**LONDON** RESILIENCE PARTNERSHIP

# London Power Supply Disruption Framework

**September 2021**

**Version 4.0**

**London Resilience Power Supply Disruption Framework**

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## LONDON RESILIENCE GROUP

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## LONDON RESILIENCE GROUP

The London Resilience Group is jointly funded and governed by the Greater London Authority, London Local Authorities and the London Fire Commissioner. We are hosted by the London Fire

Brigade. Our work, and that of the London Resilience Partnership, is overseen by the London Resilience Forum.

| Version Control | | |
|---|---|---|
| **Version** | **Date** | **Change (owner)** |
| 1.0 | Sept 2010 | First version – incorporating all comments received from T&F Group members for submission to the LRPB for endorsement. |
| 2.0 | Dec 2014 | Updates from London Power Supply Disruption (Electricity) Group and Scottish and Southern Energy. |
| 3.03 Interim Version | May 2018 | Administrative review of the Framework. |
| 3.0 Final Version | July and August 2018 | Change of terminology: replace 'plan' with 'framework' Addition of considerations relating to: Black Start power failure restoration timeline; Black Start power failure sector impacts; Identification of the vulnerable; Identification of critical services; Partnership response and coordination; Communications messages and coordination; 'Self-start' advice to the public. |
| 3.1 | October 2018 | Amendment to 1.9 under transport sector impacts, inclusion of tram and buses. |
| 4.0 Final Version | July and August 2021 | Change to terminology: replace 'Black Start' with Electricity Service Restoration Service. Addition of considerations relating to: Strategic planning considerations; Identification of the vulnerable; Sector impacts; Electricity Network risks; Training and Exercising. |

# Critical Information

| | |
|---|---|
| Who is the national lead? | Department for Business, Energy & Industrial Strategy |
| Who is the London co-ordination lead? | London Resilience Group (LRG) will chair and coordinate any Partnership teleconferences in advance of, or during an incident.<br><br>The Metropolitan Police Service (MPS), in line with the London Strategic Coordination Protocol (SCP) will lead the response as the initial default chair if a Strategic Coordinating Group (SCG) is convened. This may subsequently be handed over to the most appropriate agency depending on the nature of the incident.<br><br>The LRG will co-ordinate the maintenance of the Framework. The Utilities Sector Panel will contribute to reviews. |
| Who initiates the London Power Supply Disruption Framework? | **The Framework can be initiated by any member of the London Resilience Partnership who is faced with a significant power disruption incident.**<br><br>Activation will be in accordance with the London SCP. The power company should contact the London Resilience Duty Manager in the first instance. If no response is received they should follow the MPS 'Operation Ringmain' protocol. |
| Who notifies London partners of a power supply disruption event? | LRG, once they have been made aware of the incident by members of the Partnership or by the Department for Business, Energy & Industrial Strategy (BEIS). |
| What communication methods will be used? | LRG will cascade information via email to the Partnership using the London Resilience Partnership incident distribution list.<br><br>Immediate issues will be through existing 24/7 phone contacts.<br><br>If the power supply disruption affects Information and Communications Technology (ICT) services, LRG will activate the London Disruption to Telecommunications for Responders Plan. |
| When will the London Power Disruption Framework be reviewed? | The framework will be reviewed every 3 years – reviews initiated by LRG in accordance with the London Resilience Partnership work programme. If required the framework will be reviewed earlier to incorporate any lessons from incidents or amendments to national plans or arrangements.<br><br>Next review date: 2024 |
| Key Partner responsibilities | Power companies – provide the technical fix to restore power and situational awareness information for Partners.<br><br>All - identify and maintain their critical services (as part of Business Continuity Planning) in the event of an outage.<br><br>All – manage the response to the primary and secondary consequences of the disruption, including identifying and assisting vulnerable people.<br><br>All – provide LRG with situational awareness updates at agreed times. |
| Who will coordinate the media response? | A London Resilience Communication Group (LRCG) teleconference or face to face meeting may be convened to develop media lines with the chair determined by the Group - MPS is the default Chair. This group should work closely with the power company media representatives.<br><br>BEIS may look to lead the response if a national incident. |

| Delivery of regional measures | A Partnership teleconference, or a SCG, will be formed to oversee the strategic response, as required. |
|---|---|
| How to use this framework quickly | • Notify London Resilience Duty Manager of the power failure incident. |
| | • LRG will arrange a teleconference with relevant parties to assess the situation. |
| | • An SCG will be convened if required. |
| | • If emails and phones are impacted, refer to the London Resilience Disruption to Telecommunications for Responders Plan. |
| | • The SCG may wish to consider how any Partnership tactical coordination issues are managed. |

# Contents

# 1. Aim and Objectives

## 1.1 Aim

To detail the Partnership's planned response to a nationwide, and/or London based, failure of electricity supplies.

## 1.2 Objectives of this Framework

This Framework:

- Provides an outline for the London Resilience Partnership and its strategic decision makers to support and augment the electricity companies' response to a significant and sustained wide area power failure.

- Provides the London Resilience Partnership with a framework for responding to a widespread power cut within London and, in doing so, contributes to the overall resilience of the city.

- Sets out the circumstances under which a Partnership response to a wide area power failure may be triggered.

- Sets out the process for activating a multi-agency response to a power failure.

- Outlines the roles and responsibilities involved in providing a multi-agency response.

- Provides information to support the timely activation and delivery of a multi-agency response.

- Provides the London Strategic Coordinating Group (SCG) with guidance on risks and issues to enable them to make informed decisions during the response and recovery phases.

- Identifies methods and messages to communicate with the public.

## 1.3 Development, Ownership and Review

The Utilities Sector Panel and the London Power Supply Disruption review group contributed to the development of this Framework. Future development will be overseen by this group which is coordinated by the London Resilience Group.

The framework is owned by the London Resilience Forum (LRF). Changes are authorised by the London Resilience Programme Board (LRPB).

This framework will be reviewed at least once every three years or earlier as required to respond to any lessons identified during any incident or changes to national or London documents that have an impact on this document.

London Partners are required to inform the London Resilience Group of any potential changes which may necessitate a review of the framework.

## 1.4 Links to Other Plans and Interdependencies

This framework links to the following plans and capabilities:

- Disruption to Telecommunications for Responders Plan
- London Strategic Coordination Protocol
- London Resilience Communication Group Framework
- London Emergency Services Liaison Panel (LESLP) Major Incident Procedure Manual
- London Identification of the Vulnerable Guidance
- London Fuel Disruption Protocol Framework
- Water Supply Disruption Plan
- London Resilience Partnership Recovery Coordination Framework
- London Resilience Partnership Humanitarian Assistance Framework

## 1.5 Strategic planning considerations

There are significant interdependencies between the various utility services, with telecommunications, water supply services and gas network distribution all being dependent upon power to operate their services. Multi-agency coordination will be very difficult to achieve, so individual sectors and agencies need to do what they can to respond in the initial phase of a power supply disruption.

It is important that each agency has an appropriate level of resilient telecommunications methods in place (e.g. Airwave and/or Satellite phone). The London Disruption to Telecommunications for Responders Plan has details of the resilient layered fallback arrangements for the Partnership. The sectors listed will advise the SCG how they would nominate a sector representative to attend the SCG: Voluntary, Faith, Utilities, Telecoms, Transport and Business.

The following assumptions should also be considered:

- People are likely to gravitate towards community and 'moth-to-light' focal points.

- Partners should be aware that facilities which have maintained a power supply and kept the lights on will automatically attract people.

