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Appointed Examiner's audit of Exceptional Event Claim - Northern Powergrid

Extreme weather – 24 to 27 September 2012

Document Properties

Title: Audit of Exceptional Event Claim – NPG(NE) – Extreme weather – 24 to 27 September 2012

Reference: ep/Ofgem/NPG(NE)/Sep '12

Issue: Final report v1.0

Date: 31 May 2013

Authorisation

Name	Position	Signed	Date
Geoff Stott	energypeople's external auditor		31 May 2013

History

Issue	Date	Originator	Checker	Description
1.0	31 May 2013	Geoff Stott	Mel Brown	Final version incorporating comments
0.1	12 May 2013	Geoff Stott	Mel Brown	Draft version circulated to NPG and Ofgem for factual checking and comment
0.0	06 May 2013	Geoff Stott	Mel Brown	Document created from energypeople template

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Contents

Glossary 4

Summary 5

1. Audit part 1 6
   - 1.1 Summary of the main facts 6
   - 1.2 Exceptionality requirements 7
   - 1.3 Does the event qualify for exclusion 7
   - 1.4 Exceptionality test results 8

2. NPG(NE)'s views of its performance 9
   - 2.1 Dealing with the incident 9
   - 2.2 NPG(NE)'s answers to questions on its performance 9

3. Audit part 2 16
   - 3.1 NPG(NE)'s performance in dealing with the event 16
   - 3.2 NPG's performance in mitigating the effects of the event 17
   - 3.3 Recommended performance adjustments 17
   - 3.4 Detailed justification 17

Appendix A - Record of Audit part 1 19

Appendix B – NPG(NE)'s photographs 22

Tables

Table 1 – Audited comparison of NPG(NE)'s 2011/12 daily averages with the number of incidents occurring during the event 8

Table 2 – Summary of exceptionality test results 8

Table 3 – Recommended performance adjustments 17

Figure

Figure 1 – The widespread nature of the event across NPG(NE)'s area 6

NPG(NE)'s Photographs

Photograph 1 – Temporary flood barrier around Primary Substation in Bedale 22

Photograph 2 – Aerial view of the inundation in Bedale 22

Photograph 3 – Aerial view of the inundation at Boroughbridge 23

Photograph 4 – Aerial view of Brown's Bridge Distribution Substation, Stockton 23

Photograph 5 – The low-voltage fusegear at Brown's Bridge Distribution Substation 24

Glossary

Abbreviation	Meaning
AE	Appointed Examiner
CB	Circuit-breaker
CI	Customer Interruptions per 100 connected customers
CML	Customer Minutes Lost per connected customer
DNO	Distribution Network Operator
EHV	Extra High Voltage – all voltages above 20kV up to but excluding 132kV
ep	energypeople
HV	High Voltage – all voltages above 1kV up to and including 20kV
MIMP	Major Incident Management Plan – Northern Powergrid's corporate emergency procedure
NEWSAC	Northern Eastern Western and Southern Area Consortium
NPG(NE)	Northern Powergrid (Northeast)
QoS	Quality of Service
RIGs	Regulatory Instructions & Guidance
SCADA	Supervisory Control and Data Acquisition
SoF	Statement of Facts
ToR	Terms of Reference

Notes:

Within this document:

1. The term "higher voltage" is used to indicate all voltages greater than 1kV.
2. The calculations of CI and CML within this document are adapted from the annual calculations contained in the RIGs to reflect the CI and CML generated by the actual incidents being audited.

They are as follows:

CI: the number of interruptions to supply – the number of customers interrupted per 100 connected customers generated by the incidents being audited.

It is calculated as:

$$CI = \frac{\text{the sum of the number of customers interrupted for incidents being audited} * 100}{\text{the total number of connected customers}}$$

CML: the duration of interruptions to supply – the number of customers interrupted per connected customer generated by the incidents being audited.

It is calculated as:

$$CML = \frac{\text{the sum of the customer minutes lost for all restoration stages for incidents being audited}}{\text{the total number of connected customers}}$$

In both the formulae above, the total number of connected customers is as declared as at 30 September during the relevant reporting year. Any claims that occur and are audited prior to 30 September in the reporting year during which they occur will be audited using the total number of customers declared at 30 September in the previous reporting year.

