

REPORT INTO THE PREPARATIONS AHEAD OF STORM ARWEN AND THE AFTERMATH

RECOMMENDATIONS TO SP ENERGY NETWORKS

Rt Hon Charles Hendry CBE
May 2022

INTRODUCTION

Storm Arwen was the worst storm in recent years, described as a 1-in-40 year event. The extent of the damage and the length of time in reconnecting customers led to extensive questioning of the approach taken by the District Network Operators (DNOs) and it was in response to this, that SP Energy Networks (SPEN) asked me to carry out an independent review of the lessons that can be learned for rural areas. There is also a particular focus on what needs to be done to deliver a more resilient network, especially as we move to a more decarbonised energy system with greater reliance on electricity.

In this process, I am grateful for the written evidence I have received from local authorities and others, and the oral evidence from MPs, MSPs and members of the Local Resilience Forums (England & Wales - LRFs) and Local Resilience Partnerships (Scotland - LRP). I am grateful for the very helpful way in which they have engaged, and I hope this Report captures the strength of their concerns and the constructive ideas they have put forward for delivering a more resilient network. I have also been supported by a team within SPEN to help answer the many questions this process has raised, although the conclusions are mine alone.

It is not my intention to repeat the analyses of Ofgem and BEIS about the background to, and severity of, Storm Arwen, although it is clear that its impact was made worse because it came, unusually, from the North, rather than from the West as with most storms. As a result, its full force was felt in areas which often escape the worst of the effects of storms. In the SPEN District Network area, which covers the Central Belt & South of Scotland and the Manweb region, 189,000 homes were affected, some for a few hours, but many for an unacceptably long period - 2,887 homes for more than three days and 146 homes for more than six days. These figures are lower than for many other DNOs but that is of little consolation to households affected. As one MP described it: "there was a small group of customers who were profoundly affected".

As the Ofgem Report on the storm notes, the impact was exacerbated as "in some cases customers were also without water, communications and other services that are dependent on the power supply".

Both the Ofgem and the BEIS Reports rightly praise the work of the DNO companies' staff and contractors, in very challenging circumstances, to get customers reconnected. This sentiment about the SPEN team has been echoed in all the meetings I have held with community representatives at local and national level, and I acknowledge the dedication and exhaustive steps that were taken to address a storm of this magnitude and consequence.

I also pay tribute to the work of the local authorities and all other emergency responders who worked tirelessly to help their communities. It should not be forgotten that this event happened after two years when their resources had been depleted by Covid19 and the burn-out that inevitably followed.

As the Ofgem Report sets out (2.9) the northerly direction resulted in entire plantations being felled, creating a cascade effect, with the added impact of airborne debris. It also sets out (3.4) how poles and conductors are affected by storms. Ofgem is separately assessing whether enough had been done to replace poles considered to have a higher risk of failure (designated HI 4 and HI 5).

This report looks at the issues leading up to the storm, how to make the SPEN network more resilient to withstand future strong storms and how to ensure that, if there is devastating damage after future storms, our communities and especially those most vulnerable are better protected. It also addresses issues with regard to resilience in a future where decarbonised energy solutions requires much greater reliance on electricity.

I have also looked at all the individual complaints made by customers and all the local media coverage. In total, SPEN received 157 complaints, of which just 22 were from rural areas. This might seem a low volume

**REPORT INTO THE PREPARATIONS AHEAD OF
STORM ARWEN AND THE AFTERMATH**
Recommendations to SP Energy Networks

of complaints across the 189,000 homes affected, suggesting that most customers recognised the specific challenges of Storm Arwen and the way in which the company responded. That does not, however, in any way minimise the impact, distress and problems that were experienced by a significant number of customers (exacerbated often by inaccurate predictions of when power would be restored).

This Report does not look at whether SPEN has breached any of its statutory obligations or any regulatory issues, which are rightly the focus of Ofgem's review. However, it does address some areas where Ofgem will need to consider whether additional funding should be allowed to deliver the resilience required.

This Report does not look at the role of any specific individuals, as they all responded with great personal commitment. However, there are corporate lessons to be learned to minimise and mitigate the effects of future major storms. There is also, I hope, time to take forward recommendations to ensure that changes have been made ahead of next winter.

I have considered the following aspects:

- Preparation for Storm Arwen**
- Difficulties contacting SPEN**
- On-going communications and accuracy of information**
- Removing fallen trees and dealing with faults**
- Deployment of generators**
- Rest Centres**
- Priority Service Register**
- Under-grounding of electricity cables**
- Progress towards Net Zero**
- External support in an emergency**

Contents

INTRODUCTION	1
1 PREPARATION FOR STORM ARWEN	4
2 DIFFICULTIES CONTACTING SPEN	6
3 ON-GOING COMMUNICATIONS & ACCURACY OF INFORMATION	8
4 REMOVING FALLEN TREES AND DEALING WITH FAULTS	11
5 DEPLOYMENT OF GENERATORS	13
6 REST CENTRES	15
7 PRIORITY SERVICE REGISTER	16
8 UNDER-GROUNDING OF ELECTRICITY CABLES	18
9 PROGRESS TOWARDS NET-ZERO	19
10 EXTERNAL SUPPORT IN AN EMERGENCY	20
CONCLUSIONS	21
APPENDIX 1	22
<i>SUMMARY OF RECOMMENDATIONS</i>	<i>22</i>
APPENDIX 2	25
<i>STAKEHOLDER LIST OF THOSE INVITED TO PARTICIPATE</i>	<i>25</i>

1 PREPARATION FOR STORM ARWEN

It appears that the full severity of Storm Arwen only became fully evident in the 48 hours before impact. The BEIS Report recommends that network operators and their partners should review their forecasting capabilities to aid in effective severe weather planning and I would endorse this suggestion.

The preparation work for winter storms has to be an ongoing activity.

Several local authorities/partners in the emergency planning committees have said that SPEN was not sufficiently engaged before the 2021/22 winter storms. In particular, from the evidence of local authorities and the Local Resilience Partnerships (LRP)/Local Resilience Forums (LRF), SPEN's attendance at the Forum/Partnership meetings was 'patchy'. In many cases, a SPEN representative was always in attendance at meetings and has received great praise for the way in which engagement was maintained. However, in some others, there had been no SPEN representative for several meetings in a row. I recognise that these LRPs/LRFs cover very extensive areas, but an integrated response to a storm can only be delivered if there is close working over a protracted period.

I consider such attendance to be crucial in effective planning. It is encouraging that SPEN have now adopted an approach whereby a company representative should always attend LRF/LRP meetings.

Ideally, there should be some 'corporate knowledge' maintained from meeting to meeting, so I RECOMMEND that, wherever possible, it should be the same SPEN representative who attends each meeting. To deliver this, it will be necessary to review how many LRPs/LRFs an individual SPEN officer is to be asked to cover, as they cannot be expected to create the right partnerships if they are spread too thinly over too wide an area. My understanding from local partners is that SPEN's attendance at LRF/LRP meetings is now considered to be good/excellent, so I am pleased that a change of practice has already been identified and actioned. This needs to be enshrined in company policy.