- Partners should have mechanisms in place to signpost people to an alternative location/facility if required

- The likely impact on:

    o Food supply

    o Financial services and banking, electronic transactions and cash machines

    o Fuel supply, affecting all forms of transport, distribution and supply chains

    o Water supply

    o Sewerage network

    o Staff availability as a result of transport disruption and parenting duties

The Power Supply Disruption Planning Assumption and Power Supply Disruption Capability Assessment were reviewed and updated in 2020.

## 1.6 Borough-level planning advice

Local agencies should include the following in their organisational and multi-agency plans:

- Identify a location where face-to-face coordination will take place.

- Self-deployment policy for on-call /critical staff groups in the event of an incident disrupting the power supply and telecommunications.

    o Keep a mobile and laptop fully charged at all times.

    o Publicise the advice on where to obtain information (e.g. BBC Radio 1 - 4[1], and BBC local radio will continue to operate during a loss of power supply).

    o Significant staff absences could impact on service delivery

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[1] Use a car radio, wind-up radio, or battery-operated radio to listen to radio stations which have the capability to maintain their operations in the event of a power failure. The likelihood is only BBC radio 4 (92 - 95 FM, 103-105 FM. LW 198 Long Wave) will be transmitting in a R76 scenario.

- o Confirm with the landline telecom provider if copper wire phone lines [2] are installed.
- Obtain an old style/analogue telephone to plug in to the network
- Note the free national phone number, 105, to report, or get information about, a power cut
- Vulnerable people should register for the power company Priority Services Register
- Identify a location for the coordination of the response to vulnerable persons
- Community care services to:
  - o Identify those patients dependent on power
  - o Confirm what support will be provided and which organisation is responsible, e.g. arranging a battery back-up for medical equipment used in the home
- Further advice on preparing for a power failure is on the UK Power Networks website:

  https://www.ukpowernetworks.co.uk/internet/en/power-cuts/helpful-advice-during-a-power-cut.html

## 1.7 Electricity System Restoration Timescales

The worst case scenario is for a total national power failure, risk R76, also referred to as Electricity System Restoration. The planning assumption for R76 states 60% of households restored in 2 days and up to 7 days for 100%. There is more information about power failure risks in Section 5.

National Grid and UK Power Networks have set out the phases to restore the national power network from the time of the outage to the full restoration of the network. The actual restoration timeframe could vary, depending on the cause of the outage, but it could be up to 7 days.

Designated power stations will become operational in the first two hours and will provide power to progressively restart the rest of the network. In this scenario, London could be one of the last regions to be reconnected. The table below shows some of the potential impacts on services/sectors. Further information on the potential sector impacts is at 1.9 Electricity System power failure: sector impacts.

**Electricity System Restoration Timescales and Sector Impacts Summary**

| Indicative Timeframe | Restoration Phase/ Proportion of Customers Affected in the UK | Potential Impact on Services |
|---|---|---|
| 0 hours | Total loss of electricity power. Zero % customers restored. | Services with an Uninterruptible Power Supply (UPS) will continue. Closure of all other services e.g. financial and educational. |
| 0 – 2 hours | Network of dedicated self-start power stations will start to come online. | Increased demand on public services (e.g. health and social care). Closure of transport networks |
| 2 – 6 hours | Demand progressively restored as self-start power stations operate and form power islands. Approximately 5% customers restored. | After 2 hours, the mobile network may go down. |

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[2] Copper wire phone lines do not rely on mains electricity to work. But it should be noted Openreach will phase out this service by 2025, so need to keep under review

| Indicative Timeframe | Restoration Phase/ Proportion of Customers Affected in the UK | Potential Impact on Services |
|---|---|---|
| | | Public unable to communicate/limited radio broadcasts maintained via BBC Radio 1 - 4 |
| 6 – 12 hours | Spread of power islands and begin to join them up to form a skeleton transmission network.<br><br>Approximately 10% customers restored. | Severe staff absence due to transport disruption and school closures. |
| 12 – 48 hours | Establish stable skeleton network.<br><br>Rota load disconnections can be used to share power, if needed.<br><br>Approximately 60% of customers restored. | Water supply failure<br><br>Sewerage network disruption |
| 2 days – 7 days | Continuation of rota load disconnection.<br><br>Day 3: approximately 70% restored.<br><br>Day 4: approximately 85% restored.<br><br>Day 5: approximately 90% restored.<br><br>Day 6: approximately 95% restored.<br><br>Day 7: 100% customers restored in the UK. | After 5 days, core fixed telecoms network may fail.<br><br>Airwave resilient - batteries need to be charged<br><br>Potential public disorder. |

## 1.8 Electricity System Restoration Timeline

This is based on the BEIS reasonable worst case scenario of a total power outage in the winter, with little or no wind generation available. The actual restoration timeframe could vary, depending on the cause of the outage, but it could be up to 7 days.
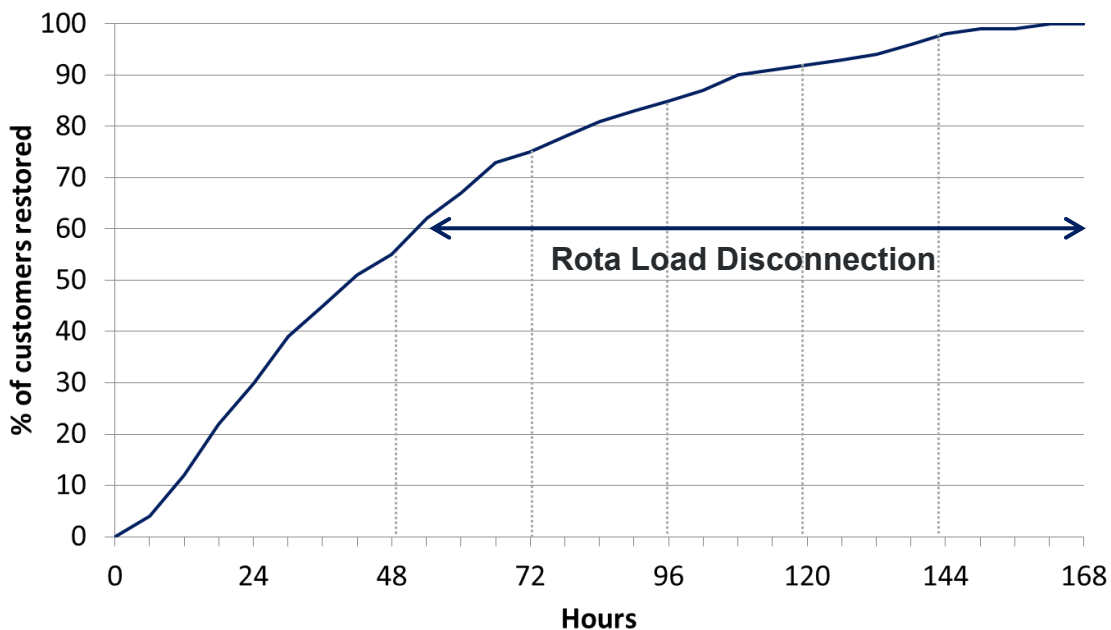
Once a stable skeleton network has been established, within approximately 2 days/48 hours, a schedule of rota load disconnections will be initiated to ensure the equal distribution of power supply to customers.