Summary

1. Ofgem has commissioned energypeople as its Appointed Examiner (AE) to audit the submission made by Northern Powergrid (NPG) under the "one off" exceptional event mechanism that extreme weather, accompanied by extensive flooding, between 24 and 27 September 2012 adversely affected the reported performance for its Northeast [NPG(NE)] licensed area for the reporting year 2012/13.
2. The AE has visited NPG(NE) to audit the claim against part 1 of the "one-off" exceptional event process and finds that it passes the exceptionality threshold in terms of CML but not CI.
3. The AE concludes that the event falls within the category of an "other event" as defined in paragraph 8.57 of Special Licence Condition CRC 8, including meeting the exceptionality requirements set out in Appendix 3 thereof.
4. The AE therefore proceeded to part 2 of the "one-off" exceptional event process, assessing NPG(NE)'s performance in mitigating the impact of the event upon its customers.
5. The AE concludes that NPG(NE) faced severe difficulties in mobilisation caused by the extreme weather during this event and was therefore prevented from restoring its customers' supplies as speedily as it normally would.
6. The AE also concludes that NPG(NE) invoked its emergency procedures in a timely way, monitoring the situation throughout the duration of the event.
7. The AE commends NPG(NE)'s personnel for their efforts in getting to work despite the worst flooding the area has known for 30 years.
8. The AE also concludes that NPG(NE) did all it could to access its inundated electrical apparatus, both within its own Substations and within its customers' premises whilst putting no-one in harm's way.
9. The AE concludes that NPG(NE) had met the criteria of Appendix 4 to paragraph 8.58 of Special Licence Condition CRC 8 and that therefore the incident is deemed to be eligible for adjustment in the DNO's reported performance.
10. The AE therefore recommends that an adjustment to NPG(NE)'s 2012/13 reported distribution system performance is made, in line with the part 1 audited CI and CML figures as shown in the following table:

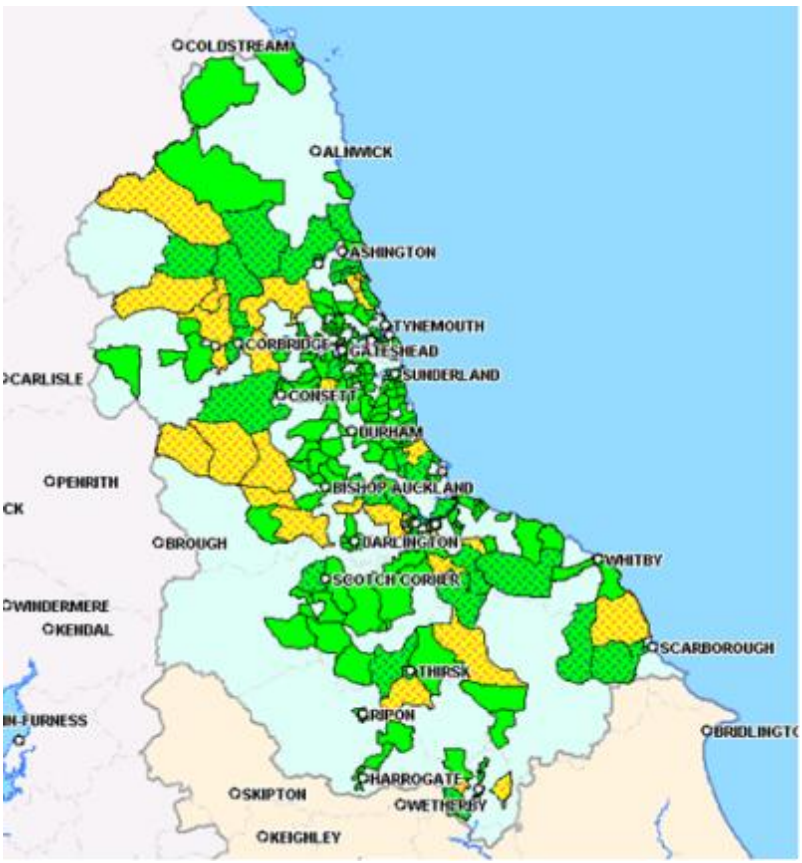
	Audited number	Residual amount above the threshold	Recommended adjustment
CI	0.92	0.00	0.00
CML	3.27	1.97	1.97

1. Audit part 1

1.1 Summary of the main facts

11. The AE's headline information log for this event is set out in Table A-1 at Appendix A. In addition, the following paragraphs summarise the main facts of the event.
12. NPG(NE) has provided photographic evidence to support its claim that extreme weather, accompanied by extensive flooding, resulted in mobilisation difficulties that delayed its personnel from attending to incidents affecting its distribution network.
13. The event is deemed to have lasted for four days, beginning on Monday 24 September and ending on Thursday 27 September 2012.
14. The widespread nature of the event across NPG(NE)'s geographic area can be gauged from the map shown in Figure 1.