It has often been commented that the contact details held by the LRF/LRPs for the SPEN personnel responsible for their areas was found to be out-of-date, when Storm Arwen occurred. This should not happen and I am pleased to understand that SPEN has already acted to address this. I RECOMMEND that measures should be put in place, so the contact lists held by the LRF/LRPs are updated by SPEN on a rolling basis and updated again before each and every anticipated storm event.

SPEN have also moved to require that, when a contact is made by one of their customer service team with a Council's Emergency Planning Officer ahead of a predicted storm, there should be a formal acknowledgment of the contact, and if not received, proactive follow-up will be made. This is a sensible and pragmatic approach which should become normal operating practice.

There have been concerns that there was not sufficient clarity about the roles of different partners in dealing with a major storm, or alternatively there was duplication of the effort. I therefore RECOMMEND that, where this is not already standard practice, there should be an annual Storm Emergency Preparation exercise before the winter storms start, so that all organisations with a role to perform, have identified what would be expected of each of them and how to work most effectively together. I recognise that while SPEN will promote this exercise it requires the co-operation of all LRF/LRP partners in order to happen. Given it is also a recommendation from both BEIS and Scottish Government investigations of Arwen it should clearly be a priority for all stakeholders.

**REPORT INTO THE PREPARATIONS AHEAD OF
STORM ARWEN AND THE AFTERMATH**
Recommendations to SP Energy Networks

This should also address the issue of which organisations or individuals should be responsible for summoning a meeting of the LRF/LRP and in what circumstances, so as little as possible is left to chance. SPEN is designated (under the Civil Contingencies Act 2004) as a Category 2 responder in the event of an emergency. This should, however, not hold SPEN back from recommending that an emergency planning committee should be called together, or declaring that the situation has developed into a Major Incident should the situation require - this should not be left to a Category 1 responder to initiate.

It has been suggested in some of the evidence I have received that an Amber warning should, perhaps, be treated as a Red warning for future storms. I think it is hard to impose a standard approach to this, but it should certainly be a question that each LRF/LRP should ask of its members.

In receiving evidence, I have been struck by how many different committees there are in different communities or run by individual local authorities for managing the local response in an emergency. It is, of course, a matter for local authorities to decide how best they should manage their affairs, but I note that the more approaches there are, the more difficulties a DNO will face in responding to all their needs and the risk of errors will increase. The Regional Resilience Partnerships could usefully consider whether greater commonality of approach is possible.

SPEN needs to check on an on-going basis that its mechanisms for keeping in contact with local authorities and other LRF/LRP partners are fully up-to-date and operational, in advance of and during a storm. One local authority only found out the full extent of the impact of Storm Arwen and the number of households affected, when they were notified by a neighbouring LRF. SPEN needs to take the necessary steps to ensure that it is always the main point of contact for accurate information, if it is to maintain the credibility and authority required. If it is not giving accurate information to partner organisations, they cannot be expected to make the right response at the right time. This relates both to information about the extent of the problems and the outages and also about when specific areas have been reconnected.

2 DIFFICULTIES CONTACTING SPEN

There are two aspects to the evidence I have received about the difficulties contacting SPEN in the run-up to Storm Arwen and the aftermath.

First, councils and other emergency responders have told me that they often had to call the main SPEN telephone number, along with the many thousands of affected customers, as they did not have a functioning contact number for a named individual.

Second, there were the issues faced by individual customers who could not make contact.

The issue facing local councils and others needs to be addressed. On occasions, they were making contact about a particular at-risk household or community/care home.

I understand it is SPEN's policy that each Council's Emergency Planning Officer should have direct contact details for a dedicated contact within SPEN, separate from their regular LRF/LRP contact, who can escalate issues as required. There seems to have been some confusion in this regard and I RECOMMEND that SPEN should undertake an immediate review to ensure that all relevant partners have the appropriate named contact/contact details. This must be a 24/7 service with back-up support available as required. This should be implemented at once.

I have asked MPs/MSPs/MWAs about their ability to contact SPEN during/after the Storm. In most cases, I have been told that they have very good operational contacts with the Scottish Power Government Relations team and channelled concerns directly through this team, which worked satisfactorily. It would nevertheless be worth considering extending the dedicated Council number to include all elected representatives.

With regard to the wider customer-base, one of the most frequently raised complaints has been the handling of phone calls from customers and from partner organisations and, in particular, the number of unanswered calls. It is understandable that customers were reluctant to stay 'on hold' for a protracted period if they knew they had no way to recharge their mobile phones.

Everyone recognises the exceptional number of calls that SPEN was trying to handle. 138,000 calls were taken in the course of the storm, with 110,000 in the first three days and, at the height, 58,000 in a single day. Some DNOs, including SPEN, have a call-back system whereby if a call is not answered, then a call-back should be made. If a call-back is not made within an hour, then the call is considered to have been abandoned. It is my understanding that SPEN made a decision to keep the call-back function engaged, where others switched this function off. This resulted in a higher figure for abandoned calls for SPEN, which does not therefore fully reflect the situation.

I understand SPEN is considering whether this call-back function should be switched off at the absolute height of future major events. On reflection, I think that this is a function customers value and I would urge them not to do so, but instead to focus on having more staff available and trained to handle calls. I would however urge Ofgem to look again at the definition of 'abandoned calls' (especially at the height of a storm) so that companies are encouraged to do the right thing to assist their consumers, rather than having a 'perverse incentive' to act in a way that improves their ratings by switching off the call-back function, even if it delivers a poorer service.

Action does need to be taken to ensure more calls are answered. During and after a storm, many staff from across the company are redeployed to handle calls. SPEN already has a protocol in place for this and some 350 members of staff were handling calls, many working from home. However, it is evident that the company was simply overwhelmed by the number of calls.

**REPORT INTO THE PREPARATIONS AHEAD OF
STORM ARWEN AND THE AFTERMATH**
Recommendations to SP Energy Networks

I RECOMMEND that SPEN should ensure that a significantly higher proportion of its employees are trained to handle calls and given the equipment to manage this remotely. I recognise that extensive training is essential (and must be kept up-to-date) as any mistaken advice could result in serious injury or death, so this will take time to implement, but I RECOMMEND that the company should have an agreed strategy in place for how to do this by end of June 2022, with implementation well ahead of the coming winter.

190 callers were deployed at peak to make outgoing calls to customers. I RECOMMEND that, ahead of next winter, a much higher number of staff members should be identified who can be brought in to handle outbound calls, which can be managed with less formal training. It is better that SPEN are over-resourced in this area rather than over-stretched.

With regard to the wider issues relating to the handling of calls, I make a number of points:

First, in many cases, customers have to report a fault to the company. This evidently can only happen where a customer either has a landline, where there is a handset which does not require electricity, or a mobile phone which can still get a signal.

Given that broadband faults can be identified remotely, it seems reasonable that power distribution companies should be able to do so. Remote identification of faults would reduce the number of calls being made to the DNOs to alert them about outages.

