



ofgem

energypeople



**Appointed examiner's audit of Exceptional Event Claim -
UK Power Networks (Southeast)
33kV Incident at Newhaven Grid Substation
21 August 2013**



Document Properties


Title: UK Power Networks (Southern) – Audit of Exceptional Event Claim – UKPN (SPN) – Newhaven Grid Substation – 21 August 2013

Reference: ep/Ofgem/SPN/21 Aug '13

Issue: Final report v1.0

Date: 27 May 2015

Authorisation

Name	Position	Signed	Date
Geoff Stott	Ofgem's Appointed Examiner		27 May 2015

History

Issue	Date	Originator	Checker	Description
1.0	27 May 2015	Bill Slegg and Geoff Stott	Mel Brown	Final report incorporating UKPN and Ofgem comments
0.1	23 November 2014	Bill Slegg and Geoff Stott	Mel Brown	Draft version circulated to UKPN and Ofgem for factual checking and comment
0.0	18 September 2014	Geoff Stott	-	Document created from energypeople template

This document has been prepared for the titled project or named part thereof and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authority of energypeople. energypeople accepts no responsibility or liability for the consequences of this document being used for a purpose other than the purposes for which it was commissioned. Any person using or relying on the document for such other purpose agrees, and will, by such use or reliance be taken to confirm his agreement, to indemnify energypeople for all loss or damage resulting therefrom. energypeople accepts no responsibility or liability for this document to any party other than the person by whom it was commissioned. Please note that the information or data prepared by parties other than energypeople which has been reviewed in the preparation of this document has not been independently checked or verified for accuracy by energypeople.

Contents

Glossary.....	4
Summary	5
1. Audit part 1	6
1.1 Summary of the main facts	6
2. Exceptionality requirements.....	9
2.1 Does the event qualify for exclusion	9
2.2 Exceptionality test results	9
3. UKPN's views of its performance	10
3.1 Dealing with the incident	10
3.2 UKPN's answers to questions on its performance	11
4. Audit part 2	14
4.1 UKPN's performance in preventing the event	14
4.2 UKPN's performance in mitigating the effects of the event	15
4.3 Recommended performance adjustments	15
4.4 Detailed justification	15
Appendix A - Record of Audit part 1	17
Appendix B - UKPN's photographs	20

Tables

Table 1 – The number of incidents attributed to the event	9
Table 2 – Summary of exceptionality test results.....	9
Table 3 – Recommended performance adjustments	15

Figure

Figure 1 – Simplified Network Diagram of UKPN's 132/33kV distribution networks affected by the incident.....	8
--	---

UKPN's Photographs

Photograph 1 – The dead sea-bird on the roof of the noise enclosure	20
Photograph 2 – Street-level view of Newhaven Grid Substation.....	21
Photograph 3 – Aerial view of Newhaven Grid Substation taken from "Google Earth"	22

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
QoS	Quality of Service
RIGs	Regulatory Instructions & Guidance
SCADA	Supervisory Control and Data Acquisition
SLD	Single Line Diagram
SoF	Statement of Facts
SPN	UKPN's Southern Power Network licensed area
ToR	Terms of Reference
UKPN	UK Power Networks

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 UK Power Networks (UKPN) under the "one off" exceptional event mechanism that an incident which occurred at its Newhaven Grid Substation at 09:27 on Wednesday 21 August 2013 adversely affected the reported performance for its Southern Power Networks (SPN) licensed area for the reporting year 2013/14.
2. The AE has visited UKPN 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 CI but not CML.
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 UKPN's performance in mitigating the impact of the event upon its customers.
5. The AE concludes that UKPN did all it could to ensure that its number 2 132kV circuit from its Lewes 132kV Substation to Newhaven Grid Substation teed Lewes Grid Substation was as free from defects as possible before the daily outage began on the number 1 circuit.
6. The AE also concludes that UKPN acted appropriately in contacting the personnel involved with the outage of the number 1 132kV circuit and in obtaining an early return to service of this circuit.
7. The AE commends UKPN's control engineers for analysing the alarms generated by the incident and for restoring all supplies as quickly as possible.
8. The AE concludes that UKPN 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.
9. The AE therefore recommends that an adjustment to SPN's 2013/14 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	Number above the threshold	Recommended adjustment
CI	2.76	1.66	1.66
CML	0.21	0.00	0.00