Figure 1 – The widespread nature of the event across NPG(NE)'s area



Key:

Green shading – postcode areas affected by incidents at low-voltage and, in some cases, also higher voltages; and

Yellow shading – postcode areas affected by incidents at higher voltages only

1.2 Exceptionality requirements

15. The majority of weather-related events are dealt with between the DNOs and Ofgem through an automated process, generally without the need for Ofgem to appoint an AE to examine the claim.
16. However, so-called 'long-running' "other events" do not fall into the above category as provided for in the current version of the RIGs[1] and the special conditions incorporated within each DNO's licence[2].
17. The AE considers that the current claim by NPG for its Northeast licensed area falls into the category of a long-running other event, the precedent for the examination of which was established during the audit of two long-running exceptional event claims in 2010 by the then CE Electric UK.
18. The principles of this approach were embodied within the discussion meetings held in 2003 between Ofgem and the DNOs during Distribution Price Control Review (DPCR) 3 at which the AE was present.
19. The DPCR 3 agreement provides for situations where the occurrence of a long-running event, such as an outbreak of foot and mouth disease or a period of difficult mobility, results in protracted restoration of incidents on a DNO's network.
20. Prior to commencing the audit of this claim therefore, the AE and NPG(NE)'s representatives agreed that the most appropriate approach would be to mirror the methodology used during DPCR 3, albeit with the tests for exceptionality and the thresholds for CI and CML being pre-determined as part of the licence conditions pertaining to DPCR 5.
21. Under the DPCR 3 methodology, the first step is to determine the duration of an event by examining a DNO's incident database, agreeing the start and end dates and hence the number of days over which the event lasted.
22. The second step is to compare the number of CI and CML for all incidents occurring during the above period with the average daily figures experienced by the DNO for the equivalent number of days in the preceding regulatory reporting year, once the effects of any one-off exceptional events have been removed.
23. Where this comparison shows an increased number for the event in question, the excess CI and / or CML, referred to as the 'residual amount', is considered for exclusion from the DNO's reported performance.

1.3 Does the event qualify for exclusion

24. As stated above, the AE considers that the event falls within the category of a long-running other event as defined in paragraph 8.57 of Special Licence Condition CRC 8, and meets the exceptionality requirements set out in Appendix 3 thereof.

[1] See specific mention of floods in paragraph 2.27 of the current version (v3) of the QoS RIGs - Ofgem – Reference 62b/12 – 27 April 2012

[2] In particular see paragraph 8.57 of Special Licence Condition CRC 8

25. The AE therefore considers that, subject to satisfying the requirements of Appendix 4 to CRC 8, the event qualifies for possible exclusion under the "one-off" exceptional events process.

1.4 Exceptionality test results

26. Due to the nature of this event, the direct cause of incidents occurring during it is not relevant to the test for exceptionality. As described above, it is the amount of residual CI and CML occurring during the event that is compared to the current thresholds for the DNO in question, as contained within the DNO's licence.
27. The audited comparison of the number of incidents occurring during the event with NPG(NE)'s averages for regulatory reporting year 2011/12 is shown in Table 1.

Table 1 – Audited comparison of NPG(NE)'s 2011/12 daily averages with the number of incidents occurring during the event

	Audited number of incidents		
	NPG(NE)'s daily averages during 2011/12 (less exemptions)	Number arising during the 4 - day event	Number in the event above 4 times NPG(NE)'s 2011/12 daily averages
132kV	0	0	0
EHV	0	2	2
HV	4.5	32	14
LV	22.4	370	280
Total	26.9	404	296

28. The results calculated by the AE to test this claim against Ofgem's exceptionality criteria are shown in Appendix A. A summary of the results is shown in Table 2.

Table 2 – Summary of exceptionality test results

Test	Threshold	Residual number		Pass / Fail	Residual amount above threshold
		Claimed	Audited		
CI exceptionality	1.60	0.92	0.92	Fail	0.00
CML exceptionality	1.30	3.27	3.27	Pass	1.97

Notes:

1. Ofgem's CI and CML exceptionality criteria are set out in the AE's ToR[3].
2. The audited residual CI and CML used in the exceptionality test have been determined from the number of incidents occurring during the event.
3. Where the event passes either or both the exceptionality thresholds, the amount(s) above the threshold is/are carried forward into the Audit part 2 assessment of the DNO's performance.
4. In accordance with guidance from Ofgem, the AE's calculations use the threshold values contained in the current Distribution Price Control and the number of customers connected to the DNO's network relevant to the date on which the incident occurred.

[3] Audits of Electricity Distribution Network Operators' one-off Exceptional Events Claims for 2012/13 to 2014/15

2. NPG(NE)'s views of its performance

2.1 Dealing with the incident

29. NPG(NE) is subject to NPG's corporate, robust emergency process. This incorporates the national guidance for civil emergencies, which includes the type of emergency being considered here.
30. NPG(NE) considers that it invoked its emergency procedures in a timely manner, declaring various stages of alert in response to both the severe weather warnings and the conditions being experienced by its front line personnel.
31. Hence, when it became apparent that the severe weather was due to last for some time and that mobility would be extremely difficult and potentially hazardous, NPG(NE) declared its highest level of alert and continuously updated its incident management teams until the event was deemed to be at an end.
32. Given the nature of the event, where deep and extensive flooding occurred, conventional vehicles were unable to get to the sites of incidents and NPG(NE) drafted-in a helicopter and, where practicable, used boats to provide some means by which its field teams could get about.
33. As soon as the flood waters receded and it was safe to proceed, NPG(NE)'s field personnel were able to access the incident sites and deal with each incident appropriately.
34. NPG(NE) considers that its emergency plans worked well and that its personnel responded to the event in a most professional manner