In particular, the roll-out of Generation 2 smart meters (SMETS2) will facilitate this - even when the power is off, the battery in the smart-meter should enable a signal to be sent that there has been a loss of electricity (the so-called 'last gasp'). This is a national rather than a regional/local issue, so I RECOMMEND that BEIS/Ofgem should ensure this is facilitated as part of the smart-meter roll-out programme and whether it can also be made available to those with earlier SMETS1 smart meters.

In conjunction, it should be considered whether isolated properties should be prioritised for smart meters with SMETS2 capabilities, given they offer such a facility, and whether Ofgem/BEIS should instruct the energy retail companies (responsible for smart meters) accordingly. SMETS2 smart meters would also let the DNO know when a customer has been reconnected. I would urge all parties involved in the smart meter roll-out to make sure this facility is well-communicated and understood to encourage smart meter take-up, which remains patchy across SPEN's areas. SPEN has included a proposal in its RII0-D2 Business Plan to Ofgem, to help address the barriers some customers have in accepting smart meters and to encourage take-up in rural areas. I hope Ofgem will support this proposal.

Second, the switch-off of the analogue telephone network will mean that it will no longer be possible to use a landline for calls when there is no electricity, so these issues will get worse, if action is not taken to address it. This is a matter for BT rather than the DNOs. I have seen correspondence from BT regarding the steps that are being taken to address the situation, which focuses primarily on enhancing the mobile network, which is also vulnerable during a storm.

This switch-off will still leave some customers in an even more vulnerable position, so it is urgent for BT to find a permanent solution, to ensure that all customers are protected. I am encouraged that BT has since agreed, in a meeting with Andrew Bowie MP, to pause the roll-out of Digital Voice, whilst more progress is made.

I also RECOMMEND that SPEN should have access to satellite phones which can be brought into areas without telecommunications after a storm, to give local residents access to the outside world. These can be positioned in local facilities (shops, pubs, garages etc) and clearly sign-posted.

3 ON-GOING COMMUNICATIONS & ACCURACY OF INFORMATION

Poor on-going communications with customers has been highlighted as one of the principle complaints.

In particular, most of those who have given evidence have spoken of the inaccuracy of expected restoration times (XRT). The principal consequence of this is that customers would have made different choices about how to respond to the loss of power, had they known the correct situation.

To put this in context, 78.8% of SPEN's Manweb customers and 79.4% of its Scottish customers received an accurate reconnection time on the first notification, rising to 96.9% and 91.9% respectively after the second notification. However, some customers were given as many as six separate XRT's which is clearly not acceptable.

This related in most cases to people being advised that connection would be restored much more quickly than was actually the case (in some cases, by several days). Had they known the actual situation, they could have made decisions to leave their homes sooner, rather than staying in an increasingly cold house without the ability to cook or wash for several days. Similarly, local authorities would have moved to open Rest Centres had they known how long particular communities would be without power.

In other circumstances, there have been complaints that people did move out because they expected the outage to last for a few days, and they would not have done so had they realised the power would be restored much more quickly.

The first of these two situations inevitably creates many more concerns, although I understand the inconvenience of the second set of circumstances.

It has been said that SPEN demonstrated an "optimism bias" - in other words, that they predicted an earlier reconnection time which they hoped they would be able to meet. Councils and others have suggested that a better approach would be to give customers a "reasonable worst case" estimate, so they can plan accordingly.

I can understand why these errors occurred. The magnitude of Storm Arwen meant that many faults were initially hidden ('nested') behind other faults. The initial assumption was that when a known fault was repaired, power would be restored to the people affected. However, when the repair was completed, it then became apparent that there were other faults further down the line which had not been initially evident. This was compounded by the fact that so many trees were down, that it was exceptionally hard to inspect the full length of the cable network to get a full picture of all faults.

SPEN already has plans to install 14,000 monitors on its low-voltage network. This is primarily to monitor real-time power flows at given points, to help identify where upgrades are going to be needed in time. They would also help show in real-time where there are faults. The 14,000 would represent approximately one every three kilometres of power lines across the SPEN network, and the focus is more on urban areas, as this is where the greatest need to upgrade the network will occur, as more users come online.

The cost of each monitor is c £1-2,000. I have considered whether SPEN might install more simple monitoring devices on more isolated parts of the network to provide immediate information on any power outages. Any such approach would require additional spending approval from Ofgem.

Additional monitors would help give more accurate information, but in time, it will be the smart meter roll-out programme which will enable completely accurate information to be provided about

**REPORT INTO THE PREPARATIONS AHEAD OF
STORM ARWEN AND THE AFTERMATH**
Recommendations to SP Energy Networks

whether a particular property does or does not have power. Ofgem would need to consider whether it represents a sensible use of bill-payers' funds to install monitors which will not be needed when the smart meter programme is complete, or to focus more attention instead on the smart-meter roll-out in rural areas.

SPEN have also advised me that they have already moved to an approach based on the "reasonable worst case" approach recommended by local authorities. I endorse this decision. Indeed, they have already adopted it in two subsequent storms, Storm Malik and Storm Franklin - the proportion given an accurate XRT at the outset had risen to 96%, and the maximum number of predicted XRTs given to any household dropped from six to three.

The communications programme for a major storm event needs to start well before it happens, and I understand that SPEN already does a great deal to make people aware of what may happen and actions that should be taken in the event of storm damage. However, in the light of the feedback I have received, I RECOMMEND that this should take a more systematic approach:

- In the early autumn all customers should be sent a Winter Preparation Notice, to set out the increasing risk of storms, the impacts these can have, and the help and support that SPEN will provide in the event of a loss of power. (In response to this proposal, SPEN have stated that their preference is to continue their current practice of having a rolling programme to contact each customer once a year, as this spreads the load of handling responses. I understand the practical aspects of this, but it does not provide all customers with timely and relevant winter information - a letter sent in May, for example, will not necessarily still be kept to hand in the autumn)
- SPEN does not have emails and telephone numbers for large numbers of customers because they are ultimately customers of their chosen energy provider, rather than of the DNO directly, and details cannot necessarily be shared under GDPR regulations. SPEN should prioritise work to build up a database of as many customer contact points as possible. Each customer mail-out should encourage the customer to self-register their email address and phone number, specifically for use during an emergency, as this offers the best long-term approach to enable customers to be given pre-storm advice
- SPEN should spell out their precise responsibilities in the event of a major and sustained loss of power - how the firm will work with local authorities/emergency responders; who would be responsible for identifying and opening rest centres; how payments for emergency food and accommodation will be managed (several comments have been made about the clarity of which organisation is responsible for what)
- SPEN's media strategy should be specifically discussed with the LRPs/LRFs/Regional Resilience Partnerships. This should cover how communications can be handled through local media channels, especially through local radio stations, which have often been referred to as one of the most trusted source of information (in this regard, SPEN might also consider making wind-up radios available to customers)

Some of the concerns expressed were related to the fact that some people who could not stay in their homes had to pay for their accommodation/food and then claim reimbursement from SPEN. I have explored this with SPEN and have been assured that: "We offer all vulnerable customers hotels from the first evening off supply and ALL customers are offered hotels from the second evening. We organise and pay for these for customers, however if a customer prefers to organise their own accommodation, we reimburse the costs".

