

Switches as detailed in Appendix A (Services Matrix) shall be inspected/tested to current industry published good practise and British Standards.

- GT/A Enclosure and Transformer Suppression Systems require two out of three/four devices respectively to activate the release of the extinguishant system. With the associated extinguishant system isolated check for correct operation by activation of two of the three/four detectors to ensure the fire suppression system activates correctly and initiates the 'release imminent' and 'extinguishant released' alarms on the local control panel/interface unit and the Fire Detection system. The testing of the system shall also include a check that the manual extinguishant release facility operates correctly with release indications. Refer to paragraphs 8.4.4 to 8.4.8 for a more detailed instruction/procedure.
- Ensure that activation of the Fire System releases the internal access door from the inside the station into the reception/lobby area of the stations Gatehouse.
- The wireless fire detection system consists of battery powered smoke detectors, call-points, strobes/beacons, sounders and translator modules of which the battery life is 5 years. A rolling programme of battery replacement must be carried out every 4 years, recording dates of when batteries are replaced and when next due for replacement. The system operates on radio frequency and as such must be set-up/calibrated to ensure the correct signal strength is maintained.

8.4.4 GT/A Enclosures SEM-SAFE Water-Mist Suppression System

The 7 Gas Turbines and associated Gas Boxes shall be inspected/tested to the following procedure in line with manufacture's recommendations-

8.4.4.1 Control Equipment

- All gas release mechanisms shall be removed from the gas bottles and all detectors and cabling checked to be intact and undamaged. In the case of the first visit to each Site, all terminations shall be checked to ensure that they are tight and that cables and junction boxes are correctly installed and identified.
- Each of the 3 detectors per system, (1x UVIR Spectrex flame detection and 2x Fenwal Heat Detectors), shall have a test source applied to them, to ensure correct alarm mode indication and alarm. With the test source applied to one detector, (the Spectrex device shall have a separate UV and then an IR source applied to it to prove device stability, and both test sources simultaneously to be initiated), it shall be checked that the system does not show an operated indication at the local Fire Control Panel and the release solenoid remains deactivated. Operation of each combination of 2 out of 3 detectors



shall be carried out, with the Avon enclosure doors closed and for each combination the local Fire Control Panel checked for correct indication, operation of the release solenoid and indication at the Main Fire Panel.

- Operate the Extinguishant Release, (Manual), Push-button and check correct indication at the local control panel and at the release solenoid.
- Check the operation of both Avon Enclosure Door microswitches activates the correct indication at the local control panel/interface panel adjacent to the door, (initiates a manual operation indication from an automatic). With one Avon enclosure door open, and then the other one, operate two of the three detectors simultaneously to prove the system remains deactivated at both the local control panel and the release solenoid. Ensure system is left on automatic upon completion of all testing.
- All fault indicators associated with each system shall be tested in the following manner:-
 - Carry out a lamp test to prove all indications before starting. Prove System status indication and Mode Select indications via the two key switches, sound the alarm and silence, at the local control panel.
 - Disconnect one alarm line from each zone to prove the System Fault Indication of each zone.
 - Prove the correct operation of the door micro-switches and indication from auto to manual, when the door opens, (and then back again when the door closes).
 - Disconnect the AC Supply to the charger equipment to prove the system Isolated Indication and alarm.
 - With the mains switched off, run the system on the Standby Batteries for 75% of their rated time to demonstrate their integrity/measure and record battery AHr capacity to check that is above the minimum requirement (65%). Record both battery charge and battery voltages both before and after tests, and battery capacity where obtainable.
 - Disconnect Standby Batteries so that the Power Healthy indication goes out.

8.4.5 Water/Nitrogen Suppression Equipment

- Before commencing inspection/testing ensure that extinguishing system is isolated electrically and mechanically and remove all solenoids and pneumatic actuators.
- Check general condition of installation and ensure there have been no changes within the environment which may effect the operation of the equipment.
- Check that each sprinkler nozzle is mounted in the right location according to the general arrangement drawing in the relevant O&M manual.



- Check each sprinkler nozzle, clean as necessary to ensure clear of dust/debris. Check all associated pipework for visible signs of damage. Replace or pressure test and repair as necessary any pipework showing corrosion or mechanical damage.
- Check cylinders for sign of damage and for security and correct labelling.
- Check cabling and fittings for signs of damage.
- Check the pressure on each nitrogen cylinder's pressure gauge. The minimum pressure is 180 bar, (assuming 200 bar original fill pressure), re-charge/refill/replace cylinder if the pressure is below 180 bar.
- Check the water cylinders are still full by either weighing or liquid level indicator.
- Check all manual and pneumatic actuators for freedom of movement, replace whole unit if defective. Check all control valves for correct manual function and automatic valves additionally for correct automatic function.

8.4.6 Generator Transformer Detection & Foam/Argon/Nitrogen Discharge Systems

The fire detection and suppression systems associated with all 7 Generator Transformers as detailed in Appendix A (Services Matrix) shall be inspected/tested to the following procedure-

8.4.6.1 Control Equipment

- All gas release mechanisms shall be removed from the gas bottle and all detectors and cabling checked to be intact and undamaged. In the case of the first visit to each site, all terminations shall be checked to ensure that they are tight and that cables and junction boxes are correctly installed and identified.
- Each of the heat and UV/IR flame detectors, shall have a test source applied to them (for the UV/IR detector the tests shall be with a separate UV and then IR source to prove device stability, and then both test sources simultaneously to prove device operation), to ensure correct operation of the release solenoid, alarm mode indication and alarm at the local control panel and at the Main Fire panel.
- All fault indicators associated with each system shall be tested in the following manner:-
 - Carry out a lamp test to prove the operation of all LEDs in the scheme.
 - Disconnect one alarm line from each zone to ensure correct fault indication of each zone.
 - Disconnect the AC Supply to the charger equipment to prove the Mains Failure Indication. Disconnect the AC Supplies to prove the Supply Failure Indication.
 - Disconnect Standby Batteries to Prove Battery Fail Indications.
 - Using an appropriate test unit measure and record battery Amp/Hr capacity to demonstrate that it is



above the minimum requirement of 65%. Record both battery charger and battery voltages both before and after testing, and record battery capacity.

- With the AC Supply disconnected run the system on the Standby Batteries for 75% of its rated duration to demonstrate its integrity.

8.4.6.2 Argon/Nitrogen Suppression Equipment

- Inspect the external condition of the Nitrogen and Argon release cylinders and the Foam tank for any corrosion or damage and report any defects. Inspection shall include all connections and couplings, interconnecting pipework, (flexible or rigid), gauges and pressure transducers, linkages and the solenoid release mechanism.
- Check the safety pin, or equivalent device, (note: safety pin in on nitrogen bottle but pin out on argon bottle), and ensure security tag is in place.
- Weigh the nitrogen/argon bottles and compare results with initial charge weight, if the loss exceeds 10%, exchange with a spare unit and arrange for the depleted bottle to be recharged/replaced.
- Remove and check the operating mechanism and discharge valve, and inspect and clean or replace as deemed necessary.
- Replace the safety clip and insert a new wire seal, or equivalent. Record the date of inspection on the unit and the cylinders the weight.

8.4.7 Diesel Enclosure Detection System and CO2 Discharge System

The fire detection and suppression systems associated with the diesel enclosure detection system and CO2 discharge system as detailed in Appendix A (Services Matrix) shall be inspected/tested to the following procedure-

8.4.7.1 Control Equipment

- At the diesel control panel the diesel shall be selected to 'hand', at the Diesel Fire Control Panel select the Fire Protection System to 'disabled'. All gas release mechanisms shall be removed from the gas bottles and all detectors and cabling checked to be intact and undamaged. In the case of the first visit to each Site, all terminations shall be checked to ensure that they are tight and that cables and junction boxes are correctly installed and identified.
- With the release mechanisms removed from the CO2 bottles, the heat detectors shall have a test source applied to them, to ensure that the "Extinguishant Discharged" indication at the Diesel Fire Control Panel, the alarm has sounded and release solenoid operated, plus correct indication at the Main Fire System panel.
- With the enclosure door open, check that the alarm sounds.



