3 position WKR relays, 33.3/125hz (with the exception of QSEV and F style relays)

Background

On 22 August 2013, a confirmed unprotected wrong side failure occurred at Embankment (District). The cause of the wrong side failure was a DEV Track Relay that was found to have had electrical continuity between 1 armature contact and 7 armature contact internally within the relay. Investigations into the cause of this internal irregular connection are ongoing.

Additional testing is being included in the overhaul processes within REW for newly overhauled relays and those currently in stores at Acton. Relays situated in line based stores and local stores are currently being examined as well as relays recently installed.

Instruction

Prior to installing and commissioning of any glass enclosed relay by any maintenance, project staff and contractors, please ensure as part of the installation preparation that:

- all armatures are tested on continuity to establish that no interconnection exists with all other armature terminals on the relay*. Test readings shall be recorded.
- all relays are thoroughly examined visually (in good lighting conditions) for any signs of unusual wiring or debris in the vicinity of the contact assembly within the relay

***Note** as this is a negative test (i.e. no reading seen) the meter is to be proved to read continuity before and after each test is undertaken.

Upon identification of any interconnection or suspected wiring anomaly, the relay is to be quarantined and escalated to the Duty Senior Signalling Engineer. The DSSE is to notify Antony Clements / Ged Neacy of the incident / and the controls implemented. The DSSE will seek instructions on transporting the relay for special examination. The relay must NOT be transported by the ERU.

Please communicate this alert to your teams, projects and suppliers as appropriate

Incident reference	LUSEA 23012379
For more information contact	John Tilly
Approved by:	Ged Neacy, Deputy Professional Head of Signalling, C&I

Transport for London
London Underground

HSE Bulletin (Ref.:21 in 2013)
Injury from Broken Conductor Rail Pot

Date of issue: 18 September 2013
Date of expiry: 03 March 2014

Background

An Engineer working on the Upminster Depot Upgrade recently sustained an injury to his right wrist with six tendons severed and had to be rushed to A&E. The injury occurred when his wrist came into contact with a broken ceramic conductor rail pot on a loaded pallet which the Engineer was attempting to move in order to reach a drainage cover beneath.

Instruction

Persons working on or about the track should be mindful of the potential for injury from broken ceramic conductor rail pots while manual handling or working in close proximity to them.

Pre-work checks of track locations must include a check for the presence of broken ceramic pots. Where broken or damaged ceramic rail pots are found on site, arrangements are to be made for the immediate safe storage, temporary quarantine and / or disposal. Appropriate hand protection must be worn during handling. Do not walk by!

Please communicate this alert to your teams, projects and suppliers as appropriate

Incident reference	EIRF 49753
For more information contact	Stella Cboite (020) 7918 3784
Approved by (HSE Snr Manager):	James Terry

F0055 A4 August 2013

MAYOR OF LONDON

7 Emergency plans

7.1 Evacuation procedures

The following information applies to all personnel working in the Line Clear area or requiring access through it to reach locations outside the Line Clear area.

The PWT-EH should ensure the work group is briefed on the actions to take if any member of a work group causes or discovers a fire, they must raise the alarm immediately by shouting or by any other appropriate means.

The PWT-EH must:

- tell the controller a fire has broken out, giving the exact location and nearest entry point and request the attendance of the fire brigade
- follow the evacuation procedure
- when evacuating a site, alert all members of the work group and proceed to the Staff Assembly Point (SAP) by the quickest and safest route
- tell other persons met, for example, mobile personnel to evacuate to the nearest SAP
- if the evacuation route is blocked, use the nearest alternative safe exit ensure all personnel are accounted for.

The PWT-EH must brief the work group on the actions that they should take should they become separated during the evacuation. The group without the PWT-EH must nominate a person to supervise the evacuation and this person must:

- make sure that all personnel in this group leave the site in an orderly manner by the nearest safe route to the SAP
- tell the controller to contact the TAC when all members of the separated work group are accounted for.

If any member(s) of the work group is missing the PWT-EH or nominated person must:

- establish who is missing
- make sure the fire brigade have full details of any missing personnel
- inform the TAC the details of any missing personnel.

If any of the work group is unaccounted for and the track is clear. The PWT-EH must not pass the Site Clear message to the TAC until:

- any personnel separated from the work group have been accounted for
- all personnel are in a place of safety
- tools, materials, plant and equipment are clear of the track and it is safe for trains to run.

If the Rendezvous Point (RVP) is located at a staffed station, a member of the station staff will meet the fire brigade. If this is not possible or it is an unstaffed station or not a station, the PWT-EH may have to nominate a member of the work group to meet the fire brigade at the RVP.

7.2 After an incident

After the incident the PWT-EH should review the situation and decide on any further action with the incident officer if one has been appointed. The PWT-EH should consider:

- any assistance that might be required immediately at the SAP, including first aid
- the need to make sure that missing persons are accounted for
- any action that might be required when the incident has been dealt with so that the train service can be restored

- any unsafe condition on the track or damage to equipment that might have occurred or been left as a result of the evacuation
- the location of tools, plant and equipment that had to be left when the site was evacuated
- any disconnections made that might prevent the operations of trains. The ability to perform any further useful work during that shift at the same or other locations
- the effects on track patrolling and the necessity to make sure further track inspections are carried out, if required
- the need to book protection again with the TAC before entering the tunnels depending, if appropriate, on advice of the Emergency Services
- the requirement to provide a full report of the incident to the manager of the persons involved.

The PWT-EH must comply with the incident reporting procedure and provide an incident report as necessary.

For other serious incidents (for example flooding, gas leak, toxic chemical spillage, or tunnel collapse) the requirements of this section must be followed.

First aiders

The PWT-EH must ensure that first aid provisions are available for the worksite.

Spill kits

The purpose of spill kits is to soak up all spills, drips or leaks and prevent polluting the environment:

- the type of spill kit required will depend on the material to be used
- access to the spill kit should be provided near storage areas, filling points or portable kits for use on site

spill kits come in different size containers or bags and contain the instructions and an assortment of absorbent materials.

These containers are not for the purpose of disposing the waste spillage only for storing clean spill kits.

When a spillage or leak occurs:

- first identify the material and select the correct spill kit
- wear appropriate PPE
- protect any drains, soak away or open waterways with absorbent sock or boom
- soak up spillage with absorbent mats or granules
- when the spill has been absorbed, the used spill kit should be temporarily disposed of in the waste bags provided ready to be stored in an approved store awaiting collection. The spill must be reported as per the companies incident reporting process
- a new spill kit should be ordered.

Incident management & reporting

If a hazard is brought to the attention of the PWT-EH they must:

- investigate and make an assessment of the situation
- arrange remedial action as required
- avoid argument if at all possible, but if necessary, insist on safety and report the incident to their manager
- complete their companies incident reporting process

The following accidents and incidents must be reported:

- all injuries
- near hits
- all hazards
- crime
- fires
- structural failures
- environmental.

There is a legal duty to report all incidents immediately and the PWT-EH must ensure that personnel who witness the incident stay at the worksite until the responsible manager or British Transport Police (BTP) tell them they can leave.