1. Audit part 1

1.1 Summary of the main facts

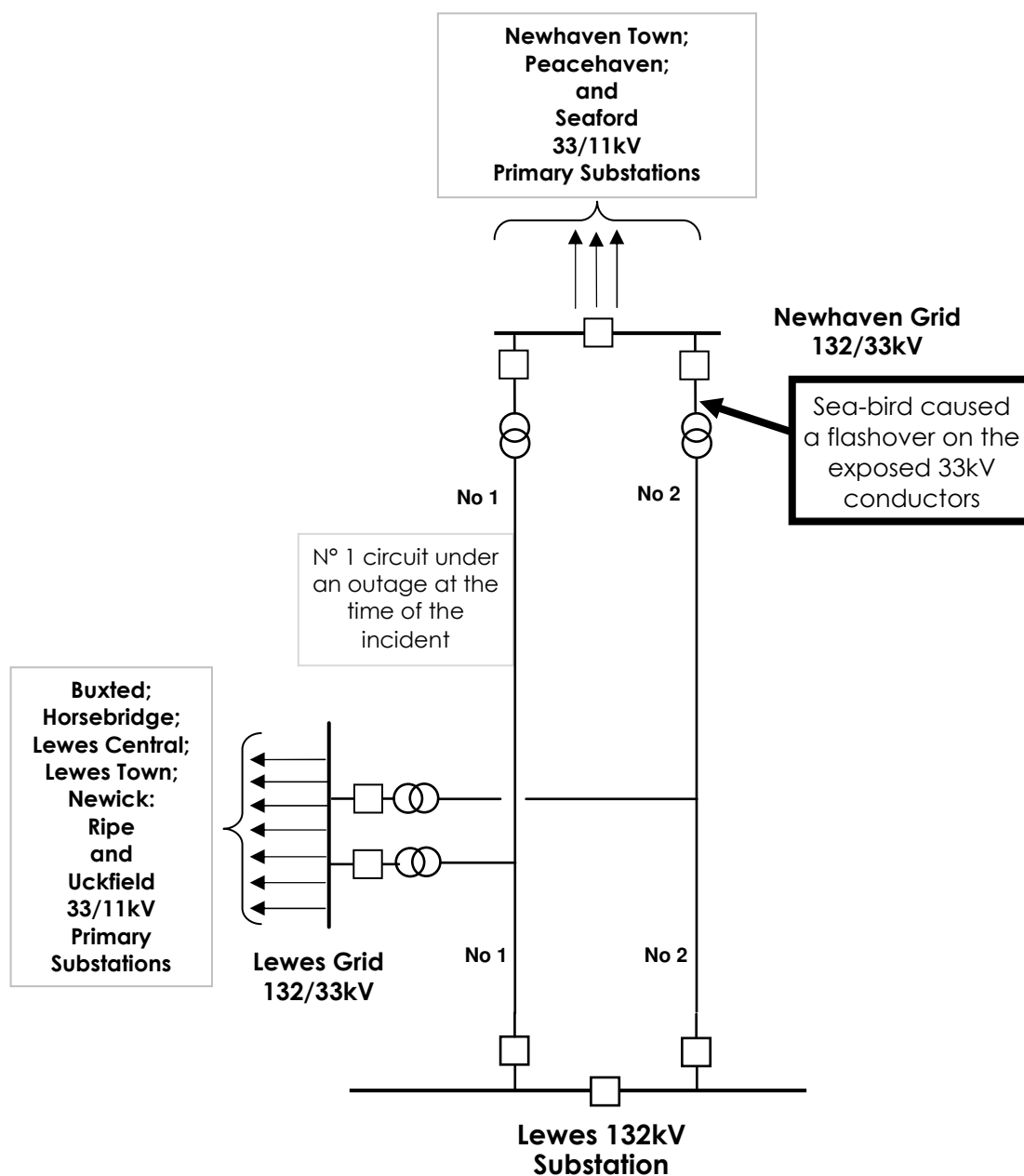
10. The AE's headline information log for this event is set out in Table A-1 at Appendix A. In addition, the following paragraphs summarise the main facts of the event.
11. UKPN has provided photographic evidence to support its claim that a sea-bird precipitated a flashover of the 33kV exposed conductors of its number 2 132/33kV Grid Transformer at its Newhaven Grid Substation.
12. The flashover, which caused no irreparable damage, resulted in the loss of 33kV infeeds to nine of UKPN's 33/11kV Primary Substations, interrupting supplies to 62,394 of UKPN's customers fed from its 132/33kV Lewes and Newhaven Grid Substations.
13. UKPN's protection operated correctly to clear the incident from its distribution network, tripping the 132kV circuit-breaker at Lewes 132kV Substation.
14. Also, a total of 3,953 of UKPN's customers fed from its 33/11kV Buxted and its 33/11kV Peacehaven Primary Substations experienced a short interruption during the time that the auto-changeover at Buxted operated and UKPN's control engineer used tele-switching to provide an alternative 33kV infeed to Peacehaven.
15. UKPN's 132kV distribution system was running abnormally at the time of the incident due to the number 1 circuit from Lewes 132kV Substation to Newhaven Grid Substation feed Lewes Grid Substation being under an outage associated with the installation of bunding around the number 1 132/33kV Grid Transformer at Lewes Grid Substation.
16. This outage, which was for safety clearances during the civil works at Lewes Grid Substation, was operated on a daily basis, the circuit being restored at the end of each working day to provide the maximum security of supply to UKPN's customers.
17. Due to the above outage UKPN's Newhaven and Lewes Grid Substations were running with a single (feed) 132kV infeed at the time of the incident.
18. Prior to the outage of the number 1 132kV circuit, UKPN had surveyed the number 2 132kV circuit to ensure it was free from defects before the outage of the number 1 132kV circuit commenced.
19. Aware that UKPN personnel were working in proximity to the number 1 132kV circuit, UKPN's control engineer had to be assured that the incident on the number 2 132kV circuit was unconnected with their activities.
20. Having spoken to the person in charge of the outage of the number 1 132kV circuit and being assured that the work was in no way connected with the incident, the person in charge of the outage was asked to suspend all work and to make ready to re-energise the number 1 132kV infeed as soon as possible as documented in the 'return to service' provisions of UKPN's outage planning process.
21. During the time it took UKPN personnel to reach Newhaven Grid Substation, UKPN had suspended the outage on the number 1 132kV circuit and re-energised it, thus restoring the infeeds to Lewes and Newhaven Grid Substations and the supplies to the remaining customers affected by the incident.