- At the Diesel Control Panel, operate the manual discharge; check the operation of the 'discharge imminent', alarm. Followed by extinguishant discharged' indication and then the operation of the solenoid release.
- Check that the manual, (pull-cord), system is correctly in place over the two pulleys, (between the diesel and the fuel tank). Operate the manual, (pull-cord), and check that the release solenoid operates and the "extinguishant discharged" indication lights at the Diesel Fire Control Panel.
- All fault indicators associated with each system shall be tested in the following manner:-
 - Disconnect the alarm line to ensure "system fault" indication at the Diesel Fire Control Panel and the Main Fire Panel.
 - Disconnect the AC Supply to the charger equipment to prove the "Power Healthy" indication is not lit.
 - With the mains switched off, run the system on the Standby Batteries for 75% of their rated time to demonstrate their integrity/measure and record battery capacity to ensure it is above the specified minimum. Record charger and battery voltages both before and after tests.

8.4.7.2 CO2 Discharge Equipment

- Inspect the external condition of the CO2 bottles for any corrosion or damage and report any defects. Inspection shall include all connections and couplings, interconnecting pipework, (flexible and rigid), gauges and pressure transducers and the solenoid release mechanism.
- Check the safety pins, or equivalent device, and security tags are in place on both CO2 bottles.
- Weigh both CO2 bottles and compare results with initial charge weight. If the loss exceeds 10%, select the spare unit and arrange for the depleted bottle to be recharged/replaced.
- Remove and check the operating mechanism and discharge valve, and inspect and clean or replace as deemed necessary.
- Replace the safety clip and insert a new wire seal, or equivalent. Record the date of inspection on the unit, which shall include the weight.

8.4.8 Diesel Fire Pump and Engine

The diesel fire pump and engine as detailed in Appendix A (Services Matrix) shall be maintained as stated in Section 14 of the Grundfos manual.

8.4.8.1 Deluge system associated with the Diesel Fire Pump

- Before commencing inspection/testing ensure the extinguishing system is isolated electrically and mechanically and remove all solenoid and pneumatic actuators.



- Check general condition of installation and ensure there have been no changes within the environment which may effect the operation of the equipment.
- Check that each sprinkler nozzle is mounted in the right location according to the general arrangement drawing in the O&M Manual.
- Check each sprinkler nozzle, clean as necessary to ensure clear of dust/debris. Check all associated pipework for visible signs of damage. Replace or pressure test and repair as necessary any pipework showing corrosion or mechanical damage.
- Check cylinders for sign of damage and for security and correct labelling.
- Check cabling and fittings for signs of damage.
- Check the pressure on each nitrogen cylinder's pressure gauge. The minimum pressure is 180 bar, (assuming 200 bar original fill pressure), re-charge/refill/replace cylinder if the pressure is below 180 bar.
- Check the water cylinders are still full by either weighing or liquid level indicator.
- Check all manual and pneumatic actuators for freedom of movement, replace whole unit if defective. Check all control valves for correct manual function and automatic valves additionally for correct automatic function.

8.4.9 The Asset Register

- 8.4.9.1 The Supplier shall maintain the Asset Register up to date at all times throughout the Contract Period. The Supplier shall ensure that data held in the Asset Register shall be in the format and hierarchy prescribed by PAS 1192-2, PAS 1192-3 and BIM protocol.

8.4.10 Asset Changes

- 8.4.10.1 The Supplier shall witness and document the testing and commissioning of new assets and shall add new assets to the Asset Register and Annual Planned Maintenance Schedule within 2 weeks of the change occurring.
- 8.4.10.2 Upon the discovery of additional assets (excluding assets referred to in 8.4.10.1 above), the Supplier shall provide to the Company details of each Asset in a format approved by the company.
- 8.4.10.3 Annually 1 month before each anniversary of the Services Commencement Date, and also 6 months before the Expiry Date, the Supplier shall review and submit an updated and revised Asset Register to the Company, taking account of any and all changes to the Sites including but not limited to changes to Appendix A (Services Matrix), acquisitions and disposals of Sites, additions and disposals of the assets, warranties and maintenance records within the previous year.
- 8.4.10.4 The Supplier shall maintain additional assets added to the Sites by the Company subject to the agreement of a Variation Order.



8.4.11 Annual Maintenance Planning

- 8.4.11.1 The Supplier shall update and issue for the Company's approval the Annual Planned Maintenance Schedule for all Sites no less than 30 calendar days prior to the anniversary of the Services Commencement Date.
- 8.4.11.2 The Company shall provide any comments or feedback on the Annual Planned Maintenance Schedule to the Supplier within 30 calendar days.
- 8.4.11.3 The Supplier shall provide the Company with a 4 weekly update of the Annual Planned Maintenance Schedule.
- 8.4.11.4 The Supplier shall include in the Annual Maintenance Plan:-
 - a. Outstanding reactive maintenance requirements above the Reactive Maintenance Threshold
 - b. Proposed life-cycle replacement works.
- 8.4.11.5 The Supplier shall identify the reason for each item appearing on the Annual Maintenance Plan and prioritise each item in terms of:-
 - a. statutory compliance requirements;
 - b. impact on health & safety;
 - c. impact on normal use of the Sites;
 - d. impact on on-going costs of maintenance;
 - e. the business resilience risks to the Company; and
 - f. any other relevant criteria.
- 8.4.11.6 The Annual Maintenance Plan shall provide indicative costs for each item, broken down into an appropriate level of detail to assist the Company in planning and budgeting.
- 8.4.11.7 The Supplier shall make the Annual Planned Maintenance Schedule available in a format to be agreed between the parties, to the Company for inspection by the Company or a third party appointed by the Company at any time.
- 8.4.11.8 The Supplier shall provide the Company with a 4 weekly update of the Annual Planned Maintenance Schedule.

8.4.12 Planned Maintenance Delivery

- 8.4.12.1 The Supplier shall deliver planned maintenance in accordance with the Annual Planned Maintenance Schedule.
- 8.4.12.2 The Supplier shall notify the Company no less than fourteen days in advance of any proposed changes to the dates or locations of planned maintenance and shall undertake the planned maintenance on the proposed changed date only if approved in advance by the Company.
- 8.4.12.3 The Supplier shall adapt the Annual Planned Maintenance Schedule to allow for any Company imposed 'maintenance freeze' periods. Notice will be provided by the Company as early as reasonably practicable.
- 8.4.12.4 If during maintenance carried out in accordance with the Annual Planned Maintenance Schedule, the Supplier identifies faults where there is a risk of danger to persons and



/ or property, the Supplier shall make safe immediately and escalate to the Company.

8.4.12.5 The Supplier shall report the hazard to the Company as soon as practicable but in any case within no more than 2 hours of making safe.

8.4.12.6 The Supplier shall identify any areas of deficient fire stopping or un-stopped penetrations (caused by others) that the Supplier discovers during the course of the delivery of the Services, and the Supplier shall report the same in an agreed format to the Company.

8.4.13 Fire Systems Maintenance to be Undertaken by the Company or Third Party Contractors

8.4.13.1 The Supplier shall not undertake weekly fire alarm testing. This is the responsibility of the Company or a third party contractor.

8.4.14 Fire Systems Isolations

8.4.14.1 From time to time the Supplier shall undertake fire systems isolations and subsequent re-instatement of all affected equipment or apparatus in order for the Company to undertake project works or inspections outside of the scope of the Contract.

8.4.15 Reactive Maintenance Delivery

8.4.15.1 The Supplier shall receive instructions to carry out reactive maintenance from the Company's helpdesk.

8.4.15.2 The Supplier shall undertake reactive maintenance in accordance with the response and rectification times detailed in Schedule 12 (Performance Measurement).

8.4.15.3 The Supplier shall attend the Sites and permanently rectify faults. The Supplier shall endeavour to permanently rectify each fault during a single attendance visit but if necessary the Supplier shall make more than one attendance visit to make safe or permanently rectify the fault up to the value of the reactive maintenance threshold for each fault.

8.4.15.4 At the end of each attendance visit the fault shall be left in a safe condition if it cannot be permanently rectified.

8.4.15.5 The Supplier shall notify the Company's helpdesk or the local reporting system utilised by relevant business unit when faults have been permanently rectified or any other measures that may be required to mitigate any reduction in fire safety arrangements.

8.4.15.6 Where reactive maintenance is identified which is outside the scope of the specification, the Supplier shall undertake the repairs having first gained the approval of the Company, except where failure to carry out the Services immediately will in the reasonable opinion of the Supplier, significantly disrupt the Company's business or present a health and safety or security risk.

