CRITEC GROUP

The INCIDENT File

North Hyde Substation, Hayes

The failure behind Heathrow's shutdown.

Every incident raises
an important question:

What was missing?

A series examining real-world incidents, the reasons behind failures, and the lessons learned.

The **Outage**

20 March 2025

North Hyde Substation, Hayes, West London





- A **fire at the North Hyde 275kV electricity substation** caused the loss of all supplies from the site, triggering widespread disruption across the surrounding area.
- Disruption extended to public infrastructure, particularly transport and healthcare.

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The **Consequences**





Image credit: Business Insider

The outage reached far beyond the substation:

Heathrow Airport:	Forced to close for most of 21 March 2025.
Essential services:	Road and rail networks and Hillingdon Hospital were affected.
Local communities:	Over **71,655** domestic and commercial customershomes and businesses lost power.
Resident safety:	**179** people evacuated, **12** placed in alternative accommodation
Data centres:	Three facilities lost their electricity supply, relying on backup generators to continue operating.



The **Investigation**

Forensic analysis by **National Grid Electricity Transmission (NGET)** and London Fire Brigade indicated:



- *A catastrophic failure of a transformer's high-voltage bushing* as the cause of fire.
- Moisture ingress, leading to an electrical fault, was also identified as the most likely cause.

In 2018,

oil tests flagged a top-category moisture reading, signalling an imminent fault. The bushing should have been replaced. It wasn't

The NESO review also identified wider gaps in energy infrastructure resilience:

Limited visibility among energy network operators.

No explicit cross-sector requirement for CNI operators to ensure continuity during disruption.

No priority for CNI facilities under the existing electricity framework.

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The **Critecal Consequences**

The incident highlights three critical lessons:

Warning must lead to action

Elevated moisture levels were recorded in 2018, but appropriate mitigating actions were not implemented.



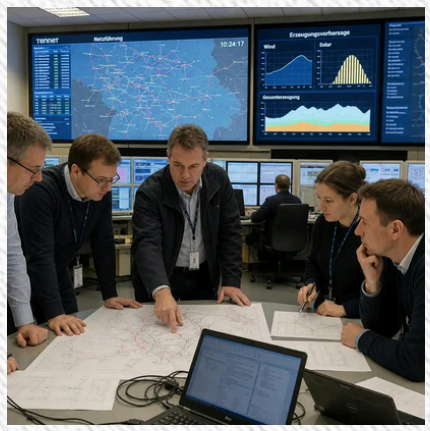
Redundancy isn't resilience

Losing one of Heathrow's three independent supply points affected critical systems.



Resilience requires coordination

Gaps in cross-sector visibility and planning can leave critical infrastructure vulnerable to disruption.



Resilience means anticipating vulnerabilities, acting on warnings, and preparing for disruption.

The INCIDENT File

Every incident leaves **questions behind**

What failed?
What was missing?
What needs to change?

?

Until the next case.....
Stay tuned.

The next investigation begins soon.

Sources and **Further Readings**

- National Emergency System Operator
- NESO’s North Hyde report: government response
- National Grid: North Hyde Substation Incident
- Fire at Electrical Substation- Hayes
- Review into the North Hyde Substation Outage
- North Hyde Review: Final Report – National Energy System Operator (NESO)
- New Energy Resilience Strategy to better protect infrastructure
- Ofgem: Investigation into National Grid Electricity Transmission's Compliance Obligations