## 1.9 Significant power failure: Sector impacts

These sectors may be impacted in the following ways, and supply chains will begin to be affected if the power loss is prolonged. Therefore, partners need to consider these impact when planning for this type of event.

| | | | |
|---|---|---|---|
| Potential influx into acute hospitals of patients and vulnerable people, usually cared for in community. Difficulties with discharging patients. | Will result in a reduced level of services. Critical care, inpatient nursing and medical care maintained as a priority. Elective activity postponed. | Supply chain disruptions (including catering; blood and transplant; medication and devices). Utilities disruption | Hospitals and care providers may have increased risk of infectious outbreaks if water supplies fail due to pumping issues. |

| | | | | |
|---|---|---|---|---|
| Failure of rail, tram and airport networks. Many commuters trapped in trains requiring rescue. | Assumption that buses would continue to run – impacts to communications. | Many commuters unable to return home, require shelter. | Lighting and signal failures cause difficult road conditions. | Assumption that petrol forecourts close - fuel supply and distribution network disrupted. |

| | | | |
|---|---|---|---|
| Core fixed telecoms network expected to be resilient for up to 5 days. | Minimal continuity of digital & mobile phone services & broadband networks. | Normal TV and radio broadcasts disrupted. | Note; Openreach is currently phasing out copper line (PSTN) telecommunication by 2025, therefore, need to keep under review |

| | | | |
|---|---|---|---|
| Loss of domestic lighting, heating, and cooking ability. | Failure of mains water supply. Sewerage network disrupted. | Inability of public to communicate / receive information. | Food spoils as fridges and freezers defrost. |

| | | | |
|---|---|---|---|
| Severe staff absence due to transport disruption and schools closure. | Electronic payment systems and financial services disrupted. | Staff unable to work in office buildings due to health and safety concerns. | Building auxiliary services will be lost if not supported by backup generation |

| | | | |
|---|---|---|---|
| People trapped in buildings and underground require rescue. | Criminal Justice System (CJS) (prisons, courts, probation) faces severe disruption. | Airwave system is resilient to a loss of telecoms - batteries need recharging. | Potential public disorder as supplies run low, increasing demand on police. |

Building owners/operators should be aware that as a result of a total loss of power, the auxiliary services will also be lost to their building, unless supported by backup generation/UPS. The main critical auxiliary building services likely to be impacted are as

follows, mains light, supplies to lifts, ventilation systems and fire alarms/fire systems (which may impact the buildings fire risk assessment) etc.

## 1.10 Security Classification

This document is protectively marked as 'OFFICIAL – LONDON RESILIENCE PARTNERSHIP USE ONLY'.

# 2. Activation

## 2.1 Activation Overview

In accordance with the London Resilience Partnership Strategic Coordination Protocol this framework can be triggered by any member of the London Resilience Partnership.

## 2.2 Criteria for triggering the London Power Supply Disruption Framework

This Framework can be triggered:

- By the National Grid Electricity System Operator formally declaring a System Restoration – notification via BEIS.

- By the Distribution Network Operator or Transmission System Operator for a power failure affecting 10,000 or more customers[3] or another incident that they believe requires activation of the framework

- By National Grid Electricity Transmission following a transmission network issue which causes a significant power outage – notified via BEIS.

- By a partner or a number of partners where they believe that a power failure meets the requirements for the declaration of an emergency as defined in the Civil Contingencies Act. For example, where a London wide Resilience Partnership organisation is facing significant issues as a result of a power failure that requires multi-agency strategic coordination

- Where the significant loss of power is one of the consequences of another major incident or emergency

- Where the power failure is a result of a significant deliberate incident

This above list is not exhaustive and is not intended to preclude the framework being triggered for reasons not listed above.

## 2.3 Supporting information to determine if the framework should be triggered

Whilst the consequences of a power cut will be apparent immediately to those people directly affected, and the electricity company will be aware immediately of power cuts affecting more than a few hundred customers[3], it can take up to three hours for the electricity company to identify the cause of a power cut and to develop a restoration strategy.

For power cuts affecting less than a few hundred people it can take longer to identify the customers affected, and to accurately identify the total number of properties affected because the number affected is determined by a connectivity model predominantly reliant on customer calls to identify the number of customers affected. Consequently, it can take time to identify the cause and develop a restoration strategy until the number of customer calls reaches a critical number dependant on the locality affected and other factors.

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[3] Note – in this context a customer is a property that has an electricity meter. It includes commercial, industrial and other premises and not just domestic properties. Therefore it is difficult to convert this customer number into a figure for the number of people affected.

It should also be noted that it can also take other responders some while for the degradation of service to become apparent to them unless they have robust business continuity plans in place to quickly identify and mitigate this type of impact.
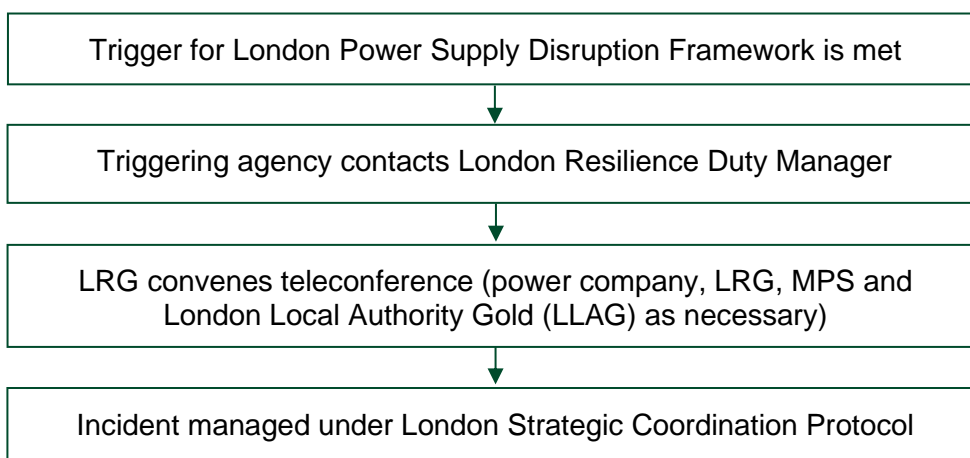
## 2.4 Activation

The framework should be triggered in accordance with the London Resilience Partnership Strategic Coordination Protocol. For a power failure incident the following information will be required by the London Resilience Duty Manager to align with the 'METHANE' model.

**Electricity Company guidance on the METHANE model for situational awareness**

| | |
|---|---|
| **M** | Has a Major Incident been declared?<br>• Command structure - Strategic Liaison Officer name and contact details<br>• Strategy - Initial power company response and recovery strategy<br>• SCG meeting - Suggested time for first SCG meeting<br>• Is assistance from other responders required? |
| **E** | Exact Location or geographic area of the incident<br>• Exact location shared if support from other responders is required at an incident site. |
| **T** | Type of incident<br>Scale (current and potential future scale)<br>• the geographical extent and potential duration;<br>• the number of premises affected;<br>• critical infrastructure affected, if known (e.g. hospitals, sewage works, water treatment works, telephone exchanges);<br>• stability of the situation and potential scale of impacts if it gets worse<br><br>Duration<br>• estimated restoration time, or if in stages, for each restoration stage<br>• key milestones or checkpoint times |
| **H** | Hazards – present, potential or suspected incl. electricity safety issues |
| **A** | Access – routes that are safe to use |
| **N** | Number – type, severity of casualties |
| **E** | Emergency services and responders – now present and those required |

## 2.5 Activation Diagram



Trigger for London Power Supply Disruption Framework is met

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Triggering agency contacts London Resilience Duty Manager

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LRG convenes teleconference (power company, LRG, MPS and London Local Authority Gold (LLAG) as necessary)

↓

Incident managed under London Strategic Coordination Protocol

# 3. RESPONSE AND RECOVERY

## 3.1 Strategic Issues

The key issues that may need to be considered by the following coordinating groups as part of the response and recovery are detailed in the Resource and Recovery Issues Matrix Appendix 2.