22. On receipt of the report from UKPN's Newhaven Grid Substation that a dead sea-bird had been found below the 33kV exposed conductors of the number 2 132/33kV Grid Transformer and no permanent damage had been caused to UKPN's equipment, the circuit was re-energised.
23. A simplified view of the sections of UKPN's 132/33kV networks affected by this event is shown in Figure 1.



Figure 1 – Simplified Network Diagram of UKPN's 132/33kV distribution networks affected by the incident



Notes:

1. Only the salient items of switchgear are shown.
2. UKPN's network was running abnormally at the time of the incident, the number 1 132kV infeed to Lewes and Newhaven Grid Substations was under an outage.
3. The automation at Buxted Primary restored supplies within 3 minutes.
4. UKPN's control engineer used tele-controlled switching to restore Peacehaven Primary via an alternative 33kV infeed.
5. The outage was restored to service to restore supplies lost for 3 minutes and over.
6. The outgoing 33kV feeders from Lewes and Newhaven Grid Substations are shown schematically.
7. Following inspection of the exposed 33kV conductors by UKPN's personnel, the number 2 132kV circuit was restored by tele-controlled switching.

2. Exceptionality requirements

2.1 Does the event qualify for exclusion

24. The AE considers that the event falls within the category of an “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.
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.

2.2 Exceptionality test results

26. The number of incidents attributed to the event is shown in Table 1.

Table 1 – The number of incidents attributed to the event

Number of incidents attributed to the event	Claimed number	Audited number
132kV	0	0
EHV	1	1
HV	0	0
LV	0	0
Total	1	1

27. 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	Claimed number	Audited number	Pass / Fail	Amount above threshold
CI exceptionality	1.1	2.76	2.76	Pass	1.66
CML exceptionality	0.9	0.21	0.21	Fail	0.00

Notes:

1. Ofgem's CI and CML exceptionality criteria are set out in the AE's ToR¹.
2. The audited CI and CML used in the exceptionality test have been determined from the number of incidents attributed to the event.
3. Where the event passes either or both the exceptionality thresholds, the amount(s) above the threshold(s) is/are carried forward into the Audit part 2 assessment of DNO 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.