The only exceptions to this are if:

- the area is unsafe
- the area has to be evacuated
- staff need medical attention.

It is the responsibility of the PWT-EH to ensure that all incidents are reported as instructed by their company incident reporting procedure.

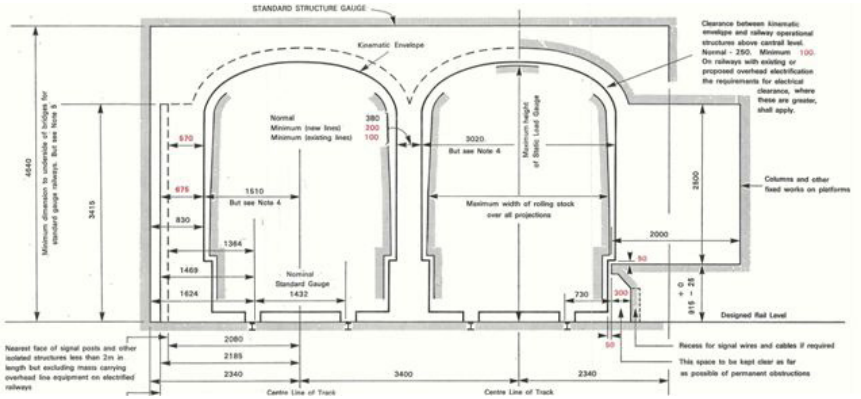
7.3 Emergency arrangements

When work is planned, the following arrangements for emergency situations must be included:

- who will be the designated person to handle the emergency
- what this person must do (contact the Controller, arrange for first aid, meet the emergency services)
- how the Controller is to be contacted.

8 Drawings

The PWT-EH must study and understand all clearance approval and project drawings. Drawings and other maintenance instructions must be kept up to date and made available to staff or contractors for guidance.



9 Lifting plans for lifting operations

Heavy lifts using cranes and other complex lifts using chain blocks require lifting plans, competent person(s), appointed person(s) and qualified banksman/slinger.

A banksman/slinger is defined as a competent person capable of:

- selecting and attaching/detaching lifting tackle to and from the load
- directing the movement of loads by crane power within the safe system of work.

The banksman/slinger should be in possession of a certificate of competence which has a validity period of two years.

10 Tool box briefing and communication

The work group must be briefed on all aspects of the work and the PWT-EH must ensure that all persons in the work group are:

- fit for work and compliant with the LU drugs and alcohol policy
- wearing the correct PPE
- suitably certificated
- aware of the agreed communications.

10.1 LU drugs and alcohol policy

If a member of the work group is suspected of being under the influence of alcohol or drugs, the PWT-EH is responsible for informing:

- their manager
- the station supervisor
- the BTP.

10.2 Personal Protective Equipment

PPE must be worn in accordance with the method statement and it is the responsibility of the PWT-EH to ensure:

- LU approved high visibility clothing is worn at all times when on LU infrastructure
- suitable work clothing is provided and worn correctly
- the work group wear sturdy footwear suitable for the task
- hard hats are worn in designated areas
- gloves, eye, ear protection and dust masks are provided and worn correctly if required.

10.3 Leptospiral Jaundice

Leptospiral Jaundice (Weil's disease) transmitted by rats urine and other vermin, in water. If untreated it can be fatal:

- cover all cuts and abrasions with waterproof plasters prior to working
- wear suitable protective clothing
- never touch face with unwashed hands or gloves
- if scratched whilst working, wash and report to doctor
- wash your hands before you eat, drink or smoke
- when work is finished, wash hands thoroughly in clean water.

11 Environmental Issues

The PWT-EH and the work group must be aware of the following environmental issues:

11.1 Waste management

Be aware that waste management is controlled by law and the PWT-EH must ensure that all of the work group comply by:

- disposing of waste in the correct segregated bins
- storing materials carefully so they do not get spoiled
- ensuring that waste is removed by licensed contractors and is accompanied by waste transfer documentation
- ensuring home waste is not brought onto the LU infrastructure
- ensuring waste is removed from the worksite at the end of the shift
- reporting illegal fly tipping to their manager.

11.2 Noise

Noise can result in poor community relations and possibly noise abatements which could result in work being stopped. Where reasonably practicable:

- keep shouting to a minimum
- turn engines off when vehicles and machinery are not in use
- keep noisy plant and activities away from residential properties where possible
- consider local businesses and residents when you park
- report all complaints to your manager.

11.3 Hazardous materials

Hazardous materials must be stored in containers appropriate for the material according to current Regulations. As a minimum the stored material must be:

- segregated and secure
- labelled as hazardous to indicate contents
- unable to escape, leak or produce foul odour or attract pests
- stored or decanted at least 10 metres away from sensitive receptors e.g. drains and surface water.

11.4 Pollution prevention

Polluting rivers, streams and groundwater is illegal. Even small amounts of some materials can cause serious pollution.

The PWT-EH must be made aware that:

- many of our drains go directly to rivers or streams
- drains are not a disposal route for wastes
- oil, fuel, antifreeze, silt and weed killer are just some of the polluting materials used on LU.

The PWT-EH must:

- store materials in the correct areas
- report spillage incidents using their companies incident reporting procedure.

11.5 Wild life and habitat

LU infrastructure is home to many legally protected species and that the PWT-EH must ensure the work being carried out does not:

- disturb nesting birds
- disturb protected species, such as bats, badgers and slow worms
- spread Japanese Knotweed.

Any accidental disturbance of wildlife and habitat must be reported to their manager.

12 Weedkilling Train

The weedkilling train can create another type of hazard, and special precautions may be necessary to protect the work group if entering an area within 24 hours of application.

The operation of the weedkilling train is published in the Traffic Circular on a weekly basis and on the NEPA on a nightly basis. If a work group is just passing through a treated area, within 24 hours of application, without carrying out work, then they do not require special precautions.

If working in a treated area within 24 hours of application, the PWT-EH must:

- make sure they wear approved disposable overalls, and gloves if working in contact with vegetation or track components
- ensure contaminated disposable clothing is sealed into plastic bags and disposed of correctly
- ensure work group scrub and wash their boots under running water at the end of the work in a treated area
- advise the work group to wash their hands before touching their face or body, and especially before eating or smoking.

13 Planning the protection for the work

The following must be considered and the PWT-EH must determine what areas must be booked via the Line Clear/Line Safe process to protect the work group:

- traction current sections to be worked on
- adjacent sections
- traction current switching times
- site access and egress
- evacuation procedures
- hazards
- relevant TAC and Signallers contact details
- general communications available
- multi work groups
- equipment to be used.

14 Site familiar

14.1 Basic areas

These areas are defined as single or double tracks with some points and crossings but no major junctions or restrictive features such as a long viaduct or fly under.

PWT-EH can make themselves familiar with a basic area by:

- taking a cab ride in a train
- studying 'places of safety' maps
- studying the traffic controllers' diagrams
- studying other sources of available information
- walking the site before taking a work group onto the track.