- Strategic Coordinating Group (SCG)
    - o Any SCG sub-groups e.g. Humanitarian Assistance, or London Resilience Communication Group
- RCG as appropriate
- Response Coordinating Group (ResCG), if convened; the Ministry of Housing, Communities & Local Government-hosted multi LRF conference call for any LRFs affected by a significantly disruptive event

Some of the checklist prompts may not be relevant for a particular incident depending on the time, season, weather, cause, duration, location etc. See Appendix 3 for background information on energy resilience.

## 3.2 Strategic Coordinating Group (SCG) Draft Strategic Aim / Objectives

The Strategic Coordination Protocol provides an example of a multi-agency strategy which refers to severe disruption to utilities.

**Strategic Aim:**

To work together to coordinate an effective emergency response, to preserve life, to minimise the impact on London communities and business, and aid the return to normality.

**Strategic Objectives:**

- To save and protect life
- To maintain and restore power and other essential services
- To relieve suffering and provide humanitarian assistance
- To minimise the impact on, and provide support to, the community and businesses
- To maintain the health and safety of responders
- To provide information to the community to aid self-help
- To facilitate recovery and the return to normality

## 3.3 Strategic Coordination arrangements

### Partnership coordination and response

- If there are no communications and an assumed wide-area power outage:

1. Partners should send representatives to pre-determined SCG location and assume the need to leave a liaison officer there 24/7. Primary pre-determined SCG location: MPS Lambeth Strategic Coordination Centre (SCC), (Fall-back location is MPS Hendon).
2. MPS will chair the SCG by default for initial response phase.
3. London Resilience Group (LRG) would deploy staff to:
    a. MPS Lambeth SCC to support the SCG and LLAG.

b. LFB Operations Centre, Merton to run the London Local Authorities Coordination Centre (LLACC)

c. LRG would endeavour to use PageOne mass messaging crisis communication system before mobile telecoms are disrupted but this cannot be guaranteed.

4. It will be assumed that UK Power Networks, and/or National Grid Electricity Transmission may not attend the SCG due to their capacity. The electricity sector will focus on supporting national coordination and therefore the best electricity sector information will come via BEIS/Cabinet Office Briefing Room (COBR) to Ministry of Housing, Communities and Local Government, Resilience and Emergencies Division (MHCLG RED) to SCG.

a. During a nationwide outage, it is expected that mobile communications will be limited. National Grid Electricity Transmission and National Grid Electricity System Operator will communicate through their resilient Optel system. SCG attendance from National Grid Electricity Transmission will be limited under these circumstances, as efforts will be focussed on ensuring the delivery of the restoration strategy, and the ability to directly communicate with the attendee will be limited.

b. The National Grid Optel system has a direct, resilient line to BEIS. During a nationwide outage, BEIS will receive co-ordinated, regular updates from National Grid Electricity Transmission and System Operator, which can be cascaded to COBR and SCG.

5. During a significant London focused power outage, with functional mobile communications, a representative from National Grid Electricity Transmission may be able to attend SCG to provide local updates and receive feedback. If not attending in person, regular communications will be provided by the National Grid Electricity Transmission Incident Response Team directly to the SCG.

6. In an R76 scenario, it is likely that the SCG will communicate with COBR and RED face to face at the SCG or via a liaison officer or runner.

7. The following sectors will advise the SCG how they would nominate a sector representative to attend the SCG: All Category 1 Responders and Utilities, Telecoms, Transport, Voluntary, Faith and Business.

8. Each organisation is responsible for reach-back communications to their organisation / sector based on their resilient telecoms capability.

## Pan-London and national coordination

The communications link from the SCG to COBR will be maintained via a copper line phone, or Liaison Officers or runners with/without Airwave.

## Pan-London and Borough- level coordination

- Potential Local Authority communication via Airwave and Satellite phones (where available) between London Local Authority Coordination Centre (LLACC) and Borough Emergency Control Centres (BECCs) to share single-agency and multi-agency communications.

- Potential links from central functions to police stations, fire stations to share single-agency and multi-agency communications.

- The expectation is that information will flow from strategic central functions (e.g. the SCG and their relevant Police and Fire representatives) to local functions (e.g. police stations and fire stations) to share single agency and multi-agency communications.

- It is expected that each agency will have internal arrangements in place to share information between their central and local functions. The multi-agency communications refers to cascading information from the SCG to the local response coordinated by the relevant BRF.

### Borough-based coordination

- Local Authorities are likely to lead borough-based coordination

- Face-to-face coordination will take place at a pre-determined location, which should be nominated by the Borough Resilience Forum (BRF).

- Volunteer centres / hubs should be included in the coordination of voluntary sector support and distribution of communications /advice to the community.

## 3.4 Self-deployment instructions to Partnership response roles

All Partner organisations should consider putting in place a policy on self-start instructions for all critical staff so they know in advance who to report to and to which location. Below is an example of how some sectors would respond:

- Emergency Services – the assumption is that staff will report unless physically impossible.

- National Grid – have a policy in place for critical staff to self-deploy in the absence of communications.

- UK Power Networks – have a policy in place for critical staff to self-deploy in the absence of communications.

- Local Authorities – all boroughs are advised to make arrangements for RVP attendance (e.g. nominate the Local Authority Liaison Officer (LALO) to self-deploy) in absence of communications.

- TfL – Surface and Underground have 24/7 operations in place.

- Health – NHS paging system for core roles

- LRG – will introduce a self-deploy policy for on-call staff and for LLAG

## 3.5 Identification of critical services

The SCG will determine the Partnership strategy which will inform the priorities about which services will be maintained

- Hospitals are considered to be a priority due to presence of vulnerable persons and the ability to provide support. It would not be feasible to decamp all non-critical patients from hospital settings across London. The assumption being that it would be better to keep people in hospital settings, even with low level of utilities, than to decamp to other public services or the community. Unless they can be discharged to home or more suitable setting. Elective surgeries would be postponed.

- Prioritisation of portable generators, fuel, water and food supplies, noting that hospitals likely to be given the highest priority.

- Domiciliary care requiring power (e.g. home dialysis patients) are likely to need to be transferred to a hospital setting. NHS community service Trust Renal team would lead on identification, but support would be provided by acute and patient transport services. It may be necessary for Local Authorities / other agencies to identify such persons and sign-post to NHS services or in extremis (constraint on NHS / London Ambulance Service (LAS) transport services) transport people to a hospital setting using any means available.

- All partners would prioritise maintenance of their critical services.

- Transport – Fuel supplies may be impacted and affect the operations of surface transport modes.

### 3.6   Communications: Coordination and Key messages

- Local communications will be maintained via face-to-face, facilities and frontline staff, etc.

- Regional communications structure and considerations:

  o  The London Resilience Communications Group has a membership primarily of Category One Responders and a representative from Cabinet Office Communications.

  o  During a widespread power supply disruption, both National Grid and UK Power Networks have a duty to provide information and advice to the public.  During a nationwide power outage, National Grid (as a whole) has a resilient Optel communication line to BEIS.  This will be the most reliable source of updates on the progress of the restoration strategy, and updates to the SCG will be received from BEIS.

  o  In the event of a widespread power supply disruption with functioning telecommunications the London Resilience Communications Group will:

    - Establish contact with the communications leads from National Grid and UK Power Networks to add them to the membership of the group.