8.4.15.7 If when undertaking planned maintenance the Supplier discovers the need to undertake remedial works which can be undertaken within the value of the reactive maintenance



threshold, this shall be treated as a fault. The Supplier shall report the fault to the Company's helpdesk and shall attend and permanently rectify the fault.

8.4.16 Critical Sites Maintenance

- 8.4.16.1 The Supplier shall monitor at an appropriate 24 hour monitoring centre all automated alarms for critical Sites (as set out in Appendix A (Services Matrix)).
- 8.4.16.2 The Supplier shall immediately escalate all alarm activations or other performance abnormalities at critical Sites to the Company in accordance with the agreed procedures.
- 8.4.16.3 The Supplier shall inform the Company no less than 3 weeks in advance of all operations and maintenance activities which have the potential to present an increased risk (for example loss of redundancy) to the Company's normal operations in critical Sites.
- 8.4.16.4 The Supplier shall treat unplanned outages and emergencies at critical Sites with the upmost importance, and work to restore normal service in the shortest possible time.
- 8.4.16.5 The Supplier shall provide frequent and comprehensive written updates to the Company in accordance with agreed procedures regarding unplanned outages and emergencies detailing as a minimum:-
 - a. description of the problem or asset failure;
 - b. impact of the problem or asset failure; and
 - c. the expected time to restoration of normal service.
- 8.4.16.6 The Supplier shall, following any unplanned outage or emergency at critical Sites, initiate a root-cause analysis and report to the Company findings and recommendations from the investigation.

8.4.17 Interfaces with the Company's Third Party Contractors

- 8.4.17.1 The Company shall take overall responsibility for management of interfaces between the Contractor and third party contractors undertaking maintenance or projects at the Sites. The Supplier shall proactively provide support to the Company in respect of the requirements set out in paragraph 8.4.17.2 below when required by the Company. The Supplier shall coordinate and resolve issues on behalf of the Company including attendance in the event of any issues surrounding interfaces until these are resolved. The Supplier shall keep the Company's local managers informed of any maintenance work that they become aware of that is likely to have an impact on assets not in the scope of this specification.
- 8.4.17.2 The Supplier's activities shall include, but shall not be limited to:-
 - a. arming/disarming life safety systems;
 - b. bypassing infrastructure components; and
 - c. training of contractors regarding risks associated with accidental service interruption.



8.4.17.3 The Supplier shall ensure that no equipment failures, downtime or interruptions are caused by the Supplier or their sub-contractors as a result of support activities.

8.4.18 Training

8.4.18.1 The following minimum skill levels and qualifications shall be provided to a sufficient number of staff as required to provide the Services:

Skills Level / Qualification	Required for
Passive Fire Qualification	Site Person in Charge (SPC) or nominated responsible person only
The Institute of Occupational Safety and Health (IOSH) - Managing Safely – Safety Management Level	HSE Management by Managers and Supervisors
The National Examination Board in Occupational Safety and Health (NEBOSH) Certificate in Occupational Health (NVQ Level 3)	HSE Management by Managers
International Rope Access Trade Association (IRATA)	High Level Access
Prefabricated Access Suppliers' and Manufacturers' Association (PASMA) – Towers for Users	Constructing and Using Mobile Access Towers
International Powered Access Federation (IPAF) - Powered Access Licence (PAL)	Operating Mobile Elevated Working Platforms (MEWPS)
International Powered Access Federation (IPAF) - MEWPS for Managers	Planning, supervising and managing the use of Mobile Elevated Working Platforms (MEWPS)
UKAS Accredited Certification for Electrical and Installation and Maintenance in Potentially Explosive Atmospheres (for example CompEx)	All staff working in potentially explosive atmospheres
Confined Space Training	All personnel undertaking maintenance activities in White City Sidings, Greenwich Generating Station, King's Cross Hotel Curve and some London Underground Sub-Stations.



9 BULK SUPPLY POINTS, SUB-STATIONS & TRANSFORMER ROOMS

9.1 Locations & Hours of Work

9.1.1 Locations

9.1.1.1 The Services shall be delivered at London Underground bulk supply points, sub-stations and transformer rooms. A complete list of Sites subject to the scope of Sections 9 to 9.4 of this specification is provided in Appendix A (Services Matrix).

9.1.2 Hours of Work

9.1.2.1 The Supplier shall deliver the Services both inside and outside of Core Hours (as defined in paragraph 4.1.2.1 of this specification).

9.1.2.2 The Supplier shall deliver the Services outside Core Hours where working in Core Hours would adversely impact the operation of the Sites or its occupants' activities, particularly in relation to safety. The Supplier shall accommodate requests to change the scheduling of particular aspects of the Services to accommodate the Company's specific operational requirements (at no additional cost to the Company).

9.1.3 Restrictions & Special Requirements

9.1.3.1 The access requirements detailed in Schedule 5 (Access) apply to this Delivery Unit.

9.1.3.2 Where access is either not possible or is unavailable during Traffic Hours, or to take an asset out of service will unacceptably impact the operation or safety of the Network, the Supplier shall undertake maintenance outside of core hours. Further information is set out in Appendix C (Implementation of Maintenance All Hours on Fire Assets).

9.1.3.3 Some locations are not permanently open or manned 24 hours per day and therefore access arrangements will require to be checked and agreed with site specific Company personnel prior to attendance at these locations.

9.1.3.4 The sub-stations listed in Appendix A (Services Matrix) require an enhanced maintenance regime to be agreed with the Company due to the criticality of the assets. All sub-station to have 100% of the fire detection systems to be serviced twice per annum.

9.1.3.5 The minimum requirements for specific spares are to be defined locally. The Supplier will manage critical spares requirements and notify company of any changes. Adequate spares shall be held to ensure system functionality is restored immediately regardless of lead time.

Critical spares listings will be reviewed with the company at period contract review meetings.



9.2 Scope of Services

9.2.1 Scope

9.2.1.1 The Supplier shall provide a professionally managed, high quality maintenance service to ensure the effective operation of all items of plant and equipment forming the Company's fire systems as detailed within the Company's Asset Register (& subsequent updates) to ensure they are properly and safely maintained to remain safe, functional and operationally sound. Services include, but are not limited to, the management, maintenance and inspection of:

- control panels, printers (including the provision of printing consumables) & interfaces;
- mechanical interfaces;
- dry droppers and risers;
- call points and break glass including door bolt glass;
- alarm sounders;
- field wiring;
- fire system isolators;
- passive fire protection systems (PFPA);
- suppression systems including but not limited to sprinklers, AFFF, inert gas and water mist;
- UV/IR detection;
- deaf alert systems (beacons and personal aids);
- door break glass;
- fire extinguishers, hose reels and blankets;
- fire hydrants;
- CAD drawings;
- Water fog / gaseous systems;
- EDNE signage;
- fire dampers and smoke vents;
- magnetic door retainers and closers; and
- aspirating smoke detection (ASD).

9.3 Standards

9.3.1 General

9.3.1.1 The services shall be provided at all times in accordance with a maintenance regime that complies with all statutory requirements, legislation, regulations and the following standards set out below.

9.3.2 TfL Standards

9.3.2.1 The Supplier shall comply with all relevant TfL Standards as they relate to fire systems.

9.3.3 British Standards, Regulations and Approved Codes of Practice

9.3.3.1 The Supplier shall provide the Services in accordance with SFG20. Where SFG20 is not available for certain assets the Supplier shall provide the Services in accordance with all relevant British Standards.



9.3.4 Other Standards

9.3.4.1 Where there is no appropriate British Standard, the Supplier shall provide the Company with a proposed maintenance regime, to be approved by the Company. Services Specification

9.4 Scope of Specification

9.4.1 Scope of Maintenance

9.4.1.1 The Supplier shall provide a professionally managed, high quality fire systems maintenance service in accordance with the specified Standards and to ensure the effective operation of all items of plant and equipment as detailed within the Asset Register (& subsequent updates).

9.4.1.2 The Supplier shall maintain all firmware, front-end software and database software upgrades for fire systems. The Company shall retain access to all up to date fire systems software as related to the Sites, to be available for inspection to the Company or a third party appointed by the Company, at any time.

9.4.1.3 All access and control of all firmware, front-end software and database software as related to the fire systems at the Sites shall be made available to the Company for the duration of the Contract and after the Contract has ended; this shall be irrespective of the manner in which the Contract comes to an end.

