

Assessment of a Civil Risk affecting the Local Community

NATIONAL POWER OUTAGE

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Introduction

The following report outlines the likelihood and the associated impacts of a National Power Outage in the local community in the South Wales area. An explanation will be given around how the impact and the likelihood of a National Power Outage were evaluated and use evidence-based methodology to present the risk rating and how this aligns with local and national resilience frameworks.

Within the UK National Risk Register 2025, a national power outage is identified as a significant civil contingency risk due to the dependence on electrical infrastructure for critical infrastructure, transportation, communication, healthcare and domestic life (Cabinet Office, 2023). Our societies in modern day life are dependent on a continuous electricity supply and, as such, even short duration disruptions have a domino effect across multiple areas and sectors of the country (National Grid ESO, 2021).

National power outages (NPO) are less frequent and currently less likely than some other localised risks or emergencies however the consequences of them are severe. The effect on the South Wales area from a disruption of electricity would very quickly impact hospitals, water, communications, fuel and wider business continuity. Therefore due to the aforementioned effects of national power outages it seems appropriate that they should be listed within the National Risk Register 2025.

Identification of Risk

This process typically begins with risk identification which involves recognising and documenting potential risks that could arise. These risks will stem from a variety of sources and operational processes. A risk analysis is then conducted to assess the nature of each risk and within this it evaluates the likelihood and impact against an established criteria to determine their significance.

“The definition of an NPO is the loss of power that will affect the whole Country for a prolonged period. It would far exceed the normal period of a few hours that you would normally experience in a power cut”. This could occur from severe weather, technical failure, supply demands from across the National Grid or cyber-attacks (Cabinet Office, 2023; National Grid ESO, 2021).

“The South Wales area is highly dependent on electrical infrastructure for many essential services which include healthcare, water supply, communications, internet access, rail or transportation infrastructure, retail and emergency response coordination” (South Wales Local Resilience Forum, 2022). Within the local community there are also many vulnerable people who rely on medical devices which are powered, assisted living systems or functions and medication refrigeration or heating which makes power resilience a public safety concern as opposed to an isolated technical concern. The relevance of this risk has historical evidence as the August 2019 UK blackout caused widespread disruption to transportation and public services which affected more than 1 million customers (Ofgem, 2020). Although this was a short duration it helps to understand a potential of a prolonged national outage and how events may turn out.

Risk Likelihood

I have researched and investigated a range of reputable sources in order to provide a calculation of risk and as such an evidence-based judgement. I have used four main considerations in order to calculate the likelihood of the risk.

- Firstly the historical occurrences which suggest that outages are relatively uncommon which as a result supports the lower likelihood score (Ofgem, 2020).
- Secondly, I have assessed the complexity of electrical systems which show that failures can cascade when they do occur this then therefore creates a credible disruption pathway (National Grid ESO, 2021).
- Thirdly, threats which are emerging such as cyber intrusion and weather which is increasingly severe create a stronger future risk environment than previous or historical incidents (Cabinet Office, 2023; Met Office, 2019) and lastly the existence of grid management controls, contingency arrangements and regulatory oversight moderates the likelihood due to the system not being managed effectively or can be classed as fragile (Ofgem, 2020).

Clear statistical information is not readily accessible or publicly available and, as such, an element of informed professional judgement based on available statistical information has been applied while making an assessment on the likelihood of this risk, therefore I have assessed this as a 3 (medium). This indicates that a national power outage is possible rather than probable and recognises that the circumstance is rare in historical terms but is still credible and possibly on the horizon due to infrastructure interdependency, cyber threats and weather-related incidents or disruption. A lower likelihood score was not applicable in this case due to the increasing complexity and interdependence of national critical infrastructure alongside a growing threat landscape. While large scale outage remains infrequent, these evolving risk factors elevate the plausibility beyond a low likelihood classification, warranting a medium rating to both reflect current conditions and emerging trends.

Risk Impact

I have assessed the impact of this risk across several areas in order to capture the full consequences taking into consideration human impact, economic impact, infrastructure impact, environmental impact and social impact – for each of these elements I have considered associated financial impact at the same time.