    - Arrange a 'fastest finger first' first alert teleconference within 2 hours of notification, noting that mobile telecom networks may start to be affected about 2 hours after a widespread power failure.

    - Confirm their arrangements for maintaining contact using resilient methods such as Airwave, Satellite Phones or face to face self-deployment to a pre-determined location.

    - Agree the communications strategy and key messages which all organisations will share throughout the incident from initial event to full restoration of power supplies.

    - Refer to the SCG strategy for the incident.

    - Coordinate National, London and local messaging as far as practical, including messaging through BBC Radio.

    - Agree and finalise messages relating to the emergency responses.

- Public communications channels

  Use a car radio, wind-up radio, or battery-operated radio to listen to the following radio stations which have the capability to maintain their operations in the event of a power failure:

  o  BBC Local Radio and BBC Radio 1 – 4 (BBC Radio 4 (92 - 95 FM, 103-105 FM. LW 198 Long Wave) is the most likely to transmit).

### Draft key messages: power company and multi-agency

The messages below are based on a prolonged wide-area power failure. The draft generic power company messages were provided as part of the London Resilience Anytown project. The draft multi-agency messages are based around the existing self-start advice provided by power companies.

### 1-3 hours:

Draft generic power company messages

A fault on the electricity network interrupted power supplies to customers at [enter time]. Engineers are working as quickly and as safely as possible to restore electricity supplies to customers. We are sorry for the inconvenience caused. Power is unlikely to be restored before [enter time]. For any information relating to a power cut, please call the national free

phone number, 105, to speak to the electricity distribution company. A further update will be provided at [enter time].

<u>Draft generic multi-agency messages</u>

- Use a battery operated radio to tune in to BBC Local Radio or BBC Radio 1 – 4
- Only attend hospital if there's a medical emergency
- Look out for vulnerable neighbours
- If you have an old-fashioned phone, plug it in
- Call 999 if there's an emergency
- Keep mobile and laptop use to a minimum to preserve battery life

## 4 hours:

<u>Draft generic power company messages</u>

We understand how difficult it is when homes and businesses are without power. We are working as quickly and as safely as we can to restore supplies and apologise for the continuing inconvenience and disruption this power cut is causing. Power is unlikely to be restored before [enter time]. A further update will be provided at [enter time]. Please follow the Power Cut advice: switch off sensitive electrical appliances, ready for when the power comes back in; leave a light on so you know when the power has been restored; check your neighbours are OK. Customers on the Priority Services Register will be contacted to provide assistance. Call the free phone number 105 for updates from the electricity distributor.

<u>Draft generic multi-agency messages</u>

- Note that some mobile phone networks may no longer work
- Using a torch is safer than candles
- Try to consume food and drink which do not require electricity to prepare
- Do not use barbecues indoors
- Continue to check on neighbours
- An old style/analogue telephone can be used to make phone calls
- If there is an emergency call 999
- Have a supply of hot water in a flask
- Keep a blanket and warm clothes handy
- Try to limit opening the fridge and freezer to preserve food

## 24 hours:

**Draft generic power company messages**

We understand how difficult it is when homes and businesses are without power. We are working as quickly and as safely as we can to restore supplies and apologise for the continuing inconvenience and disruption this power cut is causing. Power is unlikely to be restored before [enter time]. A further update will be provided at [enter time]. Please follow the Power Cut advice.

<u>Draft generic multi-agency messages</u>

- Keep one room warm and stay in it
- Refrigerated food can last up to 8 hours if the fridge is kept closed
- Do not eat any food which appears to be unsafe

- Keep tuned in to BBC Radio 1 – 4 and BBC Local Radio for updates

- Continue to check on neighbours

- Call 999 if there's an emergency

- Put together a bag with identification documents, any medication; insurance policies; mobile phone chargers; and important numbers like 105, national free phone number

**When power starts to be restored, if there are rota disconnections:**

<u>Draft generic power company messages</u>

We understand how difficult it is when homes and businesses are without power. We are working as quickly and as safely as we can to restore supplies and apologise for the continuing inconvenience and disruption this power cut is causing. Work to restore electricity supplies has now reached the stage where we are able to supply some electricity.

We are going to temporarily restore supplies of electricity to customers on a rota basis until repairs are completed. This rota will allow all customers to have electricity supplies on a fair basis for periods of three hours in every twelve hours from now on until all repairs are completed.

When you have electricity please conserve energy where you can, switch off unnecessary lights and appliances to prevent overloading of the temporary supplies.

 If power is out in your area: – Unplug sensitive equipment to avoid damage – Unplug any heat-producing appliances to reduce fire risk.

If power has been restored in your area: – Don't turn on all appliances at once – Wait 10 to 15 minutes before turning on appliances and electronics. It is advisable not to restock freezers until we let you know that all repairs are completed.

<u>Draft generic multi-agency messages</u>

- When power is restored to your area, charge mobiles and laptops

- Do not consume any previously refrigerated food, as it's likely to be unsafe

- Check on neighbours

- Continue to check BBC Local Radio or BBC Radio 1 – 4 for updates.

- Make contact with friends and relatives to check they are OK

- Only call 999 in an emergency; only attend the hospital if there is a medical emergency

- Road and transport networks will take time to resume normal operations, so check for the status before setting out

### 3.7    Self-start advice to the public to enhance community resilience

- Use a car radio, wind-up radio or battery operated radio, and keep supplies of batteries.

- BBC Radio 1 – 4 and BBC local radio will continue to operate

- Use a torch  – they are safer than candles

- An old style/analogue telephone can be plugged in if a power supply disruption occurs.

- Limit the use of any laptops and mobile phone to preserve battery power

- Have a stock of food and drink which don't require electricity to prepare them.

- Food can last up to 8 hours if the fridge and freezer are kept closed.

- Store hot water in a flask

- Look out for neighbours

- Turn off electrical appliances at the plug to avoid possible damage from a power surge when the power is restored.

- Keep one room warm and stay in it and use alternative heating safely

- Prepare a grab bag of identification documents, prescription medication, important documents like insurance policies, mobile phone chargers, a list of important telephone numbers including 105, the free national number to report a power cut and obtain updates

- Leave one light switched on so that you know when the power is restored

### 3.8 Vulnerable People

Those customers who may need extra care and support during a power cut are able to self-register onto the Priority Services Register (PSR) maintained by each Distribution Network Operator (DNO) (electricity). The criteria for joining the register are:

- Customers who are dependent on medical equipment

- Customers who are chronically sick

- Customers with a disability

- Customers who are blind or visually impaired

- Customers who are deaf

- Customers with young babies

- Nursing or residential homes

- Elderly customers

- other customers on a case by case basis

The Priority Services Register is not a comprehensive listing of vulnerable people. Therefore other Partners/Agencies will each need to consider their own vulnerable people and any action/s they may need to take to support then.

The London Resilience Partnership Identification of the Vulnerable Guidance provides advice on working with multi agency partners to identify vulnerable people.

### 3.9 Processes to identify and support the vulnerable

#### Thresholds / prioritisation

- To be prioritised based on needs and resource assessment at the time of the incident. Initially by single organisations, then working collaboratively as this becomes possible.

#### Worst case scenario; no data, electronic or voice communications available

- In the event of no data or voice communications and a lack of pan-London coordination as a result, organisations should do what they can working on a single agency basis, collaborating locally with partners where possible
  - Organisations should establish to fuller coordination as ICT services are restored

- Where multi-agency coordination is possible, Local Authorities will lead the coordination on a Borough level.