9.4.1.4 The Supplier shall provide up-to-date fire panel data downloads on a regular basis as agreed locally to the Company, which will be held as copy only, and shall provide to the Company any software that is required for the Company to access and view the data.

9.4.1.5 The Supplier shall hold all asset data relevant to the delivery of the Services in the format and hierarchy prescribed by PAS 1192-2, PAS 1192-3 and BIM protocol or as specified by relevant business unit.

9.4.2 The Asset Register

9.4.2.1 The Supplier shall maintain the Asset Register up to date at all times throughout the Contract period. The Supplier shall ensure that data held in the Asset Register shall be in the format and hierarchy prescribed by PAS 1192-2, PAS 1192-3 and BIM protocol or as specified by relevant business unit.

9.4.3 Asset Changes

9.4.3.1 The Supplier shall witness and document the testing and commissioning of new assets and shall add new assets to the Asset Register and Annual Planned Maintenance Schedule within 2 weeks of the change occurring.

9.4.3.2 Upon the discovery of additional assets (excluding assets referred to in 9.4.3.1 above), the Supplier shall provide to the Company details of each Asset in a format approved by the company.



- 9.4.3.3 Annually 1 month before each anniversary of the Services Commencement Date, and also 6 months before the Contract Expiry Date, the Supplier shall review and submit an updated and revised Asset Register to the Company, taking account of any and all changes to the Sites including but not limited to changes to Appendix A (Services Matrix), acquisitions and disposals of Sites, additions and disposals of the assets, warranties and maintenance records within the previous year.
- 9.4.3.4 The Supplier shall maintain additional assets added to the Sites by the Company subject to the agreement of a Variation Order.
- 9.4.4 Annual Maintenance Planning
- 9.4.4.1 The Supplier shall update and issue for the Company's approval the Annual Planned Maintenance Schedule for all Sites no less than 30 calendar days prior to the anniversary of the Services Commencement Date.
- 9.4.4.2 The Company shall provide any comments or feedback on the Annual Planned Maintenance Schedule to the Supplier within 30 calendar days.
- 9.4.4.3 The Supplier shall provide the Company with a 4 weekly update of the Annual Planned Maintenance Schedule.
- 9.4.4.4 The Supplier shall include in the Annual Maintenance Plan:-
- a. Outstanding reactive maintenance requirements above the Reactive Maintenance Threshold
 - b. Proposed life-cycle replacement works.
- 9.4.4.5 The Supplier shall identify the reason for each item appearing on the Annual Maintenance Plan and prioritise each item in terms of:-
- a. statutory compliance requirements;
 - b. impact on health & safety;
 - c. impact on normal use of the Sites;
 - d. impact on on-going costs of maintenance;
 - e. the business resilience risks to the Company; and
 - f. any other relevant criteria.
- 9.4.4.6 The Annual Maintenance Plan shall provide indicative costs for each item, broken down into an appropriate level of detail to assist the Company in planning and budgeting.
- 9.4.4.7 The Supplier shall make the Annual Planned Maintenance Schedule available in a format to be agreed between the parties, to the Company for inspection by the Company or a third party appointed by the Company at any time.
- 9.4.4.8 The Supplier shall provide the Company with a 4 weekly update of the Annual Planned Maintenance Schedule.
- 9.4.5 Planned Maintenance Delivery
- 9.4.5.1 The Supplier shall deliver planned maintenance in accordance with the Annual Planned Maintenance Schedule.
- 9.4.5.2 The Supplier shall notify the Company no less than fourteen days in advance of any proposed changes to the dates or



- locations of planned maintenance and shall undertake the planned maintenance on the proposed changed date only if approved in advance by the Company.
- 9.4.5.3 The Supplier shall adapt the Annual Planned Maintenance Schedule to allow for any Company imposed 'maintenance freeze' periods. Notice will be provided by the Company as early as reasonably practicable.
 - 9.4.5.4 If during maintenance carried out in accordance with the Annual Planned Maintenance Schedule, the Supplier identifies faults where there is a risk of danger to persons and / or property, the Supplier shall make safe immediately and escalate to the Company.
 - 9.4.5.5 The Supplier shall report the hazard to the Company as soon as practicable but in any case within no more than 2 hours of making safe.
 - 9.4.5.6 The Supplier shall identify any areas of deficient fire stopping or un-stopped penetrations (caused by others) that the Supplier discovers during the course of the delivery of the Services, and the Supplier shall report the same in an agreed format to the Company.
- 9.4.6 Fire Systems Maintenance to be Undertaken by the Company or Third Party Contractors
- 9.4.6.1 The Supplier shall not undertake weekly fire alarm testing. This is the responsibility of the Company or a third party Contractor. In exceptional circumstances a variation of this will be specified locally.
- 9.4.7 Fire Systems Isolations
- 9.4.7.1 The Supplier shall undertake fire systems isolations and subsequent re-instatement of all affected equipment or apparatus in order for the Company to undertake project works or inspections outside of the scope of the Contract.
- 9.4.8 Reactive Maintenance Delivery
- 9.4.8.1 The Supplier shall receive instructions to carry out reactive maintenance from the Company's helpdesk.
 - 9.4.8.2 The Supplier shall undertake reactive maintenance in accordance with the response and rectification times detailed in Schedule 12 (Performance Measurement).
 - 9.4.8.3 The Supplier shall attend the Sites and permanently rectify faults. The Supplier shall endeavour to permanently rectify each fault during a single attendance visit but if necessary the Supplier shall make more than one attendance visit to make safe or permanently rectify the fault up to the value of the reactive maintenance threshold for each fault.
 - 9.4.8.4 At the end of each attendance visit the fault shall be left in a safe condition if it cannot be permanently rectified.
 - 9.4.8.5 The Supplier shall notify the Company's helpdesk or the local reporting system utilised by relevant business unit when faults have been permanently rectified or any other measures that may be required to mitigate any reduction in fire safety arrangements.



- 9.4.8.6 Where reactive maintenance is identified which is outside the scope of the specification, the Supplier shall undertake the repairs having first gained the approval of the Company, except where failure to carry out the Services immediately will in the reasonable opinion of the Supplier, significantly disrupt the Company's business or present a health and safety or security risk.
If when undertaking planned maintenance the Supplier discovers the need to undertake remedial works which can be undertaken within the value of the reactive maintenance threshold, this shall be treated as a fault. The Supplier shall report the fault to the Company's helpdesk and shall attend and permanently rectify the fault.
- 9.4.9 Critical Sites Maintenance
- 9.4.9.1 The Supplier shall monitor at an appropriate 24 hour monitoring centre all automated alarms for critical Sites (as set out in Appendix A (Services Matrix)).
- 9.4.9.2 The Supplier shall immediately escalate all alarm activations or other performance abnormalities at critical Sites to the Company in accordance with the agreed procedures.
- 9.4.9.3 The Supplier shall inform the Company no less than 3 weeks in advance of all operations and maintenance activities which have the potential to present an increased risk (for example loss of redundancy) to the Company's normal operations in critical Sites.
- 9.4.9.4 The Supplier shall treat unplanned outages and emergencies at critical Sites with the upmost importance, and work to restore normal service in the shortest possible time.
- 9.4.9.5 The Supplier shall provide frequent and comprehensive written updates to the Company in accordance with agreed procedures regarding unplanned outages and emergencies detailing as a minimum:-
- a. description of the problem or asset failure;
 - b. impact of the problem or asset failure; and
 - c. the expected time to restoration of normal service.
- 9.4.9.6 The Supplier shall, following any unplanned outage or emergency at critical Sites, initiate a root-cause analysis and report to the Company findings and recommendations from the investigation.
- 9.4.10 Interfaces with the Company's Third Party Contractors
- 9.4.10.1 The Company shall take overall responsibility for management of interfaces between the Supplier and third party contractors undertaking maintenance or projects at the Sites. The Supplier shall proactively provide support to the Company in respect of the requirements set out in paragraph 9.4.10.2 below when required by the Company. The Supplier shall coordinate and resolve issues on behalf of the Company including attendance in the event of any issues surrounding interfaces until these are resolved. The Supplier shall keep the Company's local managers informed of any maintenance



work that they become aware of that is likely to have an impact on assets not in the scope of this specification.