Given this statement of company policy, it is clear that no-one should have found themselves in a situation where they were required to pay up-front (or worse, where they could not move our

REPORT INTO THE PREPARATIONS AHEAD OF
STORM ARWEN AND THE AFTERMATH
Recommendations to SP Energy Networks

because they could not afford to make an up-front payment). SPEN should make this policy clearer to all customers, both in advance of the storm season and using all channels possible after a major storm event, including local radio.

4 REMOVING FALLEN TREES AND DEALING WITH FAULTS

It is universally recognised that SPEN's team worked exhaustively, in the most challenging and treacherous conditions, to get people reconnected as swiftly as possible. This work could not begin safely until the winds had subsided sufficiently and even then, access was made more difficult, in some cases impossible, by the fallen trees across roads and access routes. In addition, the reduced hours of daylight at the time of year restricted working hours and work was slower because of the loss of mobile communications in many areas.

I RECOMMEND that SPEN should look to equip its teams deployed in rural areas after a storm with satellite communications systems, so the problems they face in establishing the extent of a storm's damage will not be compounded by loss of mobile connectivity, as happened with Storm Arwen. This is a costly exercise which will only be used on occasions, and so I would urge Ofgem to permit this as an additional necessary expenditure for the DNOs.

Given the challenges SPEN faced in assessing the extent of the damage (and the errors made in doing so correctly) I would RECOMMEND that greater use is made of drones to fly over affected areas to inspect the damage and teams should be trained accordingly. Drones are only permitted to be flown in the 'line of sight' of the operator, which inevitably restricts how widely they can be used, but it would be for the Civil Aviation Authority to consider whether any relaxation of such rules can be permitted 'in extremis', if it permits very vulnerable people to be helped more quickly in an emergency.

Storm Arwen devastated complete plantations of trees. It is self-evident that no amount of advance tree-preparation work could have averted damage on this scale - it would be unjustifiable on environmental grounds alone to cut back trees that would only be affected in a one-in-forty-year storm. Nevertheless, more could and should be done to cut back trees near electricity lines which could cause damage in a major storm.

SPEN are expected (as with all DNOs) to check trees near electricity lines every three years and I am advised that they meet this target. However, they can quite often be denied access by a property owner to check and cut down trees which pose a risk. SPEN have historically sought to implement a collaborative approach to such situations, rather than using the full range of legal powers available to them, unless they consider it absolutely necessary.

Storm Arwen showed that more should be done to prepare for bad storms. I therefore RECOMMEND that SPEN should take a more robust approach to felling trees where there is opposition from a property owner (which is in any case only in a small minority of cases and I understand rural communities tend to be more understanding of such work to be carried out). This could take a number of different forms such as writing formally to the landowner to advise that their intransigence is putting communities at risk in the event of a storm; notifying the local authority of where there have been refusals; or going through more formal legal channels.

My preference would be to start with a light touch approach and escalate to a more robust approach according to the urgency with which the DNO thinks the tree-work needs to be done. I understand that the DNO wants to maintain constructive working relationships with property owners, but this has to be balanced against the potential consequences of failing to keep trees adequately cut back, and the network's overall resilience must be the over-riding priority.

In the aftermath of a storm, there also needs to be a more consistent approach to using other resources to remove fallen trees. Some local authorities have told me that SPEN welcomed the assistance of their teams of tree surgeons, whilst others said that such offers were refused.

**REPORT INTO THE PREPARATIONS AHEAD OF
STORM ARWEN AND THE AFTERMATH**
Recommendations to SP Energy Networks

It is entirely right that only suitably qualified tree surgeons should be allowed to work near electricity infrastructure. However, SPEN's work to repair its network was hampered and delayed by difficulty in getting to the affected locations. It would therefore be sensible to make optimum use of the services of local authority tree surgeons and other qualified contractors, such as Network Rail, to clear access routes to affected areas.

This would leave SPEN's tree-surgeons to focus particularly on fallen trees which would be considered too high-risk for others to work on. I RECOMMEND that SPEN should adopt this as company policy across the network and before the next storm season, working practices should be agreed with local authorities and other relevant partners on how such collaborative working can be implemented safely, when required.

Whilst snow was not a major factor in Storm Arwen in SPEN's regions, a similar approach should be taken to snow clearance.

There also appears to have been inadequate communication between SPEN's teams and the local authorities/LRFs/LRPs to advise when areas had been cleared of fallen trees, which caused evident frustration. I RECOMMEND that SPEN should have procedures in place before the next storm season to ensure that all such information is relayed as soon as possible after a clearance has been completed, so that the relevant highways authorities know when roads have been re-opened.

This issue will gain greater importance in the coming years with the extent of new tree planting planned for Scotland, England and Wales. The south-west of Scotland (Dumfries and Galloway) is already seeing large areas planted and this must be done in a way that facilitates the long-term maintenance and resilience of the electricity infrastructure. This is especially the case as these areas are also likely to see great pressure for new renewable installations and the associated grid infrastructure.

5 DEPLOYMENT OF GENERATORS

There have been concerns that generators could have been provided at an earlier stage to communities without power. SPEN say, not unreasonably, that their first priority is to try to reconnect customers and when they realise they will be without power for longer than anticipated, they will then bring in generators, as and where they can. Across the six DNOs seriously affected by Storm Arwen, 456 generators were in use on average each day - of these 157, over one third of the total, were deployed by SPEN, which demonstrates the formidable logistical challenge which was achieved.

Reliance on generator back-up, where these have to be brought in from outside after a storm-event, will inevitably deliver a less than ideal response, given the time required to bring them in, connect them and subsequently to service/fuel them. In addition, deploying staff to connect a generator that has been brought in, inevitably diverts them from work to repair the network. These issues will be compounded as we rely increasingly on electricity for a wide range of energy uses, including for electric vehicles and heating.

I therefore make a number of RECOMMENDATIONS in this regard:

First, the system in future should have much more built-in resilience, through either batteries and/or permanently installed generators.

There is some debate about whether the generators were kept close enough to where the storm was likely to impact most. Some have suggested that many generators needed to be brought several hours from the central belt of Scotland. SPEN advise me that many generators were moved ahead of the storm to more localised positions, and only after these were fully utilised, were others brought in from further afield. Each storm will be different in where its impact is most severe and so it is sensible to maintain a flexible approach.

In addition, as part of the pre-winter LRF/LRP preparations, a much more comprehensive database should be developed of generators held in stock by the LRF/LRP partners and the extent to which these are movable and can be deployed where the need is greatest. This may not add significantly to the number of usable generators but at least the facts would be known and those available would be able to be deployed more swiftly.

It is also necessary to have a clearer strategy on which organisations should be responsible for refuelling generators. I have heard evidence that when generators had been provided, there were occasions when they were not operating because they had run out of fuel. This was the responsibility of SPEN's field team, who had to be taken off vital work to repair the network to refuel/restart a generator. Whilst this does not seem the best use of the most pressurised resource, I also recognise the reservations about this responsibility being passed to others - the need to have teams available at all times, and to ensure that the relevant training is always kept up-to-date.