Platform grounds are treated as basic areas except where there is:

- multi track
- locations with other restrictive features.

14.2 Complex areas

These areas are defined as multi-track sites, major junctions and locations with restrictive features. The risks are greater due to the physical conditions on the ground. Persons providing protection who are unfamiliar with area(s) that are classified as complex must make a site familiarisation visit, accompanied by protection staff familiar with the area. This could involve a number of visits before the person is fully familiar with all the local conditions.

Details of Basic and Complex areas can be found in the Site Familiar Information document available from the Network Improvement website.

14.3 Local conditions

Conditions encountered at individual location(s) might include:

- bi-directional working
- multi-track areas
- parallel running or joining end-on to NR or other organisations' lines obstructions
- access routes and walkways
- depots and sidings
- traction current arrangements
- traction current rail gaps.

14.4 Traction current sections to be worked on

The traction current sections to be worked on can be found on the NEPA maps.

14.5 Adjacent sections

There will be situations where the adjacent sections will be required to be booked for protection, e.g. in LS areas.

14.6 Tractions current switching times

Areas in double track tunnels, traction current will normally be switched on and off at the same time on the adjacent sections. These areas are listed in Rule Book 16 (Going on the track in Engineering Hours). Also in some locations, traction current can be switched on and off at different times on adjacent roads.

14.7 Multi work groups

One PWT-EH can protect separately located work groups working on station platforms as long as:

- the work is pre-planned and a method statement and risk assessment including a protection plan is provided
- two-way communications are provided where personnel are working out of direct verbal contact with each other, and each work group has its own PWT-EH
- personnel stay within the area detailed in the protection plan and work only on the platform or the track areas of a station not fitted with PEDs, which is up to and including the platform ramps or the headwalls
- the work limits are defined on site, including if necessary using warning notices or other visible demarcation (e.g. temporary barriers).

One PWT-EH can protect separate groups of personnel on the track, as long as:

- the work is pre-planned and a method statement and risk assessment including a protection plan is provided
- where there are separate groups of personnel, each group has its own PWT-EH
- the person providing the protection can remain in two- way communication with each PWT-EH
- the person providing the protection remains in the area booked with the TAC and can maintain control of the arrangements on site at all times
- each PWT-EH remains with the personnel they are responsible for throughout the work.

If there is more than one PWT-EH, the person providing the protection must decide which PWT-EH will communicate directly with them.

If the designated PWT-EH that is not providing the protection is required to leave the worksite they must:

- nominate a suitably certificated person to take over the designated PWT-EH responsibilities
- inform the PWT-EH providing the protection and provide the name of the designated PWT-EH taking over.

The PWT-EH providing the protection must remain with the work group(s) they are protecting. If it is necessary for the PWT-EH providing the protection to leave the work group(s), they must take the work group(s) off the track.

The only exception to this is when requesting LSP. The safety of the work group must be considered if the PWT-EH leaves the work group.

15 Tools, equipment and materials

When planning the work the PWT-EH must ensure that the following requirements are met:

- what equipment can be used and where
- calibration
- fit for purpose
- in date
- materials
- spares
- personnel are trained to use tools.

There are additional factors to consider when using certain equipment during Engineering Hours.

15.1 Diesel power packs and gas monitoring equipment

If the work is in a Line Clear area and the use of a diesel power pack is required:

- gas monitoring equipment must be used
- it must be published when possible
- on the night of use the TAC incident desk must be informed before 23:00 hours.

15.2 Track trolleys

Any track trolley proposed to work on LU infrastructure must satisfy LU's design standards and is of a type approved for use on LU. All trolleys irrespective of ownership must be registered on a Plant Maintenance Management System and must be allocated a registration number which is unique to each track trolley and contain the asset holder's reference number.

A two - piece track trolley must have the same reference number permanently fixed to each part of the track trolley.

When track trolleys are being used, including motorised trolleys and railcycle track trolleys.

The PWT-EH must:

- set up a safe system of work covering the movement of trolleys
- at the start of the shift, tell the appropriate signaller the requirement to secure points
- ensure that any track trolley operator has been trained and certificated for the type of trolley being used
- the track trolley operator takes responsibility for placing the track trolley on the track and removing it after use
- tell the track trolley operator(s) information about track cant, curvature and gradient before the track trolley(s) is placed on the track
- ensure that a certificated track trolley operator accompanies each trolley
- control the movements of track trolleys being used in close proximity to each other to ensure safety is maintained
- brief all staff on how and where the track trolley(s) is to be used
- ensure nobody rides on a track trolley unless it is purpose built
- on completion of the work, confirm to the appropriate signaller that all points are un-secured.

If a railcycle track trolley is being used, the operator must be a certificated PWT-EH.

15.3 Carrying scaffolding or towers

When track trolleys are used to transport scaffolding or towers, a safety plan must be drawn up by the responsible manager and must include:

- the number of trolleys to be used
- stability factors of the scaffolding or tower when being used and when being moved, taking into account track gradient, cant and curvature
- clearances from overhead structures or cables
- the competence of those erecting and dismantling the scaffolding or tower
- the safety of all personnel involved in the task.

15.4 Storage of track trolleys

The PWT-EH is responsible for ensuring:

- a storage license is applied for
- that when stored near the track the track trolley is secured by chain and padlock and does not obstruct the cess
- that if the trolley is capable of being dismantled, each component must be secured by chain and padlock.

15.5 Motorised trolleys and railcycles

When a motorised or a railcycle track trolley is being used in the Line Clear or Line Safe (or both) area during Engineering Hours details of its working area must be published. In an emergency where it has not been possible to publish details, the TAC incident desk must be informed before 23:00. The TAC's permission is required for its use for the shift concerned.

16 Weather conditions

LU's definition of wet weather:

- continuous rain, hail or snow and periods when the track is wet enough to increase the risk of electrocution.

LU has a firm policy on wet weather:

- live track must not be worked on during periods of continuous wet weather
- the policy applies to everyone, LU and supplier employees
- staff have the right to refuse to work if they consider it dangerous.

When working during wet weather:

- the PWT-EH makes the decision weather work will take place
- wet weather might increase the underfoot hazards in open sections
- if the track is live, wet clothing can increase the risk of electrocution.

17 Traction current supply

Traction current is fed to the traction current rails from a number of substations. Each traction current section has a substation at each end (in most cases). There is a rail gap at the end of each traction current section, where the feed changes to a new substation (in most cases).

Substation gaps are normally indicated by a rail gap indicator and these are normally only visible when approaching a substation gap in the Direction of Travel (DOT).