9.4.10.2 The Supplier's activities shall include, but shall not be limited to:-

- a. arming/disarming life safety systems;
- b. bypassing infrastructure components; and
- c. training of contractors regarding risks associated with accidental service interruption.

9.4.10.3 The Supplier shall ensure that no equipment failures, downtime or interruptions are caused by the Supplier or their sub-contractors as a result of support activities.

9.4.11 Training

9.4.11.1 The following minimum skill levels and qualifications shall be provided to a sufficient number of staff as required to provide the Services:

Skills Level / Qualification	Required for
Passive Fire Qualification	Site Person in Charge (SPC) or nominated responsible person only
The Institute of Occupational Safety and Health (IOSH) - Managing Safely – Safety Management Level	HSE Management by Managers and Supervisors
The National Examination Board in Occupational Safety and Health (NEBOSH) Certificate in Occupational Health (NVQ Level 3)	HSE Management by Managers
International Rope Access Trade Association (IRATA)	High Level Access
Prefabricated Access Suppliers' and Manufacturers' Association (PASMA) – Towers for Users	Constructing and Using Mobile Access Towers
International Powered Access Federation (IPAF) - Powered Access Licence (PAL)	Operating Mobile Elevated Working Platforms (MEWPS)
International Powered Access Federation (IPAF) - MEWPS for Managers	Planning, supervising and managing the use of Mobile Elevated Working Platforms (MEWPS)
UKAS Accredited Certification for Electrical and Installation and Maintenance in Potentially Explosive Atmospheres (for example CompEx)	All staff working in potentially explosive atmospheres
Confined Space Training	All personnel undertaking maintenance activities in White City Sidings, Greenwich Generating Station, King's Cross Hotel Curve and some London Underground Sub-Stations.





10 LONDON OVERGROUND STATIONS

10.1 Locations & Hours of Work

10.1.1 Locations

10.1.1.1 The Services shall be delivered at London Overground stations, offices, buildings and depots including West Anglia and TfL Rail. A complete list of Sites subject to the scope of Sections 10 to 10.4 of this specification is provided in Appendix A (Services Matrix). London Overground are responsible for 3 sub-surface stations plus a further 2 stations on the East London Railway which are managed under the "Section 12" regulations.

10.1.2 Hours of Work

10.1.2.1 The Supplier shall deliver the Services during all hours unless to do this would adversely impact the operation of the Sites particularly in relation to safety or where otherwise stated in this Specification. The Supplier shall accommodate requests to change the scheduling of particular aspects of the Services to accommodate the Company's specific operational requirements (at no additional cost to the Company).

10.1.3 Restrictions & Special Requirements

10.1.3.1 The access requirements detailed in Schedule 5 (Access) do not apply to this Delivery Unit.

10.1.3.2 The Supplier shall undertake maintenance to the following systems outside normal traffic hours (01:30 – 05:00).

- Escalator Water Sprinkler System (EWSS) (and only where the escalator has been taken out of service);
- Gaseous Suppression;
- Aspirating Smoke Detection Systems (except when the station is subject to partial or full closure);
- Fire hydrant (flow testing) and condition assessment;
- Dry/Damp Falling Mains with Pressure Reducing Hydrant Valves (flow testing).

10.1.3.3 The minimum requirements for specific spares are to be defined locally.

10.1.3.4 The Supplier shall have access to equipment that requires working on or near the line (including within 1.25m of the platform edge) only when a possession and isolation of any third Rail electrification systems are in place and with appropriate training.

10.2 Scope of Services

10.2.1 Scope

10.2.1.1 The Supplier shall provide a professionally managed, high quality maintenance service to ensure the effective operation of all items of plant and equipment forming the Company's fire systems as detailed within the Company's Asset Register (& subsequent updates) to ensure they are properly and safely maintained to remain safe, functional and operationally sound.

Services include, but are not limited to, the management, maintenance and inspection of:

- control panels, printers (including the provision of printing consumables where instructed by London Overground) & interfaces;
- mechanical interfaces;
- dry droppers and risers;
- damp droppers and risers;
- call points and break glass including door bolt glass;
- alarm sounders;
- field wiring;
- fire system isolators;
- passive fire protection systems (PFPA);
- suppression systems including but not limited to sprinklers, AFFF, inert gas and water mist;
- VA/PA interface;
- deaf alert systems (beacons and personal aids);
- door break glass;
- fire extinguishers and blankets (excluding stations where these are a tenant responsibility);
- fire hydrants, hose reels tanks and pumps;
- CAD drawings;
- water fog / gaseous systems;
- EDNE signage and DNE functionality of EDNE signage;
- escalator detection systems;
- fire dampers and smoke vents;
- magnetic door retainers and closers; and
- aspirating smoke detection (ASD).

10.3 Standards

10.3.1 General

10.3.1.1 The Services shall be provided at all times in accordance with a maintenance regime that complies with all statutory requirements, legislation, regulations and the following standards set out below.

10.3.1.2 The majority of assets are managed under London Overground and Network Rail Standards, however 5 stations on the East London Railway are designated as “Section 12” stations and are subject to the Fire Precautions (Sub-Surface Railway Stations) England Regulations 2009 and managed under TfL Standards.

10.3.2 London Overground Standards

10.3.2.1 The Supplier shall comply with the following London Overground Standards as they relate to fire systems.

- LO-MS-102-01-0001 - Management of Change
- ACF/CN2014/003 – Asset Change Form
- LO-MS-103-02-0009 - Assurance & Safety Verification
- LO-MS-102-02-0004 – Fire Safety Management



The following Standards will apply within tunnels and at sub-surface stations

- LO-IFM-332-11-0001 - Maintenance of Assets that have been designed or installed to standards other than Network Rail's;
- Appendix 11 - 1-080 The Application of Fire Safety Engineering Principles to London Underground Premises;
- Appendix 12 - 1-081 Design and Installation of Fire Protection Systems and Compartmentation Measures;
- Appendix 13 - 1-082 Active Fire Protection Systems and Portable Fire Equipment;
- Appendix 14 - 1-083 Passive Fire Protection Systems;
- Appendix 15 - 1-084 Maintenance of Fire Protection Systems and Compartmentation Measures;
- Appendix 62 - 1-085 Fire Safety Performance of Materials;
- Appendix 16 - S1086 Fire Safety Classification of Stations

10.3.3 Network Rail Standards

10.3.3.1 The Supplier shall comply with the following Network Rail Standards as they relate to fire systems at all surface stations, depots and buildings.

- NR/L1/FIR/100 - Fire safety policy
- NR/L3/FIR/101 - Fire safety – Managed stations
- NR/L3/FIR/102 - Fire safety – Operational estate
- NR/L3/FIR/103 - Fire safety – Offices and Competency and Training Delivery Centres
- NR/L3/FIR/105 - Fire Safety – Property: Business Space, Freight & Miscellaneous Portfolios
- NR/L3/FIR/106 - Fire safety – Maintenance
- NR/L3/FIR/107 - Fire safety – Fire risk assessment
- NR/L3/FIR/108 - Fire Safety – Fire Extinguishers
- NR/L3/FIR/109 - Fire safety – Fire Log book

10.3.4 British Standards, Regulations and Approved Codes of Practice

10.3.4.1 Where there are no appropriate Network Rail or TfL Standards the Supplier shall provide the Services in accordance with SFG20. Where SFG20 is not available for certain assets the Supplier shall provide the Services in accordance with all relevant British Standards.

10.3.5 Other Standards

10.3.5.1 Where there is no appropriate British Standard, the Supplier shall provide the Company with a proposed regime, to be approved by the Company.



10.4 Services Specification

10.4.1 Scope of Maintenance

- 10.4.1.1 The Supplier shall provide a professionally managed, high quality fire systems maintenance service in accordance with the specified Standards and to ensure the effective operation of all items of plant and equipment as detailed within the Asset Register (& subsequent updates).
- 10.4.1.2 The Supplier shall maintain all firmware, front-end software and database software upgrades for fire systems, where requested. The Company shall retain access to all up to date fire systems software as related to the Sites, to be available for inspection to the Company or a third party appointed by the Company, at any time.
- 10.4.1.3 All access and control of all firmware, front-end software and database software as related to the fire systems at the Sites shall be made available to the Company for the duration of the Contract and after the Contract has ended; this shall be irrespective of the manner in which the Contract comes to an end.
- 10.4.1.4 The Supplier shall provide up-to-date fire panel data downloads, where requested, on a 4 weekly basis to the Company, which will be held as copy only, and shall provide to the Company any software that is required for the Company to access and view the data.
- 10.4.1.5 The Supplier shall hold all asset data relevant to the delivery of the Services in the format and hierarchy prescribed by PAS 1192-2, PAS 1192-3 and BIM protocol.