I would therefore RECOMMEND that SPEN and the LRF/LRPs should at least have a discussion about the best strategy for ensuring generators always have sufficient fuel. This should be agreed well in advance of the storm season. It is better the generators should be refuelled more often than strictly necessary, than to run the risk of them running out of fuel.

There was a particular issue in mobile phone masts being without electricity, which increased the isolation of people affected by the Storm. I am advised that there are currently no requirements for mobile phone masts to be supported by battery or generator back-up. Whilst this is primarily a matter for the phone mast companies and therefore not within the cope of the Report, I would nevertheless say that I do not consider it to be a satisfactory situation, especially with the forthcoming switch off of the analogue network. I would urge that in isolated areas, where

REPORT INTO THE PREPARATIONS AHEAD OF
STORM ARWEN AND THE AFTERMATH
Recommendations to SP Energy Networks

communications is already more challenging, the mobile phone companies should consider how onsite back-up can be provided for at least one-two days.

I make further comments with regard to generators and power back-up in the next section on Rest Centres.

6 REST CENTRES

Local authorities have identified potential 'rest areas' across their areas, which can be utilised in the event of major power outages, where local residents can be given refuge, with warmth and power. Some of these will be larger locations (such as sports halls) which will have their own generator back-up systems for use in power outages, but the majority are small village locations where there is currently no back-up. Even when a generator is brought in, it can still be a complex task to connect it up.

I RECOMMEND that these 'rest areas' should be given a more central and structured role in providing a safe space after a loss of power. Local authorities and local communities are best placed to know which are the best potential locations, bearing in mind that most of them will be rarely, if ever, used.

In consultation with the local authorities (through the LRF/LRP), SPEN should implement a programme to equip these venues with generator connection points, so a generator can be simply "plugged in" when it is delivered and power provided as quickly as possible. Ofgem approval would be required for such expenditure.

I would also RECOMMEND that SPEN and the LRF/LRPs should undertake a strategic review of which of the designated 'rest areas' should also be given battery back-up capabilities. This would ensure that some power would be available instantaneously after a power-cut, even if it cannot provide for the full range of functions that would be desirable. Having a battery in place could be seen as an unnecessary expense if it will be rarely be required but the battery market has now developed to such an extent that commercial providers could be given the opportunity to install a battery, trade the power commercially on an on-going basis, so that the battery is available at a reduced cost for when it would be required in an emergency. Ofgem will also need to engage in this debate, given the restrictions it imposes on the DNOs purchasing large-scale batteries.

It has been suggested that such a sustainable, low-carbon solution might be eligible for support in Scotland under the Scottish Government's Heat & Building Strategy.

This enhanced approach to Rest Centres would provide a focus for many of the support services which are needed after a major and extended loss of power. They provide a location where hot food can be provided, people can stay warm and also get the power they need to charge their phones, etc.

I have heard reference to the duplication of effort, with more than one vehicle in a given location providing hot food. This is frustrating for those involved when there are other areas in need and an approach to put more attention on the Rest Centres will hopefully assist in ensuring better coordination across all service providers and the volunteer helpers, like the Salvation Army and others, who provided such valuable support.

Whilst I believe this would make a positive contribution to a coordinated strategy, it needs to be recognised that it still has its limitations. In some areas, the Rest Centre would be too far removed from the most isolated properties and the residents would struggle to take advantage of the help on offer. This would particularly be an issue if the storm brought a lot of snowfall, which was fortunately not a major issue for SPEN's areas in Storm Arwen. It reminds us, though, of the paramount importance of getting isolated properties reconnected or having some sort of back-up support on their premises.

7 PRIORITY SERVICE REGISTER

One of the issues that has been raised most often is the prioritisation of “at risk” customers for reconnection and wider support.

There is an administrative issue, in that there are different lists of who is considered vulnerable and at risk. SPEN is required by Ofgem to operate an approach whereby anyone can self-register as being vulnerable. Over time, this has grown to unmanageable numbers - around 35% of SPEN's 3.5m customer households have designated themselves as vulnerable, making it simply impossible for SPEN to give them priority treatment.

It also means that people who would objectively be considered to be ‘at risk’ are not designated as such, because they have not opted to do so. Several respondents have commented that many elderly people are very stoic in their approach and would not wish to be designated as vulnerable, but still need to be considered priority cases for reconnection.

The local authorities have their own registers of those considered to be vulnerable, prepared in conjunction with social services and using their knowledge of people who have serious medical conditions etc. There were problems after Storm Arwen in comparing these lists with those held by SPEN, on the grounds that it could breach data protection. I understand that this issue was resolved over time and the data could then be shared, but it would be sensible to ensure ahead of each winter that any such concerns were resolved well in advance of being required.

I would urge Ofgem to allow the DNOs and the local authorities to develop a formula for their at-risk registers, so they are working off an agreed list and can more effectively coordinate their efforts in the aftermath of a major storm. Those at-risk after a storm, especially in very remote areas, will go well beyond those on a council's Register, including, for example, those dependent on electricity to provide them with pumped fresh water.

The risk of not having such coordination, as with Storm Arwen, is that a large amount of time is spent trying to speak to those categorised as vulnerable - one council gave the example that they were given a list five days after the storm of 256 customers on SPEN's PSR that the company had not been able to contact. Only 30 of these were people on the council's own list of vulnerable people but home visits had to be made to all of them, involving a massive effort by the emergency services.

Those on SPEN's PSR are all provided with a dedicated telephone number at SPEN to call in the event of an emergency. It would be sensible to ensure this number is also shared with those on each council's Register.

The definition of being ‘at risk’ will of course evolve in the days following a storm. After a few days without power or heat, virtually every resident could reasonably be considered to be ‘at risk’, so the approach needs to have the flexibility to adapt as the circumstances change.

There was also an issue in that, when councils were alerted by SPEN to a vulnerable person the company had been unable to reach by phone, they were not necessarily using the same systems to identify their precise location. Whereas SPEN would use a postcode, which could include a significant number of properties, the councils' preference was either for the Unique Property Reference Number (UPRN) or a precise location provider such as ‘What Three Words’ (and I understand that SPEN can use either option).

It is important that the system should be able to identify a specific property. I do not have a view which approach (UPRN or What Three Words) is best, but it is essential that SPEN and the councils are working to the same system and I RECOMMEND that it should be a priority to develop such a

**REPORT INTO THE PREPARATIONS AHEAD OF
STORM ARWEN AND THE AFTERMATH**
Recommendations to SP Energy Networks

joined-up approach ahead of next winter. Given an emergency like Storm Arwen cuts across many boundaries, I would encourage BEIS to ensure there is consistency nationwide.

Care homes are also, by definition, a priority. If there is no power, there is the added issue that the remote monitoring systems increasingly used to check on the well-being of residents will also not be working, putting their safety at risk.

Care homes are already prioritised for generators but there will be a period of some hours until a generator can be delivered and installed. It would not be practicable to put the responsibility of installing back-up provision on the DNOs, given the number of care homes and the fact that the overwhelming majority will not experience a power interruption. Even if it was feasible, I see no likelihood that Ofgem would consider such expense a reasonable charge to impose on bill-payers. I would therefore urge those who own and operate the care homes (especially in areas which experience power outages) to look at what sensible measures can be taken to provide greater resilience for their essential services, until a generator can be installed and made operational.