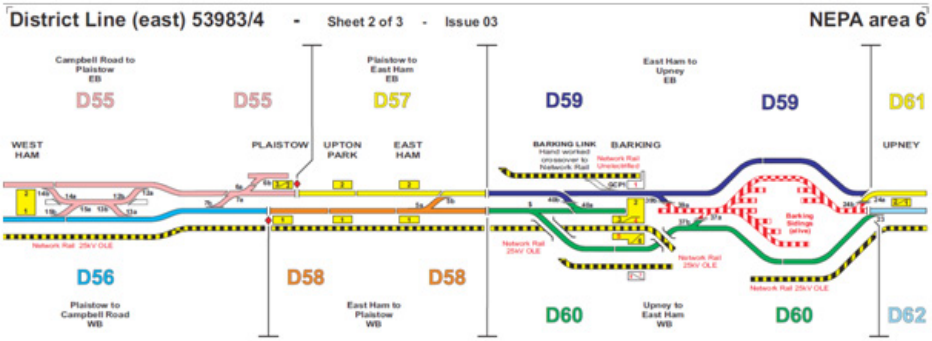
The naming of the sections is taken from the naming of the substations at each end of the section in the DOT. This naming is often taken from the underground station they are located at or near. In some cases the substations are named after the street or road they are located in (e.g. Cobourg Street to Cloudesley Road on the Victoria line).

When access is booked with the TAC, in addition to knowing the worksite location, the names of the traction current sections to be worked on must also be known, and any section(s) required for additional protection purposes or for access. All sections must be recorded correctly in the LC/LS log book.

The TAC may ask the PWT-EH to confirm if they have the correct traction current section(s) recorded. The TAC will refuse access if the correct traction curent section(s) are not identified.

18 Nightly Engineering Protection Arrangements Maps

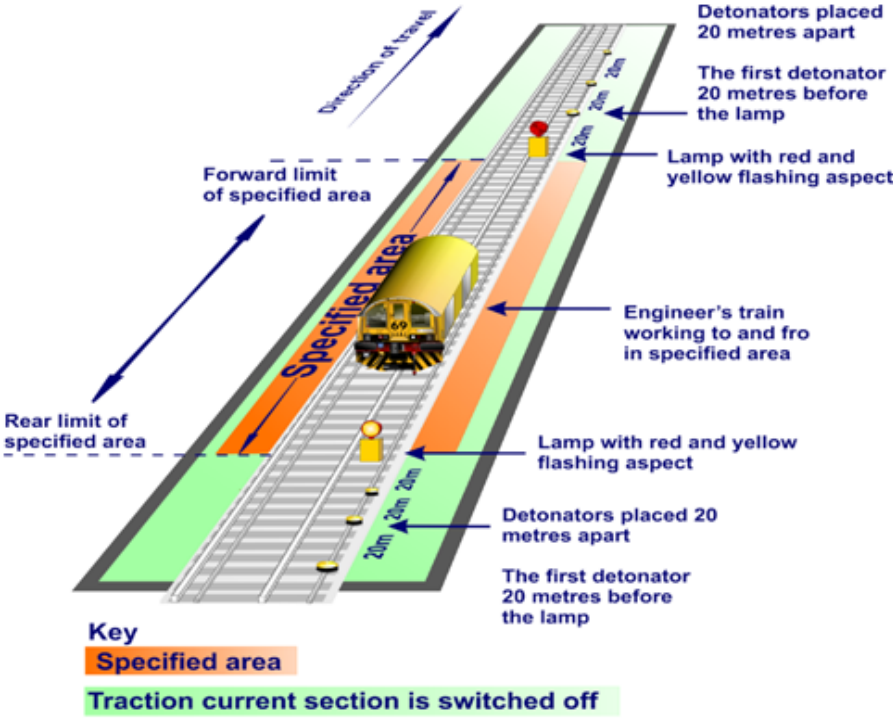
These maps are provided for persons providing protection. They show the traction current section using colour coding.



The PWT-EH must use the NEPA maps, to identify the relevant traction current sections required for the work.

19 Specified Area

When an engineer's train or mechanised vehicle is required to work with traction current off in Engineering Hours, it must do so only within a specified area or a possession.



section 19 Specified Area

Specified areas within single bore tunnels in Line Clear areas must be defined from one station to another (including disused stations) and, unless otherwise published, the entire length of any platforms at the extremities of the specified area must be included. This will provide access to leave the tunnel in an emergency. This requirement also applies to all reductions in length of specified areas within Line Clear areas.

Specified areas within Line Safe areas and double track Line Clear sections must only be defined from the following locations:

- station platforms (when including the entire platform length)
- station starter fixed signals (when not including the entire platform length)
- other fixed signals
- tunnel mouths or bridges
- traction current rail gaps
- junctions (the limits of specified areas defined at points or crossovers must always include the whole set unless otherwise stated).

20 Working with an engineer's train or mechanised vehicle

The PWT-EH must:

- ensure all members of the work group are certificated to work with moving trains
- brief each person controlling the train movement, and each engineer's train operator or mechanised vehicle operator, to agree the communication details and the use of cab telephones or hand-held radios (or both)
- brief the person controlling the train movement about the engineer's train or mechanised vehicle movements the work will require
- ensure the work group move to a safe place before any engineer's train or mechanised vehicle movement
- ensure the loading of an engineer's train is always supervised by a competent person.

20.1 Travelling on an engineer's train

Engineer's trains working in a possession or a specified area must not carry personnel in the wagons unless it is necessary and safe to do so, and the following conditions have been met:

- traction current is off at all times
- there is sufficient room within the train and train loads are properly secured
- the wagons are fitted with sides or handrails
- personnel can safely get on and off the train from a platform or via the approved wagon
- there are steps and handrails
- personnel must not get on or off while the train is moving

- all personnel are given a safety briefing on the procedures to follow, before they get on the train
- personnel must position themselves so they will not come into contact with any structure which could cause them injury
- communication with the train operator must not be adversely affected
- the train is driven slowly
- while the train is moving all personnel must observe safety procedures. If an unsafe situation arises, the train must be stopped as soon as it is safe and reasonably practical
- personnel working with the train must not get on or off the train until it has been confirmed that it is safe for them to do so.

20.2 Working with on-track plant

When working with on-track plant the PWT-EH must brief the operator of the on-track plant and any banksman/slinger working with it. The briefing should include:

- the limits and scope of the work to be undertaken at the worksite
- the emergency, safety and first aid procedures for the worksite
- what plant and equipment will be in operation at the worksite, and what processes will be undertaken
- the identity and authority of the person appointed to control the on-track plant
- the locations where the on-track plant can be on and off tracked
- the locations where the on-track plant can be stabled
- what actions to take when approaching a set of points
- the action to take if the on-track plant runs over a detonator
- the method of warning to use before moving

- the hand signals to be used
- any other information relevant to the safe method of working.

20.3 Unrelated work in a specified area

Unrelated work in a specified area can only be permitted in an emergency, when there is urgent work that is critical to the operation of traffic the next day.

Unrelated work in a specified area is not permitted if:

- an engineer's train is scheduled to uncouple in the course of work
- there is more than one engineer's train working in the specified area.

20.4 Conditions of unrelated work being permitted

To carry out unrelated work in a specified area the PWT-EH must:

- be certificated for both Traffic and Engineering Hours protection
- have the agreement of the relevant person controlling the train movement
- make sure that all personnel being protected are certificated to work with trains moving.