2.2 NPG(NE)'s answers to questions on its performance

35. Within the last two years, the AE has reviewed NPG(NE)'s design standards, construction methods and maintenance procedures during previous visits to audit exceptional event claims and found them fit for purpose.
36. The AE confirms that NPG(NE)'s emergency procedures provide for the type of event being examined here.
37. To aid understanding of the background to NPG(NE)'s Statement of Facts (SoF), the AE prepared a list of initial questions regarding this event. These questions were used as the basis for the examination of NPG(NE)'s claim.
38. The initial questions were discussed during the AE's visit to NPG(NE)'s Penshaw Control Centre on 25 April 2013, when the records of NPG(NE)'s SCADA system, the incident reports for the period of the event and other information were made available.
39. NPG(NE) has provided answers to the AE's initial list of questions. For ease of reference, the AE's questions are printed in bold font with NPG(NE)'s answers being printed in normal font.

Q1. What changes, if any, has Northern Powergrid made to its emergency plans and procedures for severe weather since the AE last visited the former CE Electric UK on 20 June 2011 to audit the Exceptional Event claims that snow and ice adversely affected both of its licensed areas during the winter of 2010/11?

A1. Northern Powergrid's Major Incident Management Plan (MIMP) is reviewed as a result of lessons learnt from major incidents and an action log maintained to document necessary actions. The 2012 MIMP Action Log (reference 1) documents actions that arose as a result of the September 2012 strong winds and flooding event. Those actions that were not completed have been carried forward to the 2013 MIMP Action log. In addition a Major Incident Report (reference 2) was compiled by Northern Powergrid's Field Operations team on the MIMP associated with the September 2012 Strong Winds and Floods event. The report details key metrics associated with the event, event details, resource deployment details, performance highlights and concerns, together with lesson learnt and improvement actions.

*[**AE's note:** The AE can confirm having seen the NPG(NE) documents quoted above and having discussed them with NPG(NE)'s representatives during the audit visit).*

Q2. Under its various stages of 'alert' what specific actions did Northern Powergrid take as a consequence of the severe weather warnings it mentions in its SoF?

A2. Northern Powergrid co-ordinates its response plans by holding regular MIMP conference calls throughout the event, which are documented to show the current "state of play" and actions taken, being undertaken or required. NPG(NE) will make its detailed chronology available to the AE.

The number of control centre staff was supplemented throughout the event.

*[**AE's note:** The AE can confirm that NPG(NE) has provided a detailed chronological account of its MIMP activity during the event. This amply demonstrates that NPG(NE) invoked its emergency procedures in a timely way, with the company declaring a MIMP yellow alert at 08:20 on Monday, 24 September 2012 in response to the Met Office's amber severe weather warning for heavy rain, strong winds, surface water, with river and coastal flooding.*

NPG(NE)'s chronology also amply demonstrates that it raised its MIMP alert to an amber alert at 12:00 on 24 September, subsequently raising it to red alert later that day as the situation worsened. NPG(NE)'s MIMP alert status remained at red until Thursday 27 September 2012.

During the event NPG(NE) maintained a continuous dialogue with the emergency services, monitoring weather forecasts, examining Highway Agency road reports and exploring the viability of alternative routes to get to areas otherwise made inaccessible by widespread flooding.

NPG(NE)'s report also demonstrates its regular internal updates as well as doing its utmost to keep its affected customers advised of progress with supply restoration].

Q3. What evidence can Northern Powergrid provide to demonstrate the protracted difficulties in mobility during the periods in which Northern Powergrid considers this to be a long-running other event?

A3. The main problem during this event was the amount of flood water that was affecting our assets and severely restricting access to certain areas. For example, at Topcliffe a pole mounted substation was not accessible due to deep flood water.

There was also some lightning activity during the four-day period that resulted in the interruption of supplies to customers. During the storm, major roads were affected by the flooding. For example, a 40-mile stretch of the A1 was closed northbound in North Yorkshire, the A66 eastbound from Stockton to Durham Tees Valley Airport was closed and there were severe delays on the A19 northbound at Wolverston. Numerous other roads and areas were also blocked by floods. NPG(NE) will make photographs available to the AE showing the widespread nature of the severe flooding that occurred during this event. One of these photographs shows Brown's Bridge Distribution Substation, which was flooded to a depth of approximately 0.75 metres. Once the flood waters had subsided, NPG(NE)'s customers supplied from Brown's Bridge Distribution Substation were connected to an alternative source until the flood-damaged apparatus at Brown's Bridge was replaced and the distribution network returned to normal.