- Local Authority (including social care) and NHS community service provider to co-locate and collaborate on a Borough basis to identify and provide support to known vulnerable persons.

- Primary care services would still act as natural hubs for members of the community, providing a level of service, and should where possible signpost to Local Authority or NHS service providers.

- If there is no access to data on vulnerable persons (no ability to print or share lists / details), service providers would need to rely primarily on staff knowledge.

- On a Borough basis a location should be identified where each organisation would send a representative(s) to engage in the face-to-face coordination function.

- Local Authorities to consider establishing community assistance centres where those requiring assistance can attend to seek support for vulnerable persons.

**When data, electronic or voice communications are restored and local and regional coordination can be facilitated**

- If resources exist and e.g. where power is restored in a given Borough, to provide a multi-agency collaborative approach:

  o In theory the Local Authority would lead coordination but this may depend on which Borough(s) are up and running first.

- As power returns, it will be necessary to bring together a coordinated approach to identifying and supporting the vulnerable and to cross-check to ensure no-one has been overlooked.

- Public communications to be agreed between local organisations and regionally once the communications means exist to develop these.

**Sector capability / provision**

- Individual organisations should identify and provide support to known vulnerable persons (customers). These may not be based on access to records or data, but knowledge of service staff about customers/clients. This will include:

  o Local authorities – care homes, children's centres, domiciliary care, vulnerable children and adults, social care (incl. mental health), social housing, homelessness, etc. Surge capacity support for hospital discharge services.

  o NHS - community services, primary care sector, pharmacies, emergency dental services.

  o Utility companies – registered vulnerable, top end customers are medically dependent on electricity – highest priority. Assume can contact some vulnerable customers via copper line telecoms. Utilities can provide some basic support but may then need to refer vulnerable people to the relevant NHS or Local Authority services depending on their needs. This is reliant on copper wire telecoms as fall-back.

  o TfL – London Underground – manage the evacuation of the whole Tube network, if required. There will be separate arrangements in place for buses and other surface transport services. Where possible TfL may provide a level of support for onward travel for vulnerable customers.

  o Voluntary and community organisations and service providers can help with identification / location of vulnerable people and could provide additional support, capacity allowing.

- Other sectors can inform the SCG if convened of any other support they can provide.

### 3.10 Pan-London Tactical Coordinating Group (TCG) Issues

The SCG should consider if a pan-London tactical coordinating meeting is required to interpret strategic direction, develop tactical plans and coordinate assets and activities. The identification of, and assistance provided to, vulnerable people is an example of a pan-London Tactical Coordinating Group issue. The pan-London TCG is directly subordinate to the SCG. Guidance on these arrangements is in the London Strategic Coordination Protocol.

### 3.11 Stand Down Criteria

The cause, scale, duration, time and timing of the incident will all impact on the time required for recovery and closedown. See the London Recovery Management Protocol.

The strategic issues to be considered before standing down include:

- Whether London has returned to normality in relation to power or wider utility services. For example:

  o Has electricity supply been restored to all affected areas?

  o Is the network stable and are rota disconnections in place?

  o If areas are still affected by power cuts are these impacting upon the critical service delivery of London responders?

- Has the cause of the power cut been contained or fixed and has the vulnerability to further faults been minimised or mitigated in full?

- Are Partnership organisations reporting a return to business as usual, or at least the delivery of all critical services?

- Does a risk to public health remain? This may require ongoing information from the Scientific and Technical Advice Cell (STAC), if set up, or from health colleagues, especially if rota disconnections remain.

- Does the Government still require information and reporting on the incident and its ongoing consequences?

### 3.12 Stand Down Notification

Once the SCG decision has been made to stand the London strategic coordination arrangements down, the London Resilience Group will notify all partners using the Local Resilience Partnership Incident email list of the decision to 'stand-down' the response.

# 4. ELECTRICITY SUPPLY INFRASTRUCTURE

### 4.1 Electricity infrastructure responsibilities during a significant power outage:

- National Grid Electricity System Operator: Assess the severity of the shutdown and declare a System Restoration event. Set the restoration strategy for GB.
- National Grid Electricity Transmission: Segregate the Transmission Network by delivering switching activities to support the restoration strategy.
- Distribution Network Owners (UKPN and SSE), segregate the Distribution Network to deliver blocks of load to support the restoration strategy.
- UK Power Networks (Distribution Network Operator for all London Boroughs except for an area around Heathrow Airport); and
- Scottish and Southern Energy (SSE - Distribution Network Operator around Heathrow)

### 4.2 Map of the Electricity distributors operating in London

The map below shows the operational boundaries for the Distribution Network Operators (electricity) in London. The area shaded grey is operated by Scottish and Southern Energy (SSE). The unshaded area is operated by UK Power Networks.

https://www.ukpowernetworks.co.uk/power-cut/map
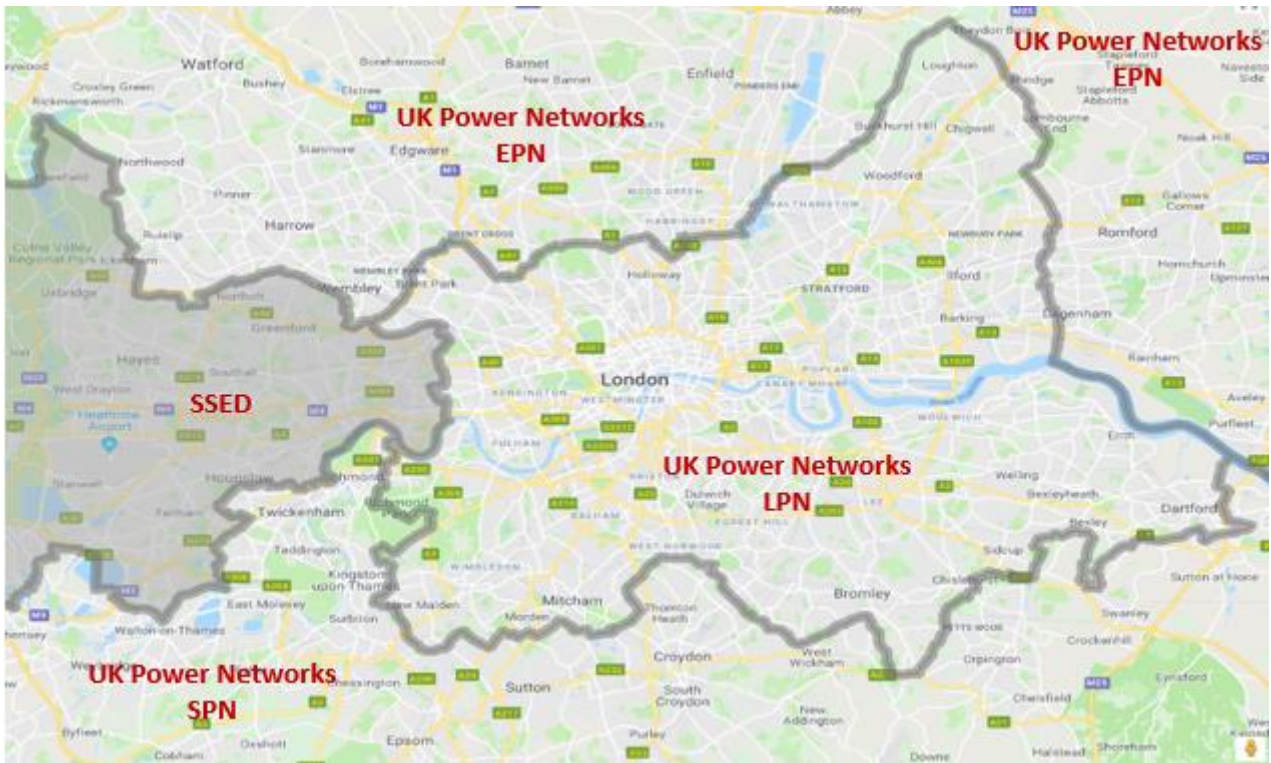
To report a power cut or receive information about an outage Partners and the public can call the free national power cut number 105, and the relevant distribution network operator will respond.