The PWT-EH must ask the TAC for the details of the person controlling the train movement responsible for the specified area.

section 20 Working with an engineer's train or mechanised vehicle

The PWT-EH must agree the following information with the person controlling the train movement:

- the nature and location of the work
- the number of personnel involved
- movement of the engineers train
- the protection arrangements being applied
- working and communication arrangements to be used
- the time work will be finished.

Specified area agreement forms must be completed when undertaking unrelated work in a specified area. Additional protection from moving trains might be required.

21 Engineer's Current Area

An Engineer's Current Area (ECA) is used where a train is working with traction current on during Engineering Hours. The traction current sections within the limits of an ECA are known as 'Active' traction current sections. This means these traction current sections have traction current switched on for the movement of the train.

To protect the ECA, all traction current sections adjacent to the 'Active' traction current sections, must be switched off. These sections that are switched off are known as 'Allied' traction current sections. They include all traction current sections where it is physically possible for a train to gain access to the Active traction current sections.

Staff can work in the Allied sections of an ECA as long as they are protected by Line Clear or Line Safe procedures.

The area, over which the train will be working, defined by lamps and detonators, is the ECA.

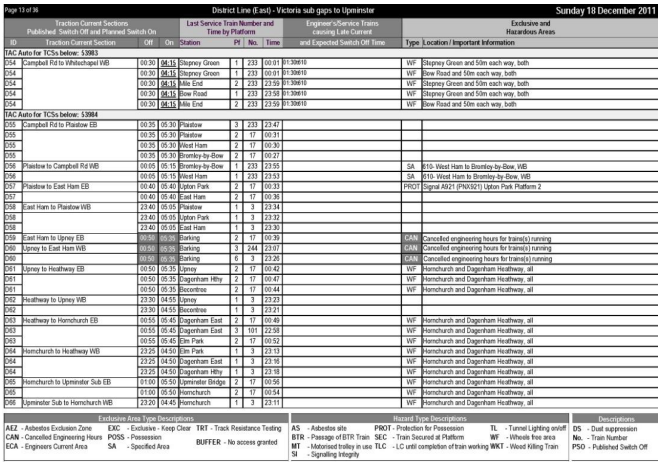
Special arrangements will have to be made if personnel are required to work in an ECA; this will only be done in an emergency, co-ordinated by the TAC.

22 Nightly Engineering Protection Arrangements

The NEPA provides all the information for the work that is taking place that night. It provides information in a logical way in a single document for the line(s) the PWT-EH is working on.

The NEPA contains the following information:

- ID codes
- traction current sections
- traction current switching times
- last service train number and time by platform
- engineer's/service trains causing late current and expected switch off time
- exclusive and hazardous areas
- TAC telephone number
- relevant signallers telephone number.



Page 13 of 36 — District Line (East) - Victoria sub gaps to Upminster — Sunday 18 December 2011

Traction Current Sections Published Switch Off and Planned Switch On				Last Service Train Number and Time by Platform				Engineer's/Service Trains causing Late Current and Expected Switch Off Time	Exclusive and Hazardous Areas	
ID	Traction Current Section	Off	On	Station	Plf	No.	Time		Type	Location / Important Information
TAC Auto for TCSs below: 53983										
D54	Campbell Rd to Whitechapel WB	00:30	04:15	Stepney Green	1	233	00:01	01:39610	WF	Stepney Green and 50m each way, both
D54		00:30	04:15	Stepney Green	1	233	00:01	01:39610	WF	Bow Road and 50m each way, both
D54		00:30	04:15	Mile End	2	233	23:59	01:39610	WF	Stepney Green and 50m each way, both
D54		00:30	04:15	Bow Road	1	233	23:58	01:39610	WF	Stepney Green and 50m each way, both
D54		00:30	04:15	Mile End	2	233	23:59	01:39610	WF	Bow Road and 50m each way, both
TAC Auto for TCSs below: 53984										
D55	Campbell Rd to Plaistow EB	00:35	05:30	Plaistow	3	233	23:47			
D55		00:35	05:30	Plaistow	2	17	00:31			
D55		00:35	05:30	West Ham	2	17	00:30			
D55		00:35	05:30	Bromley-by-Bow	2	17	00:27			
D56	Plaistow to Campbell Rd WB	00:05	05:15	Bromley-by-Bow	1	233	23:55		SA	610- West Ham to Bromley-by-Bow, WB
D56		00:05	05:15	West Ham	1	233	23:53		SA	610- West Ham to Bromley-by-Bow, WB
D57	Plaistow to East Ham EB	00:40	05:40	Upton Park	2	17	00:33		PROT	Signal A021 [PNX021] Upton Park Platform 2
D57		00:40	05:40	East Ham	2	17	00:36			
D58	East Ham to Plaistow WB	23:40	05:05	Plaistow	1	3	23:34			
D58		23:40	05:05	Upton Park	1	3	23:32			
D58		23:40	05:05	East Ham	1	3	23:30			
D59	East Ham to Upney EB	00:50	05:35	Barking	2	17	00:39		CAN	Cancelled engineering hours for trains(s) running
D60	Upney to East Ham WB	00:50	05:50	Barking	3	244	23:07		CAN	Cancelled engineering hours for trains(s) running
D60		00:50	05:50	Barking	6	3	23:26		CAN	Cancelled engineering hours for trains(s) running
D61	Upney to Heathway EB	00:50	05:35	Upney	2	17	00:42		WF	Hornchurch and Dagenham Heathway, all
D61		00:50	05:35	Dagenham Hthy	2	17	00:47		WF	Hornchurch and Dagenham Heathway, all
D61		00:50	05:35	Becontree	2	17	00:44		WF	Hornchurch and Dagenham Heathway, all
D62	Heathway to Upney WB	23:30	04:55	Upney	1	3	23:23			
D62		23:30	04:55	Becontree	1	3	23:21			
D63	Heathway to Hornchurch EB	00:55	05:45	Dagenham East	2	17	00:49		WF	Hornchurch and Dagenham Heathway, all
D63		00:55	05:45	Dagenham East	3	101	22:58		WF	Hornchurch and Dagenham Heathway, all
D63		00:55	05:45	Elm Park	2	17	00:52		WF	Hornchurch and Dagenham Heathway, all
D64	Hornchurch to Heathway WB	23:25	04:50	Elm Park	1	3	23:13		WF	Hornchurch and Dagenham Heathway, all
D64		23:25	04:50	Dagenham East	1	3	23:16		WF	Hornchurch and Dagenham Heathway, all
D64		23:25	04:50	Dagenham Hthy	1	3	23:18		WF	Hornchurch and Dagenham Heathway, all
D65	Hornchurch to Upminster Sub EB	01:00	05:50	Upminster Bridge	2	17	00:56		WF	Hornchurch and Dagenham Heathway, all
D65		01:00	05:50	Hornchurch	2	17	00:54		WF	Hornchurch and Dagenham Heathway, all
D66	Upminster Sub to Hornchurch WB	23:20	04:45	Hornchurch	1	3	23:11		WF	Hornchurch and Dagenham Heathway, all

Exclusive Area Type Descriptions

AEZ - Asbestos Exclusion Zone
CAN - Cancelled Engineering Hours
ECA - Engineers Current Area
EXC - Exclusive - Keep Clear
POSS - Possession
SA - Specified Area
TRT - Track Resistance Testing
BUFFER - No access granted

Hazard Type Descriptions

AS - Asbestos site
BTR - Passage of BTR Train
MT - Motorised trolley in use
SI - Signalling Integrity
PROT - Protection for Possession
SEC - Train Secured at Platform
TLC - LC until completion of train working
TL - Tunnel Lighting on/off
WF - Wheels free area
WKT - Weed Killing Train

Descriptions

DS - Dust suppression
No. - Train Number
PSO - Published Switch Off

Once the PWT-EH has obtained all relevant information, the LC/LS log book can be completed with the details the TAC will require when requesting access.