8 UNDER-GROUNDING OF ELECTRICITY CABLES

Ofgem has addressed the question of under-grounding more of the network (page 16).

The costs of under-grounding are high compared to traditional approaches of power cables on poles, so it can never be a general approach, without putting unacceptable costs onto customers. In addition, if there is a break in an underground cable, it is more complex and takes more time to repair it than if it is on a pole.

I RECOMMEND that Ofgem work with SPEN (and other DNOs) to develop a reopener that would allow targeted undergrounding of sections of network shown to be most vulnerable to storm damage in rural locations. Work can begin to sketch out how this could be targeted based on an engineering justification paper and impact assessment. Furthermore, the current RIIOD2 process underway presents the opportunity for Ofgem to consider a “storm related reopener” mechanism within their proposed package of measures.

9 PROGRESS TOWARDS NET-ZERO

SPEN have also asked me to look at these issues in relation to actions which would help make the network more resilient as we see increasingly decarbonised energy systems as we move towards Net Zero.

Decarbonisation will require a much greater use of electricity, as it is used more for transportation and heat. Some people have expressed concern that this would increase the vulnerability of remote/rural communities but my own assessment is that, in many areas, it should actually improve resilience.

The roll-out of EV charging points and heat pumps will require significant investment in the network (Ofgem is currently considering the proposals included in SPEN's business plan for the network). This investment will provide the opportunity to strengthen the network and enhance its resilience.

The increasing availability of solar panels (with the added benefit of domestic battery storage) will give households in remote areas a power supply with some additional back-up. In the winter, the reduced hours of daylight will mean that it may not be possible to provide for all of a household's electricity needs, but it will still help provide power for some essential needs. Remote properties, including farms and rural businesses, would benefit from small wind-turbines as well to provide additional sources of power. There will be concerns about the ability of some household/businesses to pay for this installations, and this might be considered within the decarbonisation strategies of the Governments in Westminster, Edinburgh and Cardiff, given the contribution it also makes to enhanced resilience and to essential animal welfare on farms.

Such generation capability would also ensure that people could have heat in their homes, either by providing the power a pump needs to pump hot water round the house from a gas/oil boiler or by linking it to a heat pump. Some campaign groups have urged the Scottish Government to ban wood burners/wood burning stoves to assist in decarbonisation. I have found very strong public opposition to such a move by people who are (understandably) concerned that this would remove a 'last resort' option to keep warm after a power-cut.

A number of people have commented that people have said they are worried about getting an electric vehicle in the aftermath of such a severe storm, if they would not be able to charge it for days on end, potentially leaving them stranded. In fact, an argument for EVs is that they provide a significant battery resource, from which power can be downloaded into the home at times of stress. If people ensure their EVs are fully charged when a storm may be imminent, then they would actually have enhanced resilience in the event of a power outage.

In conclusion, I do not see significant additional challenges which would result from pursuing low carbon energy options and indeed, if implemented wisely, they can actually provide enhanced resilience.

I RECOMMEND that SPEN should make a submission to Ofgem on how it considers the resilience of rural networks can best be enhanced, whilst facilitating the fastest possible Net Zero transition.

10 EXTERNAL SUPPORT IN AN EMERGENCY

The BEIS report has looked at the steps taken to bring in external help to following a major storm (page 24).

Under the NEWSAC scheme, assistance can be brought in to use the expert skills of the engineers from other network areas.

Such an approach brings its own challenges, as those coming to assist need to be housed and fed, so it needs to be done in a considered and planned way.

It is difficult to draw conclusions on this from one storm that would apply to future storms, as they are all different, so my considered view is that this should be left to be a matter for SPEN to address with the LRF/LRPs in the light of the evidence they have at the time.

There is a separate issue of whether military assistance should have been called in, as happened in Aberdeenshire. The military can only assist in certain limited ways - they should not, for example, be used to work on power line faults - but they can assist in ensuring that people are brought to safety where required and emergency support is made available.

Again, I think this needs to be decided by the LRF/LRP, based on the circumstances of each storm event, rather than to an external set of guidelines.

There is a separate question about more general coordination of activities at national level after such severe storms. During Storm Arwen, The SGORR meeting took place daily. SPEN were asked to contribute through direct meetings with the Deputy First Minister, John Swinney MSP (as Chair) rather than being an attendee at SGORR. In subsequent storms, SPEN were invited on to the SGORR to give their direct contribution which greatly improved interaction. Whilst this is a decision for the Scottish Government rather than for SPEN, I do agree with those who have said that such meetings would have helped make all responders aware of best practice and helped them to review the steps they were taking, in the light of knowledge of steps being taken in other parts of Scotland within SSEN's region and thereby potentially accelerate measures to respond to a major storm.

CONCLUSIONS

This Report has, by definition, looked at the areas where Storm Arwen highlighted deficiencies in the preparations for, and responses to, a major storm event.

It must nevertheless be looked at in the overall light of what also 'went right':

- 95% of SPEN's customer base was unaffected by Storm Arwen
- Of those customers who were off supply, 88% were restored in 24 hours and 96% within 48 hours
- SPEN moved quickly to recognise the extreme nature of events and offered an extra £150 payment to all customers who were off for longer than 48 hours (in addition to the compensation already due).

Above all, the extraordinary commitment and dedication of those working in the field to deliver reconnections as quickly as possible in treacherous conditions, has been recognised universally, together with the commitment of hundreds of back-office staff helping out to respond to unprecedented levels of calls.

This Report has not identified any fundamental, systemic weakness, but rather a large number of relatively small measures, which collectively would deliver a more resilient network for the future.

I have been encouraged by the very constructive nature of every contribution from SPEN's partners, and I have no doubt that the Local Resilience Forums and Partnerships provide the right environment for progressing these in a timely and collaborative way ahead of next winter.

I have identified many areas where SPEN will need to work together with the LRF/LRPs and I would recommend that SPEN should produce a schedule of the issues to be considered based on these recommendations.

It will never be possible to eliminate the risk of prolonged power outages after exceptional storms, but I hope these recommendations will enable a more resilient network to be developed and better communications to be put in place to address some of the challenges that emerged after Storm Arwen.

