Transport for London
London Underground

Head of Logistics and Manufacturing

Protecting Workers on the Track Engineering Hours

Learning information booklet

Issue 5

Effective October 2021

MAYOR OF LONDON

Contents

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).

1.1 On successful completion of training

On successful completion of 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 Responsibilities

The PWT-EH will be responsible for:

Protection:

- reading the relevant publications
- completing the Line Clear/Line Safe (LC/LS) logbook
- booking on and off with the Track Access Controller (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 in Charge (SPC)
- 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 PWT-EH is appointed for the overall accountability for the whole worksite and designated SPC's accountable for single specialist tasks.

On completion of the work the designated SPC must:

- report back to the 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 PWT-EH with the overall accountability for a worksite must ensure that:

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

3 Preparation

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

- site familiar information
- time piece
- LC/LS log book
- Nightly Engineering Protection Arrangements (NEPA) maps and NEPA document
- Current Rail Indicator Device (CRID) or Permanent-Current Rail Indicator Device (P-CRID).

3.1 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.

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.

3.2 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.

3.3 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 Customer Service Manager/ Supervisor will require confirmation the PWT-EH has done so
- arrange access to a tunnel with the Customer Service Manager/ 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.

3.4 London Underground and Network Rail boundaries

Personnel must be certificated and competent to 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:

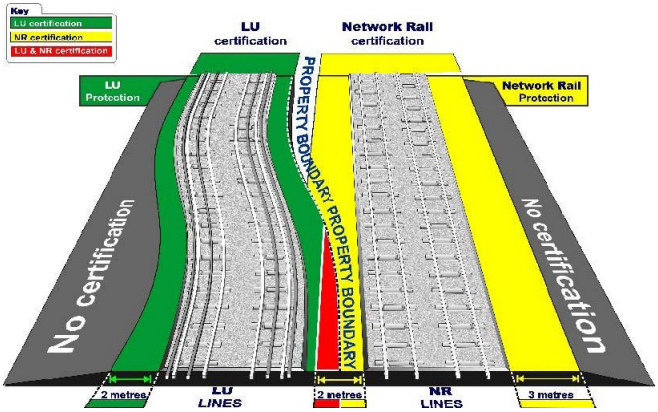
- Paddington to Westbourne Park
- Barking to Campbell Road Junction WB.

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.

3.5 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.

3.6 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

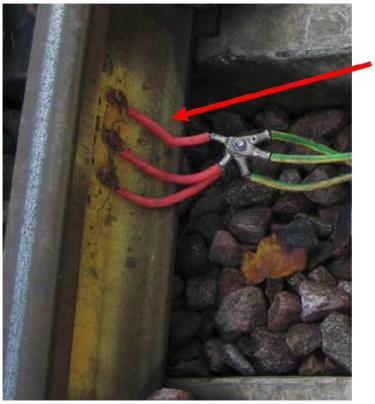
- the track certification of the work group
- any other relevant factors.

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.

3.7 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

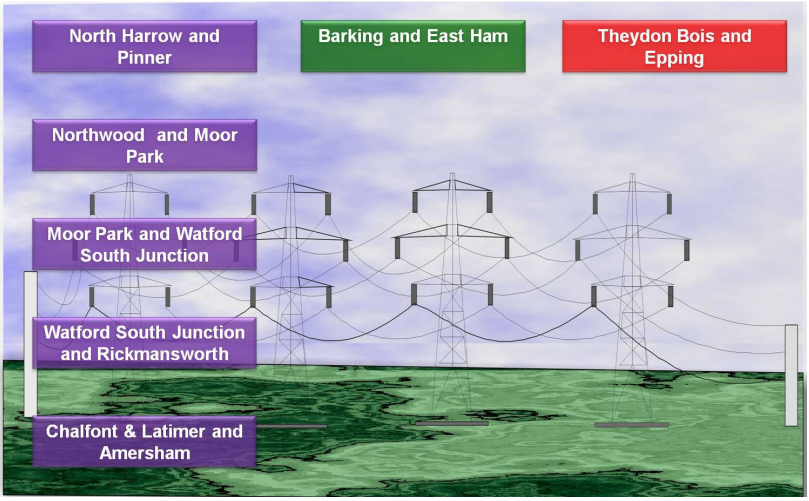
- Bridge MR10 and MR10A between West Hampstead and Kilburn.

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.

3.8 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.

3.9 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).