23 Signing in at the station

All staff or visitors when working at or visiting a station other than their normal place of work must sign in with the station supervisor on arrival and sign out on departure. On arrival they must:

- give their name and show their identification
- explain the purpose of their visit
- give all relevant details as necessary.

To work on a station you must have either:

- a valid SABRE number and be listed on the Station Works Plan or Generic Access Plan
- a valid recognised fault number.

The following are not required to sign in with the station supervisor:

- emergency services personnel
- LU operational staff or the Emergency Response Unit, attending an incident, unless they remain on the station after the incident
- signal and train technicians attending a fault or incident, unless they remain on the station after the incident
- police officers on patrol duties
- revenue control inspectors or HM Revenue & Customs personnel in plain clothes
- staff employed or booking on at engineering depots, for example a track cabin, that are an integral part of a station.

Staff walking through a station at track level are not required to report to the station supervisor of that station. Such staff must report to the station supervisors at the stations where they start and finish their track walks.

23.1 Engineering Hours

The Person in Charge Evacuation Register (PiCER) is the station access process.It is completed by the PWT-EH. The PiCER is applicable to all persons or groups of persons attending a station for work on the LU infrastructure.

PICER Number(from Permit Access):

London Underground Limited

Person in Charge Evacuation Register (PiCER)

Station:	Contractor:	Date:
Person-in-charge Name:	Sub-Contractor:	Access Number:
Contact Number:		

Location and type of works: (to include exit station where different from booking on station)

By signing on, you are declaring that you have not consumed any alcohol or taken any controlled substances, which place you in contravention of London Underground's Drugs and Alcohol Policies.

	Name	Entry Permit Number	Signature	Station Arrival Time	Time Booked Out
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

Person-in-Charge Declaration – Entry

I have witnessed the above persons signing this register and confirm that no one has any obvious signs of them being in contravention of London Underground's Drugs and Alcohol Policies. I will ensure a safe system of work is maintained at all times. I also confirm that the above person have:

- All necessary London Underground and other licences and certificates of training.
- Been briefed as to the limits and scope of their work and have received/will receive the necessary safety briefings.
- Been/Will be briefed on local evacuation and safety procedures and are aware of emergency contact numbers.
- Been made aware of, and will comply with, the strict no smoking policy whilst on London Underground premises.

Where Protection staff are required for the works the person-in-charge and Protection Master are to brief each other, agree a safe system of work and ensure staff under their control are aware of the arrangements prior to work commencing.

Name: Signature Time:

Operational checks undertaken by Station Supervisor on the Person-in-charge, representing the above work party, according to the London Underground Rule Books.

Station Supervisor Name: Signature: Time Booked On:

Infraco Cell Verification Number (Where appropriate):

Person-In-Charge Declaration – Exit

I can confirm that all areas under my control have been left in a clean, safe and secure state. I also confirm that all personnel in my work party are accounted for and left site. The exception being the Fire Watchperson who will remain on site for the required minimum of 1 hour after cessation of the hot works.

Name: Signature: Time:

When the PiCER form has been signed off the PWT-EH must:

- sign in and record the number of staff in the work group in the visitor's book
- take the appropriate number of visitors passes
- record the pass numbers in the visitors' book.

In the case of Engineering Hours and large work groups, the PWT-EH is responsible for confirming the validity of the LUCAS cards.

23.2 Accessing unstaffed stations

If access to a closed or an unstaffed station is required the PWT-EH must:

- make arrangements beforehand
- agree where to sign in and collect any keys if required.

If the unstaffed station becomes staffed you must cancel the original pass or passes and sign in the visitors book at that station.

When signing in at any station the station supervisor must give the PWT-EH details of:

- the emergency evacuation procedure and SAP
- the fire alarm procedure
- the availability of first aid equipment (if none provided under the safe system of work)
- any operational safety restrictions on the station
- any additional hazards.

The PWT-EH must repeat the briefing to all persons in the work group.

23.3 When contractors arrive late

If personnel arrive after the work group has been signed in the station supervisor must contact the PWT-EH and ask them to attend the office to assist with the signing in of the additional members of the work group. The PWT-EH can appoint a competent deputy to assist with this.

23.4 When a contractor wishes to leave early

The PWT-EH must make sure the work group is aware that they must sign out with the station supervisor if they wish to leave before the PWT-EH.

23.5 Denied access

If the station supervisor has concerns which cannot be resolved with the PWT-EH, they must not deny access. The station supervisor must inform either the Duty Operations Engineer, or Duty Operations Manager engineering via the FRC. Denied access can only be implemented when authorised to do so.

The station supervisor must:

- inform the PWT-EH that access has been denied
- complete a denied access form detailing the reason for the denied access and issue it to the PWT-EH
- ask the PWT-EH to sign the denied access form.

24 Communications

The following are examples of the various methods of communication used on LU:

- connect radios
- hand signals
- mobile phones
- BT phones
- LU auto network
- verbal.

A	Alpha	J	Juliet	S	Sierra
B	Bravo	K	Kilo	T	Tango
C	Charlie	L	Lima	U	Uniform
D	Delta	M	Mike	V	Victor
E	Echo	N	November	W	Whiskey
F	Foxtrot	O	Oscar	X	X-Ray
G	Golf	P	Papa	Y	Yankee
H	Hotel	Q	Quebec	Z	Zulu
I	India	R	Romeo		

24.1 Using Numbers

Numbers 10 and above being used in a message, must be stated one at a time.

For example, 'Train 123' must be spoken as 'Train one two three' not 'Train one hundred and twenty three'

The number '0' as 'zero'

When signals, points, train descriptions or locations have similar names or numbers (for example, signals A114 and A314 on adjacent lines), care must be exercised so as not to cause confusion.

Numbers should not be quoted separately when times are being stated, for example, the time 13.17 hours should be stated as 'thirteen seventeen'.

25 Booking on with the TAC

The PWT-EH must book on with the TAC before gaining access to the track. The TAC desks are open for bookings as published each night. Persons providing protection do not have to wait to get to the access point before booking on with the TAC, but they must have prepared their LC/LS log book with the information gathered during the preparation stage.

When booking on with the TAC at a location other than the access point, the persons providing protection must give the TAC a contact number in case they need to be informed of any late changes.