*[**AE's note:** As noted above, the AE can confirm that NPG(NE)'s detailed chronological report includes reports of road closures from the Highways Agency, some of which were via NPG(NE)'s contacts within the local resilience fora. NPG(NE)'s evidence also shows that the company was pro-active in obtaining information on road closures from the internet].*

Q4. What mapping information can Northern Powergrid provide to show how widespread the affects were within its geographic area? It would be useful if this could be provided electronically for incorporation in the AE's report.

A4. NPG(NE) will provide a geographic representation of the areas where incidents occurred during the event. This will show that the event was widespread and that areas affected by event related faults stretched from North Yorkshire to North Northumberland.

*[**AE's note:** The AE can confirm that NPG(NE) has provided the geographical representation of where incidents occurred during this event. (See Figure 1 in this report)].*

Q5. What method has Northern Powergrid used to determine the 'daily averages' for CI and CML at each voltage level shown in its SoF?

A5. The reported performance during 2011/12 (less exemptions) was used to derive the daily averages for CI and CML.

The values for the year were as follows:

	Northern Powergrid (Northeast)		Comment
	CI	CML	
2011/12 - HV	827948	55874548	Figures exclude 2011/12 exemptions
2011/12 - LV	186241	36551331	Figures exclude 2011/12 exemptions
Total	1014189	92425879	
2011/12 Per Day	2771	252530	2011/12 per day performance (366 Days)

A division of 366 days was used as the 2011/12 reporting year was part of a leap year (i.e. 29th Feb 2012)

The customer base in 2011/12 in Northern Powergrid (Northeast) was 1,581,420 and therefore the daily breakdown is as follows:

HV = 0.0965 CML

LV = 0.0632 CML

All Voltages = 0.1597 CML

Note: We could have used the data for the same period in the previous year which would have been more favourable for Northern Powergrid.

Q6. How has Northern Powergrid derived the average restoration time at all voltages for regulatory reporting year 2011/12?

A6. The reported performance during 2011/12 (less exemptions) shown in the table at A5 above was used to derive the daily averages for restoration times.

The CML for the year was divided by the customers affected. Therefore average restoration times are as follows:

LV = (36551331/186241) = 196 minutes

HV = (55874548/827948) = 67 minutes

All Voltages = (92425879/1014189) = 91 minutes

*[**AE's note:** The AE can confirm that this is the same method of calculation used in the precedent for examining long-running events established for auditing the exceptional event claims of 2010 for snow and ice from the former CE Electric UK.*

The AE can also confirm having discussed the approach and agreed NPG(NE)'s calculations during the audit visit to Penshaw on 25 April 2013].

Q7. What external assistance was requested from outside Northern Powergrid's Northeast area?

A7. Of Northern Powergrid's two licence areas, the Northeast licenced area was most badly affected by the storm; as a result therefore Northern Powergrid's own internal resources were diverted from its Yorkshire area to assist in the Northeast.

In addition, contractor resource was diverted from routine activities to MIMP support activities. Assistance from other distribution network operators (DNOs) via the Northern Eastern Western and Southern Area Consortium (NEWSAC) agreement was therefore not required or requested. Whilst Northern Powergrid did not make any requests for assistance, a request was received from Scottish Power on 25 September 2012 for assistance in their area as they were also experiencing an increased number of faults as a result of the storm. Northern Powergrid declined their request for jointing resource (as it was required in the Northeast) but offered overhead line contracting resource.

The nature of this event was such that resource availability was not a determining factor in respect of Northern Powergrid's ability to respond to this event.

The main limiting factors in respect of this event were the restrictions imposed by the presence of flood water which prevented access to NPG(NE)'s electrical equipment, coupled with the inability of engineering personnel to safely operate and repair water affected equipment whilst the flood waters remained.

Q8. What response did Northern Powergrid receive to the above request(s)?

A8. Northern Powergrid made no requests for assistance via the NEWSAC agreement. Assistance from the Yorkshire licence area and external contractors was provided in a timely manner.

Q9. In addition to those mentioned in Northern Powergrid's SoF, what non-standard / specialist means of transport did NPG consider using / actually used during the event and its aftermath?

A9. As there was widespread flooding severely limiting transport in some areas a helicopter was hired to allow assessment of the scale of the event and specific spotting in those areas affected by flooding.

There were occasions however, when the helicopter could not fly due to low cloud (notes of MIMP conference call held at 16:00 hours on 25 September 2012 refer).

*[**AE's note:** The AE can confirm that NPG(NE)'s documented MIMP activity shows this situation].*

Q10. What photographic evidence has Northern Powergrid got to show the extent of the difficulties it faced during this incident? Examples will be useful for incorporation into the AE's report?

A10. NPG(NE) will make photographs available to the AE showing the widespread nature of the severe flooding that occurred during this event. One of these photographs shows Brown's Bridge Distribution Substation, which was flooded to a depth of approximately 0.75 metres. Once the flood waters had subsided, NPG(NE)'s customers supplied from Brown's Bridge Distribution Substation were connected to an alternative source until the flood-damaged apparatus at Brown's Bridge was replaced and the distribution network returned to normal.