¹ Audits of Electricity Distribution Network Operators' one-off Exceptional Events Claims for 2012/13 to 2014/15



3. UKPN's views of its performance

3.1 Dealing with the incident

28. UKPN's Newhaven 132/33kV Grid Substation is normally supplied via a dual 132kV circuit from its Lewes 132kV Substation.
29. Both of these 132kV circuits have feed connections to provide the 132kV infeeds to UKPN's 132/33kV Lewes Grid Substation.
30. At the time of the incident, the number 1 132kV circuit was under an outage to enable the safe installation of bunding around the number 1 132/33kV Grid Transformer at UKPN's Lewes Grid Substation.
31. Prior to this outage, under its pre-outage checks, UKPN had carried-out a detailed survey of the number 2 132kV circuit.
32. UKPN therefore considers that it did all it could to ensure that the number 2 circuit was free from defects during the outage on the number 1 circuit.
33. Each 132/33kV Grid Transformer at Newhaven Grid substation is surrounded by a noise enclosure, through the rooves of which the 132kV and the 33kV conductors project on porcelain-insulated bushings. The 132kV and the 33kV connections to the two 132/33kV Grid Transformers are via exposed overhead conductors.
34. At 09:27 on 21 August 2013, a flashover on the exposed 33kV conductors associated with the number 2 132/33kV Grid Transformer at Newhaven Grid Substation resulted in the tripping of the controlling circuit-breaker at Lewes 132kV Substation and the consequential loss of 132kV infeeds to UKPN's Lewes and Newhaven Grid Substations.
35. UKPN considers that its protection operated correctly to clear the incident from the system.
36. Newhaven Grid Substation is located in an industrial area some distance from the coast and UKPN has no record of previous incidents of this nature having occurred.
37. UKPN's control engineer contacted the person in charge of the work on the number 1 132kV circuit; agreed a suspension of the proximity working and, using tele-controlled switching, restored it to service at 09:35.
38. UKPN received a report of "an explosion on a tower in new Road Newhaven near the public tip" and UKPN's personnel were dispatched to Newhaven Grid.
39. UKPN's personnel reported the cause of the incident to be a sea-bird precipitating a flashover on the exposed 33kV connections of the number 2 132/33kV Grid Transformer at Newhaven Grid Substation and that there was no permanent damage to UKPN's equipment.
40. UKPN considers that its duty control engineer reacted well in assessing the alarms generated by the event, contacting the personnel connected with the outage of the number 1 132kV circuit and commencing tele-controlled switching of alternative supplies.
41. UKPN also considers that, having confirmed with the personnel involved with the outage of the number 1 132kV circuit, its control engineer did well in re-energising the number 1 circuit and thereby an 132kV infeed to Lewes and Newhaven Grid Substations; thus restoring the supplies to the majority of the affected customers.



42. UKPN also considers its control engineer did well in providing the alternative infeed to Peacehaven Primary Substation within three minutes, i.e. a short interruption.

3.2 UKPN's answers to questions on its performance

43. Within the last three years, the AE has reviewed UKPN's design standards, construction methods and maintenance procedures during previous visits to audit exceptional event claims and found them fit for purpose.
44. The AE confirms that UKPN's emergency procedures provide for the type of event being examined here.
45. To aid understanding of the background to UKPN's Statement of Facts (SoF), the AE prepared a list of initial questions regarding this incident. These questions were used as the basis for the examination of UKPN's claim.
46. The initial questions were discussed during the AE's visit to UKPN's Ipswich Control Centre on 16 September 2014, when the records of UKPN's SCADA system, the incident report and other information were made available.
47. UKPN 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 UKPN's answers being printed in normal font.

Q1. What, if any, changes has SPN made to its emergency plans and procedures since the Appointed Examiner (AE) last visited to audit the exceptional event claim concerning the incident that occurred on 23 June 2010 which affected SPN's customers supplied from its Twickenham Grid Substation?

- A1. Following a review of this incident and the normal review cycle no changes have been made to UK Power Networks' emergency plans or procedures for single 'one-off' events.

Q2. SPN's Statement of Facts (SoF) for this incident on 21 August 2013 indicates that the cause was attributed to a sea-bird causing a flashover of the exposed 33kV conductors at its Newhaven Grid Substation. What photographic evidence is available to support SPN's claim that this was the cause of this incident?

- A2. A photograph of the dead sea-bird was given to the AE during the audit visit. *[AE's note: UKPN's photograph clearly shows the dead sea-bird in relation to the 33kV bushing on top of the noise enclosure].*

Q3. Where was the dead seabird found?

- A3. The dead sea-bird was found directly below the yellow-phase 33kV overhead conductor on the noise enclosure of the number 2 132/33kV transformer at Newhaven Grid substation.

Q4. What is SPN's experience of incidents caused by seabirds at its Newhaven Grid Substation and other substations in similar locations?