# 5. Electricity Network Risks

### 5.1 Electricity network resilience

The electricity network is highly resilient. At the national level, the risks are assessed to be low likelihood, high impact events.

### 5.2 Key National Risks for power

The key risks on the National Risk Register that have primary or secondary impacts on electricity networks are as follows:

- R76 Shutdown of the electricity network over a large area for 24 hours as a result of a technical failure of the network.

- R76 Complete shutdown of the National electricity network for 7 days as a result of a technical failure on the network. Commonly referred to as Electricity System Restoration event.

- R77 Disruption in upstream oil and gas production – 40% of power is generated by gas-fired stations, so if demand for power was high, there could be an impact on power supplies. To share fairly and equitable the available power, the electricity is disconnected (rota disconnections) in an area for periods of 3 hours (or multiples of 3 hours) to a published rota.

As at February 2021, the London Risk Register rated

- R76 Technical Failure due to operational error or bad weather:
  Very High: 3 – Likelihood and 4 – Impact

- R76 Technical failure of the national electricity network (Electricity System Restoration):
  Very High: 3 – Likelihood and 5 – Impact

The risks below may cause power supply disruptions:

- **R81/R82 Flooding (and other flooding risks).** Severe flooding could damage electricity company assets and cause power cuts to both properties within and outside the flooded areas depending on the areas the assets supply.

- **R93 Storms and Gales.** Storm force winds affecting most of the South East England region for at least 6 hours. Potential for fatalities and casualties with short term disruption to infrastructure including power, transport networks, homes and businesses.

- **R91 Low Temperatures and Snow**. Snow falling and lying over most of the area for at least one week. Significant excess deaths and casualties, mainly amongst the elderly. There is likely to be some disruption to transport networks, businesses, power supply and water supply, and also school closures.

5.3 **Related risks**

Other risks on the register are considered as part of the risk management and business continuity management process. For example, pandemic influenza, fuel supply disruption, telecommunications disruption and water supply disruption.

Threats identified are also considered.

For more information on risks see the London Risk Register.

# 6. TRAINING AND EXERCISING

## 6.1 Exercising and Review

All responders should have a clear understanding of their role and responsibility throughout any incident where the procedures outlined in this document have been invoked. This should be achieved through training and exercising at all levels. Training should take place prior to exercising the plan. The experience from exercises and incidents should contribute to reviews of this document.

The London Resilience Group maintains a list of lessons identified through exercises and incidents on behalf of the wider Partnership. These are identified, recorded and implemented in accordance with the Partnership Learning and Improvement protocol. The status of these lessons is reported to London Resilience Programme Board, and the London Resilience Forum.

Online based training/briefing material will be developed to support stakeholders briefing on revised plan and support newcomers to this area of London resilience arena.

## 6.2 Responsibilities for Training and Exercising

### Agency specific
Agencies are responsible for ensuring that they are able to carry out the roles and duties described in this document. It is expected that this will include role specific training and an appropriate level of knowledge of multi-agency procedures.

### Partnership wide
The following will support a consistent approach to multi-agency cooperation approach across the London Resilience Partnership:

- A Capability Awareness Package accompanies the document. This is prepared by the Lead Agency responsible for developing the capability. The package provides basic information about the capability for all responders.

- The LRF Training and Exercising Group will coordinate:
  - Briefings and workshops hosted by the London Resilience Group.
  - Partnership wide exercises at the London and sub-regional level.

**Record keeping**

Agencies are to maintain records of their training programmes as evidence. The LRF will, from time to time, carry out an audit of multi-agency training across the Partnership to ensure a consistent approach. The Lead Agency for each Partnership workstream is to document the development of the capability through the record of exercises, testing and activation attached to this document.

## Appendix 1: Acronyms and other terms used in this document

| | |
|---|---|
| BECC | Borough Emergency Control Centre |
| BEIS | Department for Business, Energy & Industrial Strategy |
| BRF | Borough Resilience Forum |
| | |
| CCS | Civil Contingencies Secretariat |
| CJS | Criminal Justice System |
| COBR | Cabinet Office Briefing Room |
| | |
| DNO | Distribution Network Operator |
| | |
| ESEC | Electricity Supply Emergency Code |
| | |
| ICT | Information and Communications Technology |
| | |
| LALO | Local Authority Liaison Officer |
| LESLP | London Emergency Services Liaison Panel |
| LLACC | London Local Authority Coordination Centre |
| LLAG | London Local Authority Gold |
| LRCG | London Resilience Communication Group |
| LRF | London Resilience Forum |
| LRG | London Resilience Group (London Resilience Duty Manager supports the activation of this plan) |
| LRPB | London Resilience Programme Board |
| | |
| MHCLG RED | Ministry of Housing, Communities and Local Government, Resilience and Emergencies Division |
| MPS | Metropolitan Police Service |
| | |
| NHS | National Health Service |
| | |
| Ofgem | Office of Gas and Electricity Markets. The regulator for the energy sector (gas and electricity). |
| | |
| Police | British Transport Police, City of London Police and Metropolitan Police Service |
| Power Cut | A temporary withdrawal or failure of an electricity supply. May also be referred to as a power disruption, outage, loss or interruption. |
| PSR | Priority Service Register |
| | |
| ResCG | Response Coordinating Group – led by Ministry of Housing, Communities & Local Government (MHCLG) Resilience & Emergencies Division (RED) |
| RCG | Recovery Coordinating Group |

| SCC | Strategic Coordination Centre |
| --- | --- |
| SCG | Strategic Coordinating Group |
| SCP | Strategic Coordination Protocol |
| SSE | Scottish and Southern Energy |
| STAC | Science and Technical Advisory Cell |
| | |
| TCG | Tactical Coordination Group |
| TfL | Transport for London |
| | |
| UPS | Uninterrupted Power Supply |

## Appendix 2: Resource and Recover Issues Matrix

It should also be recognised that this list is not exhaustive.