On occasions it may be necessary to book on with more than one TAC when the booking covers separate TAC control areas

When booking on with the TAC, the PWT-EH must follow the prompts given by the automated telephone system.

When prompted they must confirm that:

- they have entered their IV and SABRE Number(s)
- they have read the relevant publications
- they have access to an approved CRID
- the SPC is present, if applicable.

The PWT-EH must provide the TAC with the following information:

- confirmation of name and employer
- location of work
- nature of work
- number of staff
- equipment being used and whether the track is being made unsafe
- contact number.

The TAC may give additional information that might affect the booking. For example:

- an engineer's train travelling through the area has been cancelled
- service disruption, late running trains out of turn, changes to last train numbers
- winter weather arrangements and additional hazards
- revised traction current alterations.

This information must be recorded in the LC/LS log book.

The TAC will then provide the following information:

- confirmation of booking
- confirmation of trains holding late current
- details of any motorised track trolley(s)
- diesel power pack users published or already booked on in the Line Clear area.

The following information must be repeated back to the TAC and recorded in the LC/LS log book:

- TAC reference number
- call back time
- time check.

The call back time is normally 20 minutes (10 minutes for the Waterloo and City line) before the switching on time for the traction current section(s) that access is being booked for.

If working on more than one traction current section, the call back time given will be for the traction current section which will be switched on first.

26 Work group safety briefing

After booking on with the TAC, the PWT-EH must hold a safety briefing with the work group and inform them:

- to wear LU approved PPE when on the track
- of the relevant details of the protection plan
- the location of the worksite
- any other work in the area which could affect their work
- of any track trolley workings
- of the time to stop work
- when it is expected to be safe to go on the track
- of any other relevant information.

This is the minimum content of a safety briefing.

27 Contacting the signaller

PWT-EH must witness the passage of the last train. If this has not been possible, they must contact the relevant signaller to ensure all train movements have ceased in the area being accessed. The NEPA will show any changes to the last trains. The front and rear of a train must be checked to confirm the train running number.

Station staff will not be able to confirm if the last train has departed their station.

28 Current Rail Indicator Device

28.1 Prior to using a CRID

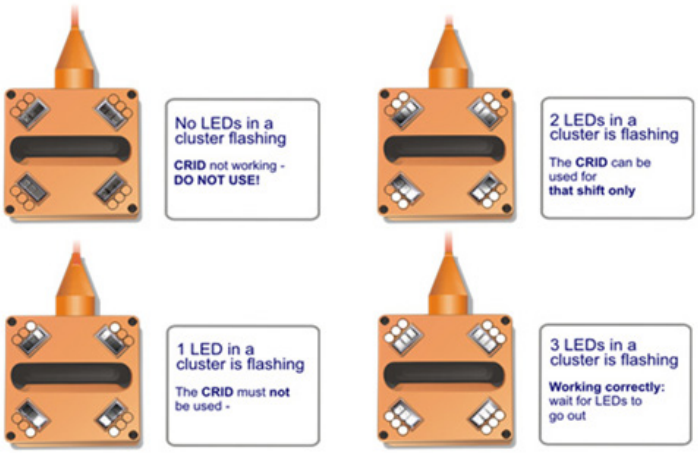
The PWT-EH must inspect the CRID for visible signs of damage, defect and date of expiry.

If the CRID appears to be damaged, defective or out of date, it must not be used and a replacement must be obtained.

The PWT-EH must self-test the CRID by:

- connecting the two units together (base to base) by aligning the arrows, using the rail securing magnets to hold the units in place
- pressing and holding the test push button for at least five seconds. Check the red battery status indicator illuminates. If it does not, the CRID can be used for that shift only, provided the Light Emitting Diodes (LEDs) function correctly, as shown below.

Check the status of the LEDs as follows:



28.2 Using a CRID to check for traction current

After undertaking the self-test, place the CRID on the traction current rails to check for traction current.

Make sure the base and contacts on the terminal units are clean and dry. This is to make sure of a good electrical contact.

28.3 Before placing a CRID

Make sure that the surface of the traction current rails where the CRID will be placed is flat e.g. not ramp ends.

The checking of traction current rails in station limits must be carried out at the normal departure end of the platform. The PWT-EH must access the track by following the Line Clear/Line Safe procedures.

Rule Book 16 Going on the track in Engineering Hours refers to a list of locations where trains can approach a platform from either direction.

28.4 Placing a CRID

Stand in the four foot, between the conductor rails, facing the DOT where possible and place the terminal unit without the LED clusters on the negative rail first, letting go of that unit before placing the other unit on the positive rail and letting go. Make sure that both units are sitting fully on top of each traction current rail and leave there for at least five seconds.

If the LEDs illuminate at any time, it means that traction current is on. In this situation, remove the CRID, leave the track and go to a place of safety.

28.5 Removing a CRID

When removing a CRID from the traction current rails, make sure the unit is removed from the positive rail first and then remove the other unit from the negative rail.

After removing the CRID from the traction current rails, repeat the self testing process.

Every CRID must undergo a self-test before and after checking for traction current to make sure it is working correctly. If the CRID fails either test, staff must not go on the track until a properly functioning replacement has been found.

LU approved high visibility clothing must be worn at all times when on or near the track.

A CRID must not be used:

- if it is out of date (must be valid for the entire shift)
- if it is damaged
- if it fails the self test
- on rusty traction current rails
- on traction current rail ramps
- on out of gauge traction current rails.

Always be alert to the danger from moving trains.

28.6 P-CRID

The P-CRID is a permanently fixed traction current status indication device designed to improve the safety of staff accessing the track or those whose work might affect the track. Only those staff appropriately trained or briefed can use a P-CRID as the primary method for determining traction current status.

The fail safe mechanism of the P-CRID unit is designed to remove the risk of staff accessing the track when traction current is either switched on or its status cannot be determined.

When it has been established that the P-CRID is functioning correctly, the following procedures must be followed.

If the P-CRID displays either an:

“ON” indication or

“OFF” indication

This means that the unit is functioning correctly and can be safely used to establish the traction current status.

If a FAULT indication is shown then this unit must not be used and must be reported to Tube Lines Control Centre (TLCC).

29 Switching Off Traction Current

29.1 Reasons why traction current might not be switched off at the published time

Traction Current switch off time may be amended due to:

- late last train
- operational incident
- amendment to existing switch off times
- engineers train scheduled to run.

29.2 What to do if the traction current is still on after the published off time

If the traction current is still switched on after the published off time, the reason for this should be stated in the NEPA. If the reason is unscheduled, the controller would know the reason and communicate this to the TAC and the PWT-EH will be advised. If the PWT-EH is unsure why traction current is still switched on after the published switch off time, they should contact the TAC incident desk.

29.3 What to do if traction current goes off early

If the PWT-EH becomes aware that traction current has been switched off before the passage of the last train, or published time for switching traction off, they must not go on the track. The TAC incident desk must be contacted immediately.