4 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.

5 Site familiar

5.1 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.

5.2 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.

5.3 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
- access routes and walkways
- depots and sidings
- traction current arrangements
- traction current rail gaps.

5.4 Traction current sections to be worked on

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

5.5 Adjacent sections

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

5.6 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.

5.7 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 SPC
- 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 SPC
- they can remain in two- way communication with each SPC
- they remain in the area booked with the TAC and can maintain control of the arrangements on site at all times
- each SPC remains with the personnel they are responsible for throughout the work.

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

If the designated SPC is required to leave the worksite they must:

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

The PWT-EH must remain with the work group(s) they are protecting. If it is necessary for the PWT-EH 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.

6 Tools, equipment and materials

6.1 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.

The PWT-EH must make sure points are secured before any track trolley movements over them.

7 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).

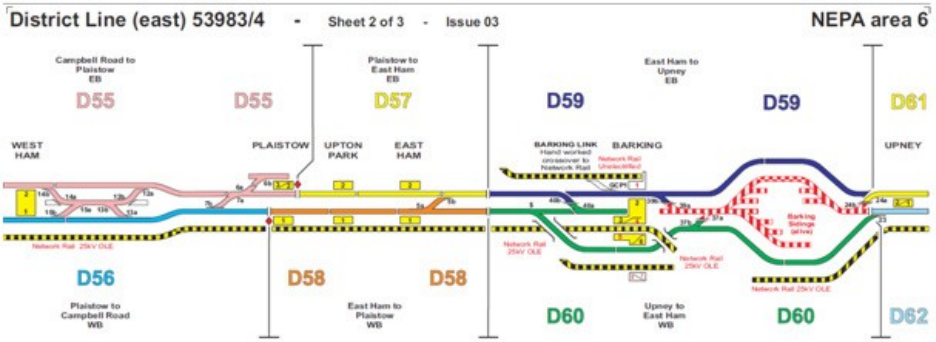
The naming of the sections is taken from the naming of the substations at each end of the section in the DOT. This naming is often taken from the underground station they are located at or near. In some cases the substations are named after the street or road they are located in (e.g. Cobourg Street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

8 Nightly Engineering Protection Arrangements Maps

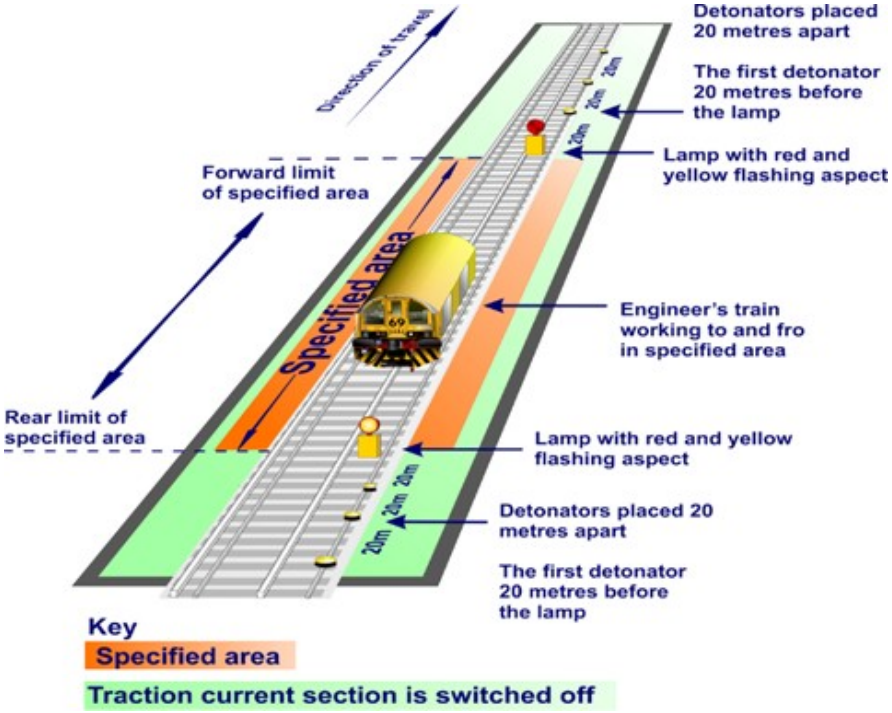
These maps are provided for persons providing protection. They show the traction current section using colour coding.



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

9 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.