| Issue | Responsibility | Relevant Yes / No |
|---|---|---|
| Restoration of electricity supplies<br><br>• Staged restorations<br>   o Areas restored first<br>   o Critical infrastructure affected<br>• Rota disconnections (electricity restored for periods and then switched off to allow others to have electricity)<br>   o Bespoke versus standard rotas<br>   o Bespoke versus standard rota areas<br>• Temporary mobile generation<br>   o For vulnerable customers<br>   o Generator size (physical and electrical output)<br>   o Safety and security<br>   o Re-fuelling<br>• Temporary versus permanent repairs<br>• Where flood water causes power failure, power cannot be restored until flood waters recede from substations and customers' properties and all "flooded" plant and equipment has been inspected and maintained. | Electricity Company | |
| Update Partnership regularly of progress and timescales for the restoration of electricity supplies to assist the Partnership in planning the ongoing response. Note that restoration and repair timescales can evolve rapidly.<br>• Information flows<br>• Battle rhythm<br>• Regular versus exception reporting | Electricity Company | |
| Non-technical impacts for consideration by the SCG:<br>• Critical infrastructure and services<br>• Disruption or suspension of healthcare services<br>• Public health impacts from individual partners or STAC.<br>• Potable water and waste water service impacts<br>• Vulnerable people identification and support<br>• Sanitation and hygiene impacts<br>• Food supply impacts<br>• Public transport impacts<br>• The failure of the rail network is likely to involve numerous passengers (potentially tens of thousands) being trapped in trains.<br>• A failure of the electrical supply on the tube would involve passengers being trapped on train's underground – which | SCG | |

| Issue | Responsibility | Relevant Yes / No |
|---|---|---|
| would require a massive multi-agency effort to get everyone out.<br>• Fuel supply impacts<br>• Road impacts (traffic lights, flows, congestion etc.)<br>• Telecommunications (999 service, Airwave, mobile, fixed line and data services)<br>• Media and public communications (social and mainstream)<br>• Environmental impacts<br>• Economic impacts<br>• Education impacts<br>• Safety and security systems (CCTV, threat to public order, failure of alarm systems including 'Lifeline' and care alarm systems)<br>• Degradation of other responders services due to impacts of electricity failure<br>• Co-ordination of the impacts due to rota disconnections | | |
| Setting of strategic priorities (excluding technical fix) | SCG | |
| Resources available to respond and mitigate the incident:<br>• Communities<br>• Transport sector<br>• Voluntary sector<br>• Private sector<br>• Military resources[4]<br>• Mobile temporary generation<br>• Utilising customer fixed back-up generation<br>• Commercial temporary mobile generation<br>• Individual agency resources | SCG | |
| Recovery of critical services | SCG / RCG | |
| Public communications, engagement and reassurance | SCG | |

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[4] Military resources cannot be guaranteed and should therefore not be relied upon

# Appendix 3: Impacts of Electricity Cuts

An indication of the impacts of Electricity cuts is shown graphically below.
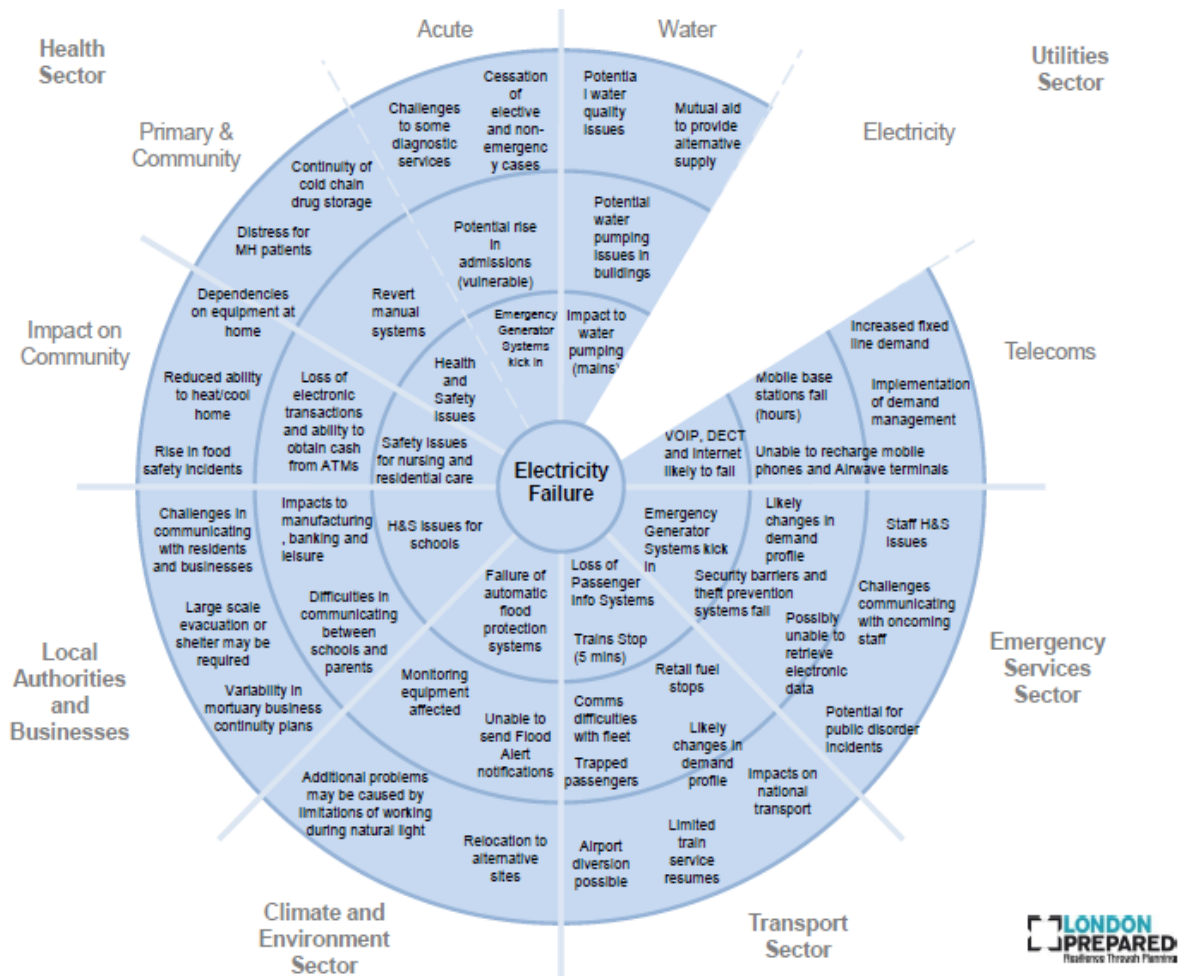
## Appendix 4: Resilience of Electricity Networks

The key responsibilities of Distribution Network Operators (DNOs) (electricity) is to "keep the lights on" for the customers connected to our electricity networks, maintain the safety and reliability of our electricity networks, and restore supply to customers who experience an interruption to their electricity supply as quickly as possible.

To achieve this, electricity networks are designed in accordance with national and international standards to be robust and resilient in a cost-effective manner.

The design of the electricity networks in London and its high load density means that London has a high-availability electricity supply and normally if there is a power cut (electricity) then power is usually restored to over 80% of customers within three hours and to 99.9% of customers within eighteen hours.

To achieve this reliability the electricity network is designed with differing levels of redundancy depending on the size of the electricity demand on a particular substation or group of substations and means that it is often possible to restore supplies from alternative sources of power if there is a failure and on some of the network to switch to alternative supplies without affecting customer supplies. There is less time allowed for larger groups of electricity demand.

Staff are also available at all times to respond when a power cut (electricity) does occur and to manage the quick and safe restoration of supplies.

However, exceptional numbers of incidents or significant events in the external environment can cause degradation in the response to power cuts (electricity). For example, flooding may mean that supplies cannot be restored for safety reasons or concurrent multiple faults in an area may mean that it is impossible to restore supplies from alternative sources quickly.

Under these circumstances the Distribution Network Operator may invoke this plan.

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**LONDON** RESILIENCE GROUP

The London Resilience Group is jointly funded and governed by the Greater London Authority, London Local Authorities and the London Fire Commissioner. We are hosted by the London Fire Brigade. Our work, and that of the London Resilience Partnership, is overseen by the London Resilience Forum.