10.4.2 The Asset Register

- 10.4.2.1 The Supplier shall maintain the Asset Register up to date at all times throughout the Contract period. The Supplier shall ensure that data held in the Asset Register shall be in the format and hierarchy prescribed by PAS 1192-2, PAS 1192-3 and BIM protocol.

10.4.3 Asset Changes

- 10.4.3.1 The Supplier shall witness and document the testing and commissioning of new assets and shall add new assets to the Asset Register and Annual Planned Maintenance Schedule within 2 weeks of the change occurring.
- 10.4.3.2 Upon the discovery of additional assets (excluding assets referred to in 7.4.3.1 above), the Supplier shall provide to the Company details of each Asset using the standard asset change form, change notification or for multiple changes the asset template spreadsheet.
- 10.4.3.3 Annually 1 month before each anniversary of the Services Commencement Date, and also 6 months before the Expiry Date, the Supplier shall review and submit an updated and revised Asset Register to the Company, taking account of any and all changes to the Sites including but not limited to changes to Appendix A (Services Matrix), acquisitions and



disposals of Sites, additions and disposals of the assets, warranties and maintenance records within the previous year.

10.4.3.4 The Supplier shall maintain additional assets added to the Sites by the Company subject to the agreement of a Variation Order.

10.4.4 Annual Maintenance Planning

10.4.4.1 The Supplier shall update and issue for the Company's approval the Annual Planned Maintenance Schedule for all Sites no less than 30 calendar days prior to the anniversary of the Services Commencement Date.

10.4.4.2 The Company shall provide any comments or feedback on the Annual Planned Maintenance Schedule to the Supplier within 30 calendar days.

10.4.4.3 Upon agreement with the Company, the Supplier shall upload the agreed Annual Planned Maintenance Schedule in to the Asset Management System.

10.4.4.4 The Supplier shall make the Annual Planned Maintenance Schedule available in a format to be agreed between the parties, to the Company for inspection by the Company or a third party appointed by the Company at any time.

10.4.4.5 The Supplier shall provide the Company with a 4 weekly update of the Annual Planned Maintenance Schedule.

10.4.5 Planned Maintenance Delivery

10.4.5.1 The Supplier shall deliver planned maintenance in accordance with the Annual Planned Maintenance Schedule.

10.4.5.2 The Supplier shall notify the Company no less than fourteen calendar days in advance of any proposed changes to the dates or locations of planned maintenance and shall undertake the planned maintenance on the proposed changed date only if approved in advance by the Company.

10.4.5.3 The Supplier shall adapt the Annual Planned Maintenance Schedule to allow for any Company imposed 'maintenance freeze' periods. Notice will be provided by the Company as early as reasonably practicable.

10.4.5.4 If during maintenance carried out in accordance with the Annual Planned Maintenance Schedule, the Supplier identifies faults where there is a risk of danger to persons and / or property, the Supplier shall make safe immediately and escalate to the Company.

10.4.5.5 The Supplier shall report the hazard to the Company as soon as practicable but in any case within no more than 2 hours of making safe.

10.4.5.6 The Supplier shall identify any areas of deficient fire stopping or un-stopped penetrations (caused by others) that the Supplier discovers during the course of the delivery of the Services, and the Supplier shall report the same in an agreed format to the Company.



10.4.6 Fire Systems Maintenance to be Undertaken by the Company or Third Party Contractors

10.4.6.1 The Supplier shall not undertake weekly fire alarm testing. This is the responsibility of the Company's staff.

10.4.7 Fire Systems Isolations

10.4.7.1 The Company shall provide the Supplier with access to the Company's remote monitoring facility for East London Line fire systems which are located at the OBC at New Cross Gate Depot. The Supplier and the Company shall use the remote monitoring facility to review systems, changes and faults.

10.4.7.2 The Supplier shall undertake emergency isolations to the fire detection and protection systems in order to allow the Sites to remain open and operational. The Supplier shall attend the Sites to undertake the emergency isolation.

10.4.7.3 The Supplier shall undertake planned isolations and de-isolations to the fire detection and protection systems to facilitate planned work by third party contractors of the Company.

10.4.7.4 The Company will advise the Supplier of the requirement by no later than 15.00 hrs on the day the planned isolation is required and the Supplier shall attend the Sites to undertake planned isolation and de-isolation at the close of traffic on the same day.

10.4.8 Reactive Maintenance Delivery

10.4.8.1 The Supplier shall receive instructions to carry out reactive maintenance from the Company's helpdesk.

10.4.8.2 The Supplier shall undertake reactive maintenance in accordance with the response and rectification times detailed in Schedule 12 (Performance Measurement).

10.4.8.3 The Supplier shall attend the Sites and permanently rectify faults. The Supplier shall endeavour to permanently rectify each fault during a single attendance visit but if necessary the Supplier shall make more than one attendance visit to make safe or permanently rectify the fault up to the value of the reactive maintenance threshold for each fault.

10.4.8.4 At the end of each attendance visit the fault shall be left in a safe condition if it cannot be permanently rectified.

10.4.8.5 The Supplier shall notify the Company's helpdesk or the local reporting system utilised by relevant business unit when faults have been permanently rectified or any other measures that may be required to mitigate any reduction in fire safety arrangements.

10.4.8.6 Where reactive maintenance is identified which is outside the scope of the specification, the Supplier shall undertake the repairs having first gained the approval of the Company, except where failure to carry out the Services immediately will in the reasonable opinion of the Supplier, significantly disrupt the Company's business or present a health and safety or security risk.



10.4.8.7 If when undertaking planned maintenance the Supplier discovers the need to undertake remedial works which can be undertaken within the value of the reactive maintenance threshold, this shall be treated as a fault. The Supplier shall report the fault to the Company's helpdesk and shall attend and permanently rectify the fault.

10.4.9 Interfaces with the Company's Third Party Contractors

10.4.9.1 The Company shall take overall responsibility for management of interfaces between the Contractor and third party contractors undertaking maintenance or projects at the Sites. The Supplier shall proactively provide support to the Company in respect of the requirements set out in paragraph 10.4.9.2 below when required by the Company. The Supplier shall coordinate and resolve issues on behalf of the Company including attendance in the event of any issues surrounding interfaces until these are resolved. The Supplier shall keep the Company's local managers informed of any maintenance work that they become aware of that is likely to have an impact on assets not in the scope of this specification.

10.4.9.2 The Supplier's activities shall include, but shall not be limited to:-
a. arming/disarming life safety systems;
b. bypassing infrastructure components; and
c. training of contractors regarding risks associated with accidental service interruption.

10.4.9.3 The Supplier shall ensure that no equipment failures, downtime or interruptions are caused by the Supplier or their sub-contractors as a result of support activities.

10.4.10 Training

10.4.10.1 The following minimum skill levels and qualifications shall be provided to a sufficient number of staff as required to provide the Services:

Skills Level / Qualification	Required for
Passive Fire Qualification	Site Person in Charge (SPC) or nominated responsible person only
The Institute of Occupational Safety and Health (IOSH) - Managing Safely – Safety Management Level	HSE Management by Managers and Supervisors
The National Examination Board in Occupational Safety and Health (NEBOSH) Certificate in Occupational Health (NVQ Level 3)	HSE Management by Managers
International Rope Access Trade Association (IRATA)	High Level Access
Prefabricated Access Suppliers' and Manufacturers' Association (PASMA) – Towers for Users	Constructing and Using Mobile Access Towers



Skills Level / Qualification	Required for
International Powered Access Federation (IPAF) - Powered Access Licence (PAL)	Operating Mobile Elevated Working Platforms (MEWPS)
International Powered Access Federation (IPAF) - MEWPS for Managers	Planning, supervising and managing the use of Mobile Elevated Working Platforms (MEWPS)
UKAS Accredited Certification for Electrical and Installation and Maintenance in Potentially Explosive Atmospheres (for example CompEx)	All staff working in potentially explosive atmospheres
Confined Space Training	All personnel undertaking maintenance activities in White City Sidings, Greenwich Generating Station, King's Cross Hotel Curve and some London Underground Sub-Stations.