Charles Hendry
May 2022

APPENDIX 1

SUMMARY OF RECOMMENDATIONS

Recommendations made in final report by The Rt. Hon Charles Hendry

No.	Page	Recommendation
Storm Preparation		
1	4	I RECOMMEND that, wherever possible, it should be the same SPEN representative who attends each meeting (LRF / LRP)
2	4	I RECOMMEND that measures should be put in place, so the contact lists held by the LRF/LRPs are updated by SPEN on a rolling basis and updated again before each and every anticipated storm event.
3	4	I therefore RECOMMEND that, where this is not already standard practice, there should be an annual Storm Emergency Preparation exercise before the winter storms start, so that all organisations with a role to perform, have identified what would be expected of each of them and how to work most effectively together.
Difficulties in Contact		
4	6	I RECOMMEND that SPEN should undertake an immediate review to ensure that all relevant partners have the appropriate named contact/contact details. This must be a 24/7 service with back-up support available as required.
5	7	I RECOMMEND that SPEN should ensure that a significantly higher proportion of its employees are trained to handle calls and given the equipment to manage this remotely. I recognise that extensive training is essential (and must be kept up-to-date) as any mistaken advice could result in serious injury or death, so this will take time to implement, but I RECOMMEND that the company should have an agreed strategy in place for how to do this by end of June 2022, with implementation well ahead of the coming winter.
6	7	I RECOMMEND that, ahead of next winter, a much higher number of staff members should be identified who can be brought in to handle outbound calls, which can be managed with less formal training. It is better that SPEN are over-resourced in this area rather than over-stretched.
7	7	In particular, the roll-out of Generation 2 smart meters (SMETS2) will facilitate this - even when the power is off, the battery in the smart-meter should enable a signal to be sent that there has been a loss of electricity (the so-called 'last gasp'). This is a national rather than a regional/local issue, so I RECOMMEND that BEIS/Ofgem should ensure this is facilitated as part of the smart-meter roll-out programme and whether it can also be made available to those with earlier SMETS1 smart meters.
8	7	I also RECOMMEND that SPEN should have access to satellite phones which can be brought into areas without telecommunications after a storm, to give local residents access to the outside world. These can be positioned in local facilities (shops, pubs, garages etc) and clearly sign-posted.
On-Going Communications and Accuracy of Information		
9	9	[I RECOMMEND] in the early autumn all customers should be sent a Winter Preparation Notice, to set out the increasing risk of storms, the impacts these can have, and the help and support that SPEN will provide in the event of a loss of power. (In response to this proposal, SPEN have stated that their preference is to continue their current practice of having a rolling programme to contact each customer once a year, as this spreads the load of handling responses. I understand the practical aspects of this, but it does not provide all customers with timely and relevant winter information - a letter sent in May, for example, will not necessarily still be kept to hand in the autumn)

**REPORT INTO THE PREPARATIONS AHEAD OF
STORM ARWEN AND THE AFTERMATH**
Recommendations to SP Energy Networks

No.	Page	Recommendation
10	9	<p>SPEN does not have emails and telephone numbers for large numbers of customers because they are ultimately customers of their chosen energy provider, rather than of the DNO directly, and details cannot necessarily be shared under GDPR regulations.</p> <p>[I RECOMMEND] SPEN should prioritise work to build up a database of as many customer contact points as possible. Each customer mail-out should encourage the customer to self-register their email address and phone number, specifically for use during an emergency, as this offers the best long-term approach to enable customers to be given pre-storm advice</p>
11	9	[I RECOMMEND] SPEN should spell out their precise responsibilities in the event of a major and sustained loss of power - how the firm will work with local authorities/emergency responders; who would be responsibility for identifying and opening rest centres; how payments for emergency food and accommodation will be managed (several comments have been made about the clarity of which organisation is responsible for what)
12	9	[I RECOMMEND] SPEN's media strategy should be specifically discussed with the LRPs/LRFs/Regional Resilience Partnerships. This should cover how communications can be handled through local media channels, especially through local radio stations, which have often been referred to as one of the most trusted source of information (in this regard, SPEN might also consider making wind-up radios available to customers)
Removing Fallen Trees and Dealing with Faults		
13	11	I RECOMMEND that SPEN should look to equip its teams deployed in rural areas after a storm with satellite communications systems, so the problems they face in establishing the extent of a storm's damage will not be compounded by loss of mobile connectivity, as happened with Storm Arwen. This is a costly exercise which will only be used on occasions, and so I would urge Ofgem to permit this as an additional necessary expenditure for the DNOs.
14	11	Given the challenges SPEN faced in assessing the extent of the damage (and the errors made in doing so correctly) I would RECOMMEND that greater use is made of drones to fly over affected areas to inspect the damage and teams should be trained accordingly. Drones are only permitted to be flown in the 'line of sight' of the operator, which inevitably restricts how widely they can be used, but it would be for the Civil Aviation Authority to consider whether any relaxation of such rules can be permitted 'in extremis', if it permits very vulnerable people to be helped more quickly in an emergency.
15	11	Storm Arwen showed that more should be done to prepare for bad storms. I therefore RECOMMEND that SPEN should take a more robust approach to felling trees where there is opposition from a property owner (which is in any case only in a small minority of cases and I understand rural communities tend to be more understanding of such work to be carried out). This could take a number of different forms such as writing formally to the landowner to advise that their intransigence is putting communities at risk in the event of a storm; notifying the local authority of where there have been refusals; or going through more formal legal channels.
16	12	Making optimal use of the services of local authority tree surgeons and other qualified contractors, such as Network Rail, to clear access routes to affected areas to leave SPEN's tree-surgeons to focus particularly on fallen trees which would be considered too high-risk for others to work on. I RECOMMEND that SPEN should adopt this as company policy across the network and before the next storm season, working practices should be agreed with local authorities and other relevant partners on how such collaborative working can be implemented safely, when required.

**REPORT INTO THE PREPARATIONS AHEAD OF
STORM ARWEN AND THE AFTERMATH**
Recommendations to SP Energy Networks

No.	Page	Recommendation
17	12	There also appears to have been inadequate communication between SPEN's teams and the local authorities/LRFs/LRPs to advise when areas had been cleared of fallen trees, which caused evident frustration. I RECOMMEND that SPEN should have procedures in place before the next storm season to ensure that all such information is relayed as soon as possible after a clearance has been completed, so that the relevant highways authorities know when roads have been re-opened.
Deployment of Generators		
18	13	[I RECOMMEND] the system in future should have much more built-in resilience, through either batteries and/or permanently installed generators.
19	13	[I RECOMMEND] as part of the pre-winter LRF/LRP preparations, a much more comprehensive database should be developed of generators held in stock by the LRF/LRP partners and the extent to which these are movable and can be deployed where the need is greatest.
20	13	I would therefore RECOMMEND that SPEN and the LRF/LRPs should at least have a discussion about the best strategy for ensuring generators always have sufficient fuel. This should be agreed well in advance of the storm season
Rest Centres		
21	15	I RECOMMEND that these 'rest areas' should be given a more central and structured role in providing a safe space after a loss of power. Local authorities and local communities are best placed to know which are the best potential locations, bearing in mind that most of them will be rarely, if ever, used
22	15	In consultation with the local authorities (through the LRF/LRP), [I RECOMMEND] SPEN should implement a programme to equip these venues with generator connection points, so a generator can be simply "plugged in" when it is delivered and power provided as quickly as possible. Ofgem approval would be required for such expenditure.
23	15	I would also RECOMMEND that SPEN and the LRF/LRPs should undertake a strategic review of which of the designated 'rest areas' should also be given battery back-up capabilities
Priority Service Register		
24	16	It is important that the system should be able to identify a specific property. I do not have a view which approach (UPRN or What Three Words) is best, but it is essential that SPEN and the councils are working to the same system and I RECOMMEND that it should be a priority to develop such a joined-up approach ahead of next winter.
Undergrounding of Electricity Cables		
25	18	I RECOMMEND that Ofgem work with SPEN (and other DNOs) to develop a reopener that would allow targeted undergrounding of sections of network shown to be most vulnerable to storm damage in rural locations. Work can begin to sketch out how this could be targeted based on an engineering justification paper and impact assessment. Furthermore, the current RIIOD2 process underway presents the opportunity for Ofgem to consider a "storm related reopener" mechanism within their proposed package of measures.
Progress Towards Net Zero		
26	19	I RECOMMEND that SPEN should make a submission to Ofgem on how it considers the resilience of rural networks can best be enhanced, whilst facilitating the fastest possible Net Zero transition.
Conclusions		
27	21	I have identified many areas where SPEN will need to work together with the LRF/LRPs and I would recommend that SPEN should produce a schedule of the issues to be considered based on these recommendations.