Lamps can be either Red and Yellow or Red and Red

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 areas 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).

10. 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.

10.1 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 thats responsible for the specified area.

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.

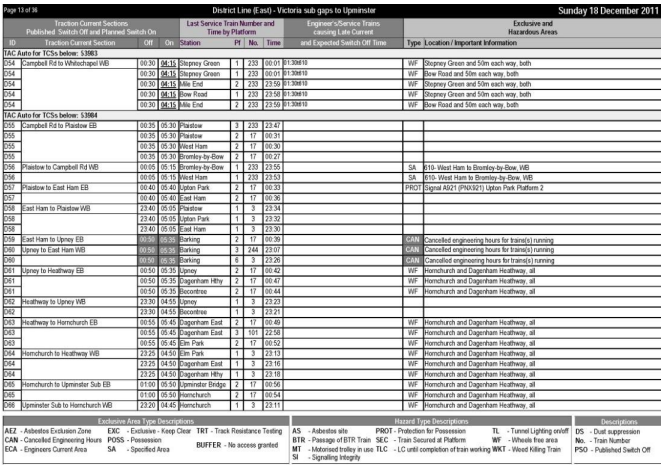
Specified area agreement forms must be completed when undertaking unrelated work in a specified area. Additional protection from moving trains might be required.

11 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	Pf	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	1I30610	WF	Stepney Green and 50m each way, both
D54		00:30	04:15	Stepney Green	1	233	00:01	1I30610	WF	Bow Road and 50m each way, both
D54		00:30	04:15	Mile End	2	233	23:59	1I30610	WF	Stepney Green and 50m each way, both
D54		00:30	04:15	Bow Road	1	233	23:58	1I30610	WF	Stepney Green and 50m each way, both
D54		00:30	04:15	Mile End	2	233	23:59	1I30610	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 A521 (PN0321) 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	05:35	Barking	3	244	23:07		CAN	Cancelled engineering hours for trains(s) running
D60		00:50	05:35	Barking	6	3	23:26		CAN	Cancelled engineering hours for trains(s) running
D61	Upney to Healthway 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.

12 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		

12.1 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'.

13 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 RailSys number
- 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 SPC must witness the PWT-EH booking on with the TAC

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:

14 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 work group safety briefing.

15 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.

The SPC must witness the PWT-EH contacting the signaller.

16 Current Rail Indicator Device

16.1 Prior to using a CRID

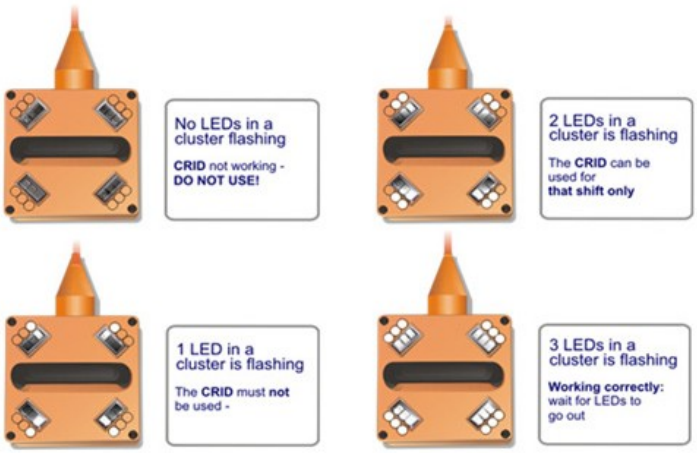
The PWT-EH must inspect the CRID for visible signs of damage, defect and date of expiry.

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:



16.2 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.

16.3 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 LC/LS 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.

16.4 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.

16.5 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.

16.6 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 your manager

The SPC must witness the PWT-EH checking for traction current.

17 Switching Off Traction Current

17.1 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.

17.2 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.

17.3 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.

17.4 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.

18 Going on the track

18.1 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 trolleys, points must be secured for movement over them.

18.2 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.

19 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.

19.1 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 Protecting workers on the Track - Traffic Hours (PWT-TH)
- ensure the PWT-TH sets up the safe system of work and sets up protection
- ensure the PWT-TH 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.

20 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
- 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.

20.1 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 worksite, 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.

20.2 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.

20.3 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.

20.4 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.

20.5 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.

The SPC must witness the PWT-EH booking off with the TAC.

21 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).

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

- maintaining signals at danger
- Service Control Permissioning
- securing 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.

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