*[**AE's note:** The AE can confirm that NPG(NE) has provided photographs of the widespread flooding, some of which appear elsewhere in this report].*

Q11. What learning points has Northern Powergrid incorporated into its procedures as a result of this event?

A11. NPG(NE)'s documented list of lessons learned and improvement actions will be made available to the AE. The main learning point from this incident was that during the event there was confusion over "fault" incidents and "flood" incidents and who was responsible for attending. Actions to resolve this confusion are documented.

Northern Powergrid also held an event in February 2013 with guest speakers to discuss its experience with major events in previous years. Learning points regarding our MIMP response to surface water and flash flooding events were that the issuing of Met Office flood guidance statements and daily forecasts to Northern Powergrid personnel was useful for the prioritisation of resources. In addition, increased interactions with our Local Resilience Fora (LRF) were recommended.

*[**AE's note:** The AE can confirm that NPG(NE) made its documented list of learning points available during the audit visit. It clearly shows the information noted by NPG(NE) in A11 above.*

The AE can also confirm having seen the presentation slide pack used at Northern Powergrid's event, held in February 2013].

Q12. What further learning points should be considered as a result of the application of the current one-off Exceptional Event Claims process?

A12. This is the second time that Northern Powergrid has made a one-off exceptional using this type of methodology. The first was related to the snow and ice event in both of Northern Powergrid's licence areas (Northeast and Yorkshire) in November and December 2010 where the methodology was proposed by Northern Powergrid and accepted by Ofgem. Formal confirmation from Ofgem of the appropriateness of the continued use of this methodology, where appropriate, would be helpful.

It would also be helpful if all exceptional event claims could be assessed and agreed in a timely manner prior to the end of the regulatory reporting year, if possible.

40. Northern Powergrid also provided further information both during and subsequent to the audit visit. This includes:
    - A chronology of NPG(NE)'s MIMP activity during the event;
    - NPG(NE)'s photographs of the extensive flooding, including photographs of its Brown's Bridge Distribution Substation which was still partially flooded;
    - A full list of the incidents that occurred during the period of this event from which the AE made dip-stick tests for accuracy of reporting;
    - NPG(NE)'s methodology and calculations regarding the beginning and end of the event as detailed in the company's SoF;
    - Sight of the weather warnings the company received from the Metrological Office;
    - A geographic representation of the areas affected by the event; and
    - Sight of Northern Powergrid's commercially sensitive internal report in which the event is documented and the company's associated activities reviewed.

    Northern Powergrid's Additional notes following the AE's audit visit on Thursday 25 April, 2013:

    - There were two 66kV (EHV) incidents as a result of the storm – neither of which interrupted customer supplies; and
    - There were no 132kV incidents as a result of the storm.

    *[**AE's note:** The AE can confirm that neither of the 66kV incidents resulted in customer interruptions and that NPG(NE)'s incident database shows that no 132kV incidents occurred during the event].*

3. Audit part 2

3.1 NPG(NE)'s performance in dealing with the event

41. In viewing NPG(NE)'s performance in dealing with the event, the AE has considered what more the company could have reasonably done to ensure that its resources were as prepared as possible ahead of the onset of the severe weather.
42. NPG(NE) invoked its emergency procedures, alerting its personnel to the severe weather that had been forecast and, like other parts of the country, had to await the actual weather before knowing what, if any effect it would have on its distribution system.
43. That said, NPG(NE) deployed temporary flood barriers around the substations it considered most at risk. Photograph 1 shows such a barrier in place ahead of the subsequent flooding.
44. In the event, the flooding was extensive with major arterial roads flooded to such an extent that they had to be closed.
45. To aid what mobility was available, the company drafted-in a helicopter but that, too, had to be grounded for some of the time due to the adverse weather conditions.
46. NPG(NE) kept a constant watch on the situation and permitted its personnel to enter flooded areas only when it was safe to do so.
47. Northern Powergrid's confidential, comprehensive, post-event review and associated report amply detail the impact that the event had on the company and its personnel.
48. NPG(NE)'s photograph 1 shows the temporary flood barrier installed around the company's Primary Substation in Bedale, North Yorkshire.
49. Photograph 2 shows the scale of the subsequent inundation of Bedale.
50. Photograph 3 shows the inundation at Boroughbridge, a town some 20 miles (32km) south of Bedale.
51. Reference is made elsewhere in this report to the flooding of NPG(NE)'s Brown's Bridge Distribution Substation. Photograph 4 is an aerial view of this Distribution Substation and its immediate surroundings.
52. Photograph 5, taken once it was safe to access NPG(NE)'s Brown's Bridge Distribution Substation, shows the low-voltage fuseboard. The soiling on the upper parts of the centre phase fuseways shows how high the flood water reached.
53. The distance from Boroughbridge to Stockton is approximately 38 miles (61 km), a fact that indicates how widespread this event affected NPG(NE)'s geographic area.
54. An examination of NPG's measurement systems, including dip-stick audits of incidents at the EHV, HV and LV levels confirms that NPG did all it could to restore supplies as expeditiously as possible.
55. The AE concludes that NPG(NE) had done all it could reasonably have been expected to do in preparing for the onset of the severe weather and responded as best it could to the effects of it.