Appendix A.

Service Matrix

The Service Matrix is the document titled Lot 2 (Fire) - Schedule 3 – Appendix A (Service Matrix) and stored on the CD-ROM at Schedule 23 ((Documents on CD-ROM))



Appendix B.

Heritage Listed Station Data



SCHEDULE OF LISTED STATIONS OR STATIONS WITH LISTED BUILDINGS OR STRUCTURES

STATION	LU LINE or OVERGROUND	BOROUGH	STATION	LU LINE or OVERGROUND	BOROUGH
Acton Town	District / Piccadilly	Ealing	Kew Gardens	District	Richmond upon Thames
Aldgate East	District / Hammersmith & City	Tower Hamlets	Kilburn Park	Bakerloo	Brent
Aldwych (Disused)	Piccadilly	City of Westminster	King's Cross St Pancras	Circle / H & C / Met / Nor / Picc / Vic	Camden
Arnos Grove	Piccadilly	Enfield	Leicester Square	Northern / Piccadilly	City of Westminster
Baker Street	Bakerloo / Circle / H & C / Jubilee /	City of Westminster	Liverpool Street	Central / Circle / H&C / Metropolitan / LO	City of London
Balham	Northern	Wandsworth	Loughton	Central	Epping Forest
Bank	Central / Circle / District / Northern	City of London	Maida Vale	Bakerloo	Brent
Barking	District / Hammersmith & City	Barking & Dagenham	Moorgate	Circle / H&C / Met / Northern	City of London
Barkingside	Central	Redbridge	Momington Crescent	Northern	Camden
Barons Court	District / Piccadilly	Hammersmith & Fulham	Newbury Park	Central	Redbridge
Belsize Park	Northern	Camden	North Ealing	Piccadilly	Ealing
Boston Manor	Piccadilly	Hounslow	Northfields	Piccadilly	Ealing
Bounds Green	Piccadilly	Haringey	Notting Hill Gate	Central / Circle / District	RB Kensington & Chelsea
Bow Road	District / Hammersmith & City	Tower Hamlets	Oakwood	Piccadilly	Enfield
Brent Cross	Northern	Barnet	Osterley	Piccadilly	Hounslow
Caledonian Road	Piccadilly	Islington	Oxford Circus	Bakerloo / Central / Victoria	City of Westminster
Camden Road	Overground	Camden	Paddington (City)	Circle / District	City of Westminster
Chalk Farm	Northern	Camden	Paddington (Suburban)	Circle / Hammersmith & City	City of Westminster
Chesham	Metropolitan	Chiltern	Park Royal	Piccadilly	Ealing
Chiswick Park	District	Ealing	Peckham Rye	Overground	Southwark
Clapham Common	Northern	Lambeth	Perivale	Central	Ealing
Clapham High Street	Overground	Lambeth	Piccadilly Circus	Bakerloo / Piccadilly	City of Westminster
Clapham South	Northern	Wandsworth	Rayners Lane	Metropolitan / Piccadilly	Harrow
Cockfosters	Piccadilly	Enfield	Redbridge	Central	Redbridge
Colliers Wood	Northern	Merton	Ruislip	Metropolitan / Piccadilly	Hillingdon
Covent Garden	Piccadilly	City of Westminster	Russell Square	Piccadilly	Camden
Crystal Palace	Overground	Bromley	St. James's Park	Circle / District	City of Westminster
Denmark Hill	Overground	Southwark	St. John's Wood	Jubilee	City of Westminster
Ealing Common	District / Piccadilly	Ealing	South Kensington	Circle / District / Piccadilly	RB Kensington & Chelsea
Earl's Court	District / Piccadilly	RB Kensington & Chelsea	South Wimbledon	Northern	Merton
East Finchley	Northern	Barnet	Southgate	Piccadilly	Enfield
East Ham	District / Hammersmith & City	Newham	Sudbury Hill	Piccadilly	Harrow
Eastcote	Metropolitan / Piccadilly	Hillingdon	Sudbury Town	Piccadilly	Brent
Farringdon	Circle / Hammersmith & City / Met	Islington	Tooting Bec	Northern	Wandsworth
Fulham Broadway	District	Hammersmith & Fulham	Tooting Broadway	Northern	Wandsworth
Gloucester Road	Circle / District / Piccadilly	RB Kensington & Chelsea	Turnpike Lane	Piccadilly	Haringey
Great Portland Street	Circle / Hammersmith & City / Met	City of Westminster	Uxbridge	Metropolitan / Piccadilly	Hillingdon
Green Park	Jubilee / Piccadilly / Victoria	City of Westminster	Victoria	Circle / District / Victoria	City of Westminster
Harrow and Wealdstone	Bakerloo	Harrow	Wapping	Overground	Tower Hamlets
Hatch End	Overground	Harrow	Watford	Metropolitan	Watford
Hendon Central	Northern	Barnet	West Acton	Central	Ealing
Holloway Road	Piccadilly	Islington	West Brompton	District	RB Kensington & Chelsea
Hounslow West	Piccadilly	Hounslow	Willesden Green	Jubilee	Brent
Kennington	Northern	Southwark	Wood Green	Piccadilly	Haringey

Note: Stations are only listed in their highest category – they may still be in a Conservation Area, but have not been noted as such if they are listed.

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SCHEDULE OF LOCALLY LISTED STATIONS OR STATIONS WITH LOCALLY LISTED BUILDINGS OR STRUCTURES

STATION	LU LINE or OVERGROUND	BOROUGH	Parsons Green	District	Hammersmith & Fulham
Acton Central	Overground	Ealing	Plaistow	District / Hammersmith & City	Newham
Alperton	Piccadilly	Brent	Putney Bridge	District	Hammersmith & Fulham
Arsenal	Piccadilly	Islington	Putney (Bridge over River)	District	Wandsworth
Becontree	District	Barking & Dagenham	Richmond	District	Richmond-upon-Thames
Bruce Grove	Overground	Haringey	Romford	Overground	Havering
Buckhurst Hill	Central	Epping Forest	Ruislip Manor	Metropolitan / Piccadilly	Hillingdon
Bushey	Overground	Watford	South Harrow	Metropolitan	Harrow
Chingford	Overground	Waltham Forest	South Ruislip	Central	Hillingdon
Chorleywood	Metropolitan	Three Rivers	Stamford Hill	Overground	Hackney
Clapham Junction	Overground	Wandsworth	Stanmore	Jubilee	Harrow
Clapton	Overground	Hackney	Totteridge and Whetstone	Northern	Barnet
Dagenham East	District	Barking & Dagenham	Tufnell Park	Northern	Islington
Dagenham Heathway	District	Barking & Dagenham	Upminster	District	Havering
Ealing Broadway	Central / District	Ealing	Upminster Bridge	District	Havering
Emerson Park	Overground	Havering	Upney	District	Barking & Dagenham
Epping	Central	Epping Forest	Upton Park	District / Hammersmith & City	Newham
Fairlop	Central	Redbridge	Walthamstow Central	Victoria / Overground	Waltham Forest
Hackney Downs	Overground	Hackney	Wanstead	Central	Redbridge
Hainault	Central	Redbridge	Watford High Street	Overground	Watford
Hammersmith (D&P)	District / Piccadilly	Hammersmith & Fulham	West Finchley	Northern	Barnet
Hangar Lane	Central	Ealing	West Kensington	District	Hammersmith & Fulham
Hillingdon	Metropolitan	Hillingdon	White City	Central	Hammersmith & Fulham
Mill Hill East	Northern	Barnet	Wimbledon Park	District	Merton
Morden	Northern	Merton	Woodside Park	Northern	Barnet