Appendix 2

STAKEHOLDER LIST OF THOSE INVITED TO PARTICIPATE

Job Title	Additional Info
Chief Executive	Dumfries and Galloway Council
Chief Executive	East Lothian Council
Chief Executive	Fife Council
Chief Executive	Midlothian Council
Chief Executive	Scottish Borders Council
Chief Executive	Cheshire East Council
Chief Executive	Cheshire West and Chester Council
Chief Executive	Wirral Borough Council
Chief Executive	Shropshire Council
Chief Executive	Conwy Council
Chief Executive	Denbighshire Council
Chief Executive	Flintshire Council
Chief Executive	Gwynedd Council
Chief Executive	Isle of Anglesey Council
Chief Executive	Wrexham Council
MP	City of Chester
MP	Ellesmere Port & Neston
MP	Eddisbury
MP	Congleton
MP	Crewe & Nantwich
MP	Macclesfield
MP	Tatton
MP	Weaver Vale
MP	Ludlow
MP	Wallasey
MP	The Wrekin
MP	Shrewsbury & Atcham
MP	North Shropshire
MP	Wirral West
MP	Birkenhead
MP	Wirral South
MP	Clwyd South
MP	Alyn & Deeside
MP	Arfon
MP	Dwyfor Meirionnydd
MP	Ynys Mon
MP	Delyn
MP	Aberconwy
MP	Clwyd West
MP	Vale of Clwyd
MS	Aberconway
MS	Alyn & Deeside
MS	Arfon
MS	North Wales (x4)

**REPORT INTO THE PREPARATIONS AHEAD OF
STORM ARWEN AND THE AFTERMATH**
Recommendations to SP Energy Networks

MS	Wrexham
MS	Isle of Anglesey
MS	Dwyfor Meirionnydd
MS	Delyn
MS	Clwyd West
MS	Clwyd South
MSP	Galloway and West Dumfries
MSP	Dumfriesshire
MSPs	Midlothian North and Musselburgh (x2)
MSP	East Lothian
MSPs	Mid Scotland and Fife (x7)
MSP	Cowdenbeath
MSP	Mid Fife and Glenrothes
MSP	North East Fife
MSP	Dunfermline
MSP	Kirkcaldy
MSP	Midlothian South, Tweeddale and Lauderdale
MSP	Ettrick, Roxburgh and Berwickshire
MSP	Clydesdale
MSPs	South Scotland (x7)
MSPs	Lothian (x7)
MP	Dunfermline & West Fife
MP	Glenrothes
MP	Kirkcaldy & Cowdenbeath
MP	North East Fife
MP	Dumfries and Galloway
MP	Dumfriesshire, Clydesdale and Tweeddale
MP	East Lothian
MP	Midlothian
MP	Berwickshire, Roxburgh & Selkirk
MP	East Kilbride
MP	Lanark and Hamilton East
LJRF / LJRP Chair	Dumfries & Galloway
LJRF / LJRP Chair	Ayrshire
LJRF / LJRP Chair	East of Scotland
LJRF / LJRP Chair	East Lothian council
LJRF / LJRP Chair	Midlothian Council
LJRF / LJRP Chair	Edinburgh City Council
LJRF / LJRP Chair	Northumberland County Council
LJRF / LJRP Chair	Scottish Borders Council
LJRF / LJRP Chair	South Lanarkshire
LJRF / LJRP Chair	North Lanarkshire
LJRF / LJRP Chair	East Dumbartonshire
LJRF / LJRP Chair	Fife (x4)
LJRF / LJRP Chair	Forth Valley (x3)
LJRF / LJRP Chair	Glasgow & East Dumbarton
LJRF / LJRP Chair	Argyll & Bute
LJRF / LJRP Chair	Cheshire
LJRF / LJRP Chair	West Mercia (Shropshire)

**REPORT INTO THE PREPARATIONS AHEAD OF
STORM ARWEN AND THE AFTERMATH**
Recommendations to SP Energy Networks

LJRF / LJRP Chair	Dyfed & Powys
LJRF / LJRP Chair	Merseyside
Civil Contingencies and Community Safety Lead Officer	Powys County Council
Merseyside Police	Merseyside Police
Senior Manager – Emergency Planning	Cheshire East Council and Cheshire West and Chester Council
Assistant Director Neighbourhoods, Safety and Transport	Wirral Council
Street Works and Enforcement Manager Highways, Waste and Property	Isle of Anglesey County Council
Chief Officer Environment & Technical	Wrexham County Borough Council
Regional Emergency Planning Manager	North Wales Councils
Head of Emergency Planning Resilience and Response	NHS England (Cheshire and Mersey)
Civil Resilience Team Leader	Shropshire Council
Public Transport Officer	Wrexham County Borough Council
Electrical Asset Co-ordinator	Wrexham County Borough Council
Enforcement Services Co-ordinator	Wrexham County Borough Council
Contracts and Engineering Manager	Wrexham County Borough Council
Landscape Officer	Wrexham County Borough Council
Landscape Officer	Wrexham County Borough Council
Road Safety Assistant	Wrexham County Borough Council
Arboricultural Manager	Wrexham County Borough Council
Performance and Business Manager	Wrexham County Borough Council
Head of Service (Operations)	Wrexham County Borough Council
Civil Contingencies Officer	Ayrshire Civil Contingencies Team
Superintendent Support and Service Delivery	Dumfries
Emergency Resilience Manager	Fife Council
Emergency Planning, Risk & Resilience Officer	East Lothian Council
Senior Manager Response, Renew & Recovery	Dumfries and Galloway Council
Head of Assets, Transportation and Environment	Fife Council
Emergency Planning Officer	Scottish Borders Council
Contingency Planning Officer	Midlothian Council
Resilience Adviser	South Lanarkshire Council
Resilience Development Coordinator	North Lanarkshire Council
Executive Director Enterprise and Environment	Fife Council
Senior Resilience Advisor	Glasgow City Council
Civil Contingencies Manager	Argyll and Bute Council
Superintendent (Operations) Forth Valley Division	Police Scotland
Resilience Officer	South Lanarkshire Council
Emergency Planning and Resilience Officer	Newcastle City Council