3.2 NPG's performance in mitigating the effects of the event

56. Whilst the examination of NPG(NE)'s incident database shows that there were 34 incidents that affected its higher voltage networks (EHV and HV), by far the greatest number of incidents was at the LV and service levels, with 370 being recorded.
57. NPG(NE)'s distribution system is designed, constructed and maintained to the national security of supply standard P2/6 and complies with good UK practice.
58. Many of the incidents affected underground cables and service terminations which, together with the associated joints, were subjected to the effects of excessive ground movement caused by the flood waters and by the ingress of water.
59. A number of incidents were recorded as being due to the lightning activity that accompanied the severe weather.
60. NPG(NE) was able to manage the event by transferring personnel, mainly jointing teams, from its Yorkshire licensed area and did not need to call on the resources available via the NEWSAC agreement.
61. NPG(NE) also deployed non jointing personnel on advanced spotting duties and temporary restoration work where practicable and safe so to do.
62. The AE concludes that NPG(NE) did all it could to restore supplies as expeditiously as possible, thereby minimising the duration of the interruptions.
63. The AE is pleased to note that Northern Powergrid's review of the event incorporates learning points with which to continuously improve its policies and procedures.

3.3 Recommended performance adjustments

64. The AE's recommendations to Ofgem are shown in Table 3.

Table 3 – Recommended performance adjustments

	Residual amount above threshold	Audit part 2 recommendation
CI	0.00	0.00
CML	1.97	1.97

3.4 Detailed justification

65. In reaching a judgement on a recommendation, the AE has firstly considered whether or not NPG(NE) could have reasonably taken any different course of action that would have resulted in its customers' supplies being affected less than they were.
66. The AE has also considered whether or not NPG(NE) could have restored supplies any more quickly than it did, thus reducing the overall period of the event.

67. In these deliberations, the AE has taken account of the contemporaneous national and international media coverage of this period of weather which pointed to both its abnormality and its severity.
68. The AE considers it is to the credit of NPG(NE)'s preparedness that its personnel were able to deploy temporary flood barriers ahead of the subsequent inundation.
69. Similarly, it is to the credit of NPG(NE)'s personnel that they persevered in getting to work through some of the worst flooding the region has experienced for several decades.
70. In viewing NPG(NE)'s preparedness for this event, the AE has noted that the company invoked its emergency procedures in a timely manner, alerting its personnel to the severe weather forecast and escalating its level of alert according to the changing circumstances during the course of the event.
71. The AE has taken into account the way in which Northern Powergrid moved jointing and other personnel from its Yorkshire licensed area to its Northeast licensed area as soon as it was safe to do so and the requisite skill requirements had been identified.
72. The AE has also taken note of the deployment of a helicopter to aid mobility and the fact that this mode of transport was, itself, unable to move due to the severe weather conditions on the second day of the event.
73. The AE is satisfied that the affected sections of NPG(NE)'s distribution network comply with the requirements of Security of Supply Standard P2/6 and are designed, constructed and maintained to current UK practice.
74. The AE is satisfied that NPG(NE) has met the criteria for preventative and mitigating actions set out in Appendix 4 to paragraph 8.58 of Special Licence Condition CRC 8.
75. The AE therefore concludes that NPG(NE)'s claim is justified and recommends to Ofgem that the amount of residual CML above the threshold value should be excluded from NPG(NE)'s performance for regulatory reporting year 2012/13.

Appendix A - Record of Audit part 1

Table A-1: Appointed Examiner's Information Log

"One-Off" Exceptional Event for Regulatory Reporting Year 2012/13	
Licensed Area	Northern Powergrid (Northeast) [NPG(NE)]
Period of event	24 to 27 September 2012
Cause	Extreme weather accompanied by widespread flooding
Notification to Ofgem	08 October 2012
SoF received	14 November 2012
SoF information	• Extreme weather – rain and strong winds with extensive flooding and some lightning activity. • The event principally affected NPG(NE) – the effects on NPG(Y) were insufficient to reach either residual threshold. • NPG received severe weather warnings to which it reacted appropriately. • Mobility was impossible in some places resulting in restoration times above the DNO's norm. • Several of the DNO's substations were impossible to access for a time. • As many alternative routes as possible to affected places were explored. • Helicopters could not always fly during the severe weather. • Particularly at LV, the number of incidents affecting the DNO's underground cables was much greater than the DNO's daily average. Restoration times were therefore adversely affected. • The DNO invoked its emergency procedures throughout the event. • The DNO used all its available non-jointing personnel on spotting and / or temporary repairs once it was safe to do so. • The DNO moved personnel from its Yorkshire region to the Northeast to assist in restoration – it did not need to contact NEWSAC. • The DNO has followed the precedent set for dealing with this type of event – the AE and the DNO agreed to again use the DPRC 3 process.
Additional pre-visit information provided	Based on the SoF the AE drew up a list of initial questions. These were discussed during the audit visit. This initial list of questions, together with NPG(NE)'s response, is contained in paragraph 39 of the report.
Location of audit visit	NPG(NE)'s Penshaw Control Centre.
Date of audit visit	25 April 2013
Visiting Auditor	Geoff Stott (ep)
NPG(NE)'s Representatives	Roy Barnes, Neil Dunn-Birch, Tony Ingham, Jeremy Meara, and Ian Punshon.