29.4 What to do if crossing into another traction current section

If the route taken to the worksite requires access to another traction current section, the PWT-EH must check for traction current using the procedures for checking using a CRID/P-CRID. The work group must not enter the section until instructed by the PWT-EH. It is the responsibility of the PWT-EH to ensure the work group are in a place of safety before the check is conducted.

30 Going on the track

30.1 Going to the worksite

If it is necessary for the work group to walk to a worksite the PWT-EH must lead the work group and make sure everyone understands that they must not walk in front of the PWT-EH. The PWT-EH may have to deliver another briefing at the worksite, particularly if circumstances have changed from the platform briefing.

If using Track Trolley(s) or Ironmen, points must be secured for movement over them.

30.2 Safety at the worksite

The PWT-EH must monitor the progress of the work against the call back time. They must make sure the work group remains within the protected area.

31 Starting and finishing work in Traffic Hours

In the Line Clear area, work can only be carried out during Engineering Hours, unless special arrangements have been put in place. In the Line Safe area work can be carried out outside Engineering Hours, provided certain conditions are met:

- all staff are suitably certificated for Traffic Hours and have Traffic Hours protection
- the track is not made unsafe for trains to run.

31.1 Working into Traffic Hours

If work is to continue into Traffic Hours in a Line Safe area, the work group must be certificated for Traffic Hours and the track must be safe for trains to run, The PWT-EH must:

- take the work group to an area off the track
- identify the Protection Master Traffic Hours (PMTH)
- ensure the PMTH sets up the safe system of work and sets up protection
- ensure the PMTH briefs the work group
- record that work is to continue under Traffic Hours protection, in their LC/LS log book
- pass a Site Safe message to the TAC informing the TAC that work is continuing under Traffic Hour protection.

If the work group are not certificated for Traffic Hours and the track is not safe for trains to run, then work can only continue under LSP.

32 Late Surrender Protection

LSP is required when:

- the PWT-EH informs the TAC that work will not be finished by the call-back time and the track is unsafe for trains to run
- the PWT-EH fails to pass a Site Clear or Site Safe message to the TAC by the call-back time.

LSP is introduced to maintain protection until the work is finished or the missing person providing protection is found, or any searcher has confirmed that the missing person providing protection is not on-site and the track is safe for trains to run.

LSP requires appropriate measures to prevent trains from entering traction current section(s) where traction current remains switched off, because Site Clear or Site Safe messages have not been received.

32.1 Leaving the work group

The PWT-EH must consider what track certification the work group have and to appoint the deputy identified at the planning stage to remain with the work group at the work site, or to take the work group to a place of safety.

If the PWT-EH needs to leave the work group, to request LSP, the safety of the work group must be considered at all times.

In deciding this, it should also be considered whether:

- it is in an open section with readily available places of safety
- it is a single bore tunnel
- there is a station nearby
- there is a need to walk to a telephone to contact the TAC, and how long this will take
- any other factors.

32.2 Informing the TAC

If the PWT-EH becomes aware that work will overrun, the TAC must be contacted as soon as possible, and the following information provided:

- name
- location
- TAC reference number
- that the job will not finish on time and that LSP is required
- the reason for LSP
- an approximate time when the work will finish (if known)
- telephone number from where they are calling.

The PWT-EH must also inform the TAC:

- which traction current sections require LSP
- where possible give a Site Clear or Site Safe message for any traction current section(s) which are no longer required.

If giving up any traction current sections, a safe exit for the work group must be available.

The TAC will give instructions:

- to wait for confirmation that LSP has been implemented
- to contact them again after 10 minutes if it is not confirmed that LSP has been implemented.

If the confirmation message that LSP has been implemented is not received after 10 minutes, the work group should be removed to a place of safety to await further instructions from the TAC. LSP is not implemented until confirmed by the TAC.

32.3 On completion of work

When the work has been completed the PWT-EH must make sure that the work group leaves the track and that the worksite is clear of materials, equipment and anything else that could endanger the train service. They must also make sure that anything left on-site is secured.

32.4 Journey from the worksite

The PWT-EH Must:

- lead the work group off the track
- maintain protection whilst leaving the worksite
- make sure the work group remain within the area booked with the TAC
- once off the track, instruct the work group not to return to the track because protection is being removed.

32.5 Booking off with the TAC

The PWT-EH must then contact the TAC stating:

- their name
- the TAC reference number
- the Site Clear/Site Safe message stating that all staff and equipment are clear of the track and it is safe for trains to run.

The TAC will confirm the TAC reference number and the Site Clear/Site Safe message and give the PWT-EH the time they cleared. The PWT-EH must repeat back the time cleared to the TAC and record the time in the LC/LS log book.

33 Signing out at the station

When the work is complete and before signing out, the PWT-EH must check the worksite and confirm it has been:

- cleared of all persons in the work group
- cleared of tools, plant, equipment, materials or any other obstructions
- left in a clean, tidy and safe condition.

33.1 Signing out of a staffed station

The PWT-EH must:

- sign out in the visitors book
- sign out for their staff (if applicable)
- return all visitor passes.

In addition the PWT-EH must:

- make sure all members of the work group are signed out on the PiCER form
- sign the 'Person in Charge' declaration-exit section of the PiCER form
- take the copy of the PiCER form from the station supervisor.

The PWT-EH must now leave the station and make sure that all members of the work group (if applicable) have left the station.

33.2 Signing out of an unstaffed station

If the station is unstaffed, the PWT-EH must go to the nominated location to sign out with the station supervisor responsible and return the keys.

If a visitor's pass has not been returned, the station supervisor must:

- arrange for a search of the premises
- tell the person's manager or supervisor
- ask for the pass to be returned
- submit a written report to the landlord manager.

34 Possessions

A possession is a designated area of track taken out of service, protected against unauthorised trains, under the control of a Possession Master (POM) and a Protection Support Manager (POSM).

Any possession on LU's infrastructure must be adequately protected by an approved method such as:

- maintaining signals at danger
- securing facing points to divert trains away from the area
- securing a vehicle
- Line Clear/Line Safe procedures to create buffer zones
- operation of a protection key switch.

Some or all of the protection arrangements can be delegated to suitably qualified staff.

If the possession is during Engineering Hours the POSM is responsible for setting up a safe system of work for each worksite with the PWT-EH. The PWT-EH is then responsible for:

- managing the safe system of work for the worksite in collaboration with the POSM
- liaising with the POSM on movement of engineer's trains and mechanised vehicles into and out of their worksites
- co-ordinating with the person controlling the train movement, the movement of engineer's trains and mechanised vehicles within the worksite.

35 References

- Rule Book 1 Communications
- Rule Book 3 Traction current and high voltage supply
- Rule Book 10 Station Access
- Rule Book 14 Possession Planning and Management
- Rule Book 15 Possession Protection Methods
- Rule Book 16 Going on the track in Engineering Hours
- Rule Book 17 Managing access to the track in Engineering Hours
- Rule Book 18 Engineer's Trains, Vehicles and Trolleys
- The Regulatory Reform (Fire Safety) Order 2005
- The Fire Precautions (Sub-Surface Railways Stations) (England) Regulations 2009