SCHEDULE OF STATIONS IN CONSERVATION AREAS			STATION	LU LINE or OVERGROUND	BOROUGH
STATION	LU LINE or OVERGROUND	BOROUGH	Kensal Green	Bakerloo	Brent
Aldgate	Circle / Metropolitan	City of London	Kensington (Olympia)	District	RB Kensington & Chelsea
Bethnal Green	Central	Tower Hamlets	Kentish Town West	Overground	Camden
Brixton	Victoria	Lambeth	Monument	Circle / District	City of London
Brockley	Overground	Lewisham	New Cross Gate	Overground	Lewisham
Burnt Oak	Northern	Barnet	Oval	Northern	Lambeth
Bush Hill Park	Overground	Enfield	Queen's Park	Bakerloo	Brent
Camden Town	Northern	Camden	Regent's Park	Bakerloo	City of Westminster
Campbell Road	District Sub-Station	Tower Hamlets	St James Street	Overground	Waltham Forest
Chancery Lane	Central	City of London	Seven Sisters	Victoria	Haringey
Charing Cross	Bakerloo / Northern	City of Westminster	Seven Kings	Overground	Redbridge
East Acton	Central	Hammersmith & Fulham	Shepherd's Bush	Central	Hammersmith & Fulham
Embankment	Bak / Circle / District / Northern	City of Westminster	Sloane Square	District	RB Kensington & Chelsea
Euston	Northern / Victoria	Camden	South Tottenham	Overground	Haringey
Forest Gate	Overground	Newham	Stepney Green	District / Hammersmith & City	Tower Hamlets
Forest Hill	Overground	Lewisham	Sydenham	Overground	Lewisham
Golders Green	Northern	Barnet	Temple	Circle / District	City of Westminster
Goodge Street	Northern	Camden	Tower Hill	Circle / District	Tower Hamlets
Gospel Oak	Overground	Camden	Wanstead Park	Overground	Newham
Greenwich	Generating Station	RB Greenwich	Warren Street	Northern / Victoria	Camden
Hampstead	Northern	Camden	Warwick Avenue	Bakerloo	City of Westminster
Hampstead Heath	Overground	Camden	Waterloo	Bakerloo / Jubilee / Northern / W & C	Lambeth
Highbury and Islington	Victoria	Islington	West Ham	District / Hammersmith & City / Jubilee	Newham
Highgate	Northern	Haringey	West Hampstead	Jubilee	Camden
Holborn	Central	Camden	Westminster	Jubilee	City of Westminster
Holland Park	Central	Islington & Chelsea	Whitechapel	District / Hammersmith & City	Tower Hamlets
			Woodford	Ce	Redbridge

Appendix C.

Implementation of Maintenance All Hours on Fire Assets



Document type : Form

Format for Case for Safety Paper

Reference Number: TLF-229-V11

From Parent Document: P-320

Review Date: 06th May 2015



Case for Safety Paper

Implementation of Maintenance All Hours on Fire Assets.

SRCC No: TL/1415/012

Date change to be implemented: 01st June 2015

The owner of this Case for Safety is the
Fire Asset Manager(s) (JNP, BCV, SSL)

Version Control

Version	Date	Author	Reviewed LU DRACCT
R2	27/05/2015		Amended sec 1.0 for Dracct
R1	14/04/2015		Dracct Review 6 th May 2015

Final Version Approved For Submission By:

Accountability	Print Name	Signature	Date
Author			
Project Manager			
Authorising Manager			
Competent Authority (Asset Engineer)			
Fire Manager BCV/SSL			
Head of Stations Engineering			
Safety Risk Manager			
Union H&S Representative (if applicable)			

	CFS to support (Mark as appropriate)	Reference number	Date to be implemented	Change Category (where relevant)
SRCC Submission				
PSC Submission				
Concession				
Continued Operation				
Assurance Submission				
Other (Specify)				

1.0 Introduction

Further to the previous Case for Safety Paper - **Implementation of Extended Working Hours for Planned Preventative Maintenance on Fire Assets - Number TL/1314/008** approved at DRACCT on the 22nd July 2013, this paper follows on with a similar principle. However it now covers works that may be undertaken during All Hours. These works will avoid peak traffic hours working in public areas and will not impact upon the safe operation of the LU Station or Facility.

This paper supersedes the previously agreed paper and is intended to apply to all London Underground Locations.

The detailed scope of works is attached in Appendix 2 with a summary shown in section 4.0 of this document.

This document aims to outline the impact of the risks associated with carrying out maintenance activities during All Hours working on the Fire assets. It also includes the mitigating actions to be put in place to minimise the risk as low as reasonably practicable.

The objective of the Fire Asset All Hours Working initiative is to explore making changes to the current maintenance practices that can increase productivity and efficiency without causing any disruption to passengers or LU Operational staff.

The main driver for moving to All Hours working is to achieve compliance to Statutory Regulations, LU Standards and legislation for the Maintenance of Fire Assets. At present there could be clashes with other works, for example in a machine room when an escalator needs to be repaired ready for service the following morning, the escalator maintainers will take priority over the fire maintainers. In this situation, the fire maintenance work would not be completed and today, this outstanding work would be completed at the weekends. With the introduction of Night Tube in September, the weekend recovery period will be lost and the work will need to be completed during the week. By moving some maintenance to Traffic Hours, there will be less pressure on staff so that jobs are not rushed and statutory obligations met. A significant driver for this proposal is therefore Night Tube which will ultimately limit hours available for Maintenance works.

2.0 Background

A CoMET benchmarking study commissioned by London Underground identified that other metros with similar or higher traffic levels than London undertake more of their maintenance during traffic hours. This was the basis of the previously approved paper which extended working hours for some activities.

Due to Night Tube and pressure on scarce resources there is a need to work during All Hours (non engineering and engineering hours), this requirement has prompted a review to establish which activities can be undertaken during All Hours working as applied to London Underground.

This document supersedes the previous paper (TL/1314/008) and extends the working period to ALL Hours .

3.0 Current Situation

All maintenance activities are currently undertaken within Engineering hours and Extended Engineering hours. Most stations have close of traffic around 01:00 and open for service between 05:00 and 05:30. Taking station preparation time (30-60 minutes) into consideration this restricts productive maintenance time to between 01:00 and 04:30, about three and a half hours. Extended Engineering hours has enabled the Fire Maintainer to access identified sections of the fire systems from 22:00 to 05:00.

At present repairs are undertaken to the fire systems within traffic hours if a failure occurs but no PPM or corrective maintenance is undertaken.

Non public buildings and depots are generally maintained during Traffic Hours at the request of the Operations Management. This situation is unlikely to change.

Works at Vent Shafts, Intervention Shafts & Detrainment Points at remote stations are undertaken during Traffic Hours.

4.0 Proposed Change

This paper supersedes the previously agreed paper which extended working hours to a situation where selected activities may be undertaken during All Hours working. Furthermore this paper is intended to apply to all Underground premises (station's and non public buildings).

The following maintenance activities have been identified as suitable for undertaking during ALL Hours running (not during peak hours in customer areas). With the work activities described in Appendix 2. This list is not mandatory, with selection of particular tasks at the discretion of the asset manager. These activities have been risk assessed with the generic risks shown in Appendix 1:-

- 4.1 Main Fire Control Panel
- 4.2 Fire Control Panel Repeater & Networked Panels
- 4.3 Remote Audio Visual Driver Unit (RAVDU) System
- 4.4 Fire Voice Alarm
- 4.5 Emergency Do Not Enter (EDNE) Panel System
- 4.6 Emergency Do Not Enter (EDNE) Signs (Loop driven or Plunger activated)
- 4.7 Underground Ticketing System (UTS) interface panel
- 4.8 UTS loop interface
- 4.9 Escalator Wet Sprinkler System (EWSS) Electrical
- 4.10 Generic Heat Detection (inc Linear Heat Cable)
- 4.11 Trace Heating Panel
- 4.12 High Sensitivity Smoke Detection (HSSD) / AIRSENSE / VESDA
- 4.13 Smoke Beam System
- 4.14 Video Smoke Detection
- 4.15 Damper Control Panels and associated Field Equipment
- 4.16 Loop Driven Damper Interface Panel
- 4.17 Motorised Smoke & Fire Dampers and Magnetic Door Retainers
- 4.18 Field Equipment
- 4.19 Loop Driven Field Equipment
- 4.20 Point Smoke & Heat Detection
- 4.21 Manual Call Points
- 4.22 Loop Driven Sounders/Beacon
- 4.23 Loop Interface units (PA Monitoring, Inverter, Lift etc)
- 4.24 Picc Ex / T5C Shaft Network
- 4.25 EWSS System.
- 4.26 Wet Sprinkler System.
- 4.27 Water Fog System.
- 4.28 Fire Water Mains Supplies.
- 4.29 Hose Reels.
- 4.30 Hydrant Systems.
- 4.31 Dry & Damp Fire Mains.
- 4.32 Define Corrective Maintenance