Information provided during and subsequent to the audit visit	Comprehensive documentation / information including:
	• Sight of NPG's commercially confidential review of its policies and procedures.
	• A copy of NPG's confidential, comprehensive internal review of the event.
	• A discussion regarding the extent of the area affected by the event – basically the whole of the DNO's area.
	• A discussion concerning the start and end dates of the event – the DNO's approach and analysis agreed.
	• Confirmation of the above by examining the DNO's incident records.
	• A review of the DNO's calculations regarding its normal (average) incident restorations times.
	• Examination of the severe weather warnings that NPG(NE) received.
	• Sight of Highway Agency reports detailing road closures.
	• The calculations that the DNO has used to determine the average restoration time for reporting year 2011/12.
	• Discussion of NPG(NE)'s incident analyses supporting its claim.
	• Examination of the information provided by NPG(NE), its incident database and its statistical analysis of the preceding reporting year and the event under review shows:
	  o the event started on Monday 24 September 2012 when very heavy and prolonged rain accompanied by strong winds resulting in the flooding that the Met Office had predicted and an increase in the number of incidents affecting NPG(NE)'s distribution network;
	  o as shown in the SoF, the number of incidents affecting NPG(NE)'s distribution networks was above the daily average, particularly at LV;
	  o restoration times were above the daily average due to difficulties in mobility caused by the floods;
	  o once the requisite skills were identified, personnel were transferred from Yorkshire to assist with restoration of supplies;
	  o the event ended on 27 September 2012 when the incident activity returned to its average level, giving an event duration of 4 days;
	  o the average customer interruptions for 4 days of regulatory reporting year 2011/12 is 11,084;
	  o the average customer minutes lost for 4 days of regulatory reporting year 2011/12 is 1,010,119;
	  o the total customer interruptions during the event were 25,609, giving a residual of 14,525 [25,609 - 11,084]; and
	  o the total customer minutes lost during the event were 6,184,444, giving a residual of 5,174,325 [6,184,444 - 1,010,119].
	
	Continued ….

	• using NPG(NE)'s total connected customers of 1,583,627 as at 30 September 2012, the residual customer interruptions occurring during this event equate to a CI of 0.92 [14,525*100/1,583,627]; and • the residual customer minutes lost during this event equate to a CML of 3.27 [5,174,325/1,583,627]. *[**AE's note:** the figures above follow NGP(NE)'s completion of its internal audits – the figures, with which the AE agrees, have changed slightly from those in NPG's SoF].* • the comparison of the residual CI and CML occurring during the event with the corresponding thresholds for NPG(NE) is shown in Table A-2. • Discussed the initial questions; • Discussed post-event learning points; • Confirmed P2/6 compliant; • NPG(NE) provided answers to the initial questions plus additional information both during and subsequent to the audit visit; and • Okay regarding compliance with Appendix 4 of Paragraph 8.58 of CRC 8.

Table A-2: Impact on CI and CML

	CI		CML	
	Claimed	**Audited**	**Claimed**	**Audited**
Residual occurring during the event	0.92	0.92	3.27	3.27
NPG(NE) threshold (total)	1.60		1.30	
Part 1 Exceptionality test	Fail		Pass	
Part 1 Precondition of eligibility (meets App 3 to paragraph 8.57 of CRC 8)	Pass			

NOTE: NPG(NE)'s measurement systems are subject to QoS audits for accuracy of reporting and it is not within the AE's ToR to repeat that work as part of the examination of exceptional event claims, although any consequential adjustments to reporting accuracy will be reflected in Ofgem's final adjudication of reported performance for the regulatory reporting year 2012/13.

Appendix B – NPG(NE)'s photographs

Photograph 1 – Temporary flood barrier around Primary Substation in Bedale

Photograph 2 – Aerial view of the inundation in Bedale

Photograph 3 – Aerial view of the inundation at Boroughbridge

Photograph 4 – Aerial view of Brown's Bridge Distribution Substation, Stockton

Photograph 5 – The low-voltage fusegear at Brown's Bridge Distribution Substation

[***AE's note:*** *the soiling on the upper portions of the centre phase ('yellow' or 'L2') fuseways indicates the height of the inundation].*