The human impact is considerable due to the effect that a sustained or prolonged power loss would have on vulnerable people, disrupt healthcare and reduce the effectiveness of emergency response (Cabinet Office, 2023). Economic impact would also be considerable as the underpinning of commerce, logistics, payment systems, food storage and public transport. The 2019 blackout demonstrated that a short event could impose immediate costs through delay, lost productivity, and various business interruption (Ofgem, 2020; BBC News, 2019). The impact on infrastructure would be significantly high as power is a dependant for water treatment, fuel supply, communication, transport, healthcare, and wider critical national infrastructure (Cabinet Office, 2023). The impact on environmental elements is fairly low compared to other risks captured within the National Risk Register as it would not create a large element of direct environmental harm but there could be secondary impacts. Finally social impact would be high and similar to the infrastructure impact as any prolonged outage would

undermine public confidence and interrupt communication reducing access to services and increasing the risk of disorder (Cabinet Office, 2023). Considering all of the above I have calculated the risk impact to be at 5 (catastrophic) as if this does occur it will result in severe, long term consequences that cannot be easily mitigated.

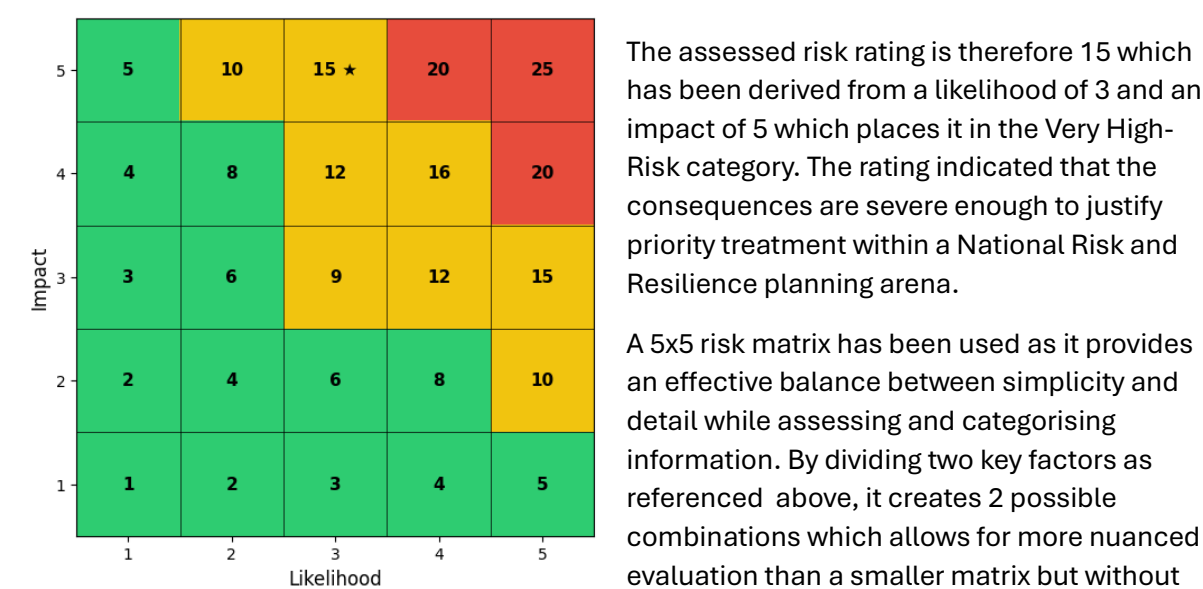


Fig.1 (Safety Culture 2026)

becoming overly complex or difficult as larger ones would be. A 5x5 matrix is widely used in contexts of evaluating and assessing risks because it supports clearer prioritisation and decision making.

Conclusion

Within this professional report I have explained and outlined the impact and likelihood of a National Power Outage within the South Wales area. The final assessment was that the risk should be detailed and considered as Very High for the local community; this is due to the UK’s heavy and constant dependence on electricity and the electrical infrastructure. Should there be a failure of this then the impact would be severe should it be a prolonged outage from a Health, Safety, Economic, and community resilience perspective (Cabinet Office, 2023; National Grid ESO, 2021).

This assessment does contain an element of unavoidable uncertainty which is particularly evident with the large scale scenarios. The reason for this is due to the element of professional judgement needed to be taken given the limited experience we hold of understanding the full effect, it is clear that the effect will be significant and therefore we must plan resilience options accordingly, alongside making consideration towards recovery.

The recovery phase would be critical in reducing long-term harm to communities and restoring essential services. This needs to include a phased restoration of critical infrastructure, clear communication with any effected individuals and appropriate support for vulnerable groups. Recovery should also consider the wider social and economic effects of the outage which includes disruption to healthcare, transport, food supply, digital communications and local businesses. Following any incident a formal debrief and lessons learnt process should be

undertaken to identify gaps in planning, improve future resilience and support the community's return to normality.

References

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