- A4. There are no previous incidents caused by sea-birds at this location and, as shown in the photograph, the bird in question was very large

**Q5. What protection schemes are installed on:****a. The 132kV circuit-breakers at Lewes Grid Substation?**

A5(a). Details of the protection schemes will be provided during the AE's visit.

b. The 33kV sides of Grid Transformers 1 and 2 at Lewes Grid Substation?

A5(b). Details of the protection schemes will be provided during the AE's visit.

c. The 33kV bus-section circuit-breaker at Lewes Grid Substation?

A5(c). Details of the protection schemes will be provided during the AE's visit.

d. The 33kV sides of Grid Transformers 1 and 2 at Newhaven Grid Substation?

A5(d). Details of the protection schemes will be provided during the AE's visit.

and

e. The 33kV bus-section circuit-breaker at Newhaven Grid Substation?

A5(e). Details of the protection schemes will be provided during the AE's visit.

Q6. What settings are applied to the above protection schemes?

A6. Details of the protection settings will be provided during the AE's visit.

Q7. What protection operated when supply was lost?

A7. Details of the protection that operated will be provided during the AE's visit.

Q8. What learning points has SPN incorporated into its procedures as a result of this incident?

A8. From the evidence gathered from site and the lack of previous incidents of this type it was concluded that anti vermin guards would not add to the protection at the site and, as they themselves can in the long term have a detrimental effect on network performance, no further action has been taken at this time.

Q9. What further learning points should be considered as a result of the application of the current one-off Exceptional Event Claims process?

A9. Just one observation: whilst we understand there has been a lot of activity regarding weather-related events in 2013 it is always better to review claims as close to the event as possible as it makes it easier to retrieve any additional information requested by Ofgem's AE.

48. During the discussion of this claim it was concluded that a visit to UKPN's Newhaven Grid Substation would be unnecessary; the AE was satisfied with UKPN's date-stamped audit trail and UKPN's photographic evidence. Also, "Google Maps" provided sufficient site information to enable the AE to make a judgement on the location and layout of UKPN's Newhaven Grid Substation.

49. UKPN also provided further information both during and subsequent to the audit visit. This includes:

- Information to show that the affected section of UKPN's network is P2/6 compliant;
- Information to show that; prior to the current incident, UKPN's Newhaven Grid Substation has been free from incidents due to this cause;
- UKPN's photographs of the dead sea-bird and the general layout of its Newhaven Grid Substation;
- UKPN's control room log for this incident;



- UKPN's incident report from which it calculated the CI and CML attributed to this incident;
- The details of UKPN's SCADA alarms received during this incident;
- A representation of the incident on UKPN's SCADA system; and
- Copies of UKPN's protection schemes and associated relay settings for its 132kV and 33kV feeders affected by this event.



4. Audit part 2

4.1 UKPN's performance in preventing the event

50. In viewing UKPN's performance in preventing this Incident, the AE has considered what more UKPN could have reasonably been expected to have done to ensure that its 33kV equipment at Newhaven Grid Substation was safeguarded from the effects of third party interference and such things as the larger sizes of bird and windborne materials.
51. This is particularly relevant as UKPN has no records of a similar incident having occurred previously.
52. The AE has discussed UKPN's policy on its preventative measures and the AE considers that the measures applied are in accordance with good UK practice.
53. Images from "Google Maps" dating before the incident show UKPN's Newhaven Grid Substation to be surrounded by an 'unclimbable' palisade fence in accordance with accepted UK practice for this type of substation. The fence is in good condition and carries statutory warning notices.
54. UKPN's photograph 1, taken at the time of the incident shows the dead sea-bird below the 33kV exposed conductors on the roof of the noise enclosure surrounding the number 2 132/33kV Grid Transformer at Newhaven Grid Substation.
55. UKPN's photograph 2 shows the street-level view of Newhaven Grid Substation with the noise-enclosures and projecting bushings visible beyond the 'unclimbable' palisade fencing.
56. A general view of Newhaven Grid Substation can be gauged from UKPN's photograph 3, taken from "Google Earth".
57. UKPN's measurement systems clearly show the tripping of the number 2 132kV Lewes Grid Substation feed Newhaven Grid Substation circuit-breaker at Lewes 132kV at 09:27 on 21 August 2013.
58. UKPN's measurement systems also confirm the auto-changeover of the 33kV infeeds to Buxted Primary substation and the tele-controlled switching to provide the alternative 33kV infeed to Peacehaven Primary Substation; both within three minutes, resulting in short interruptions to the affected customers.
59. UKPN's measurement systems also confirm the restoration of the number 1 132kV circuit from Lewes 132kV Substation to Lewes Grid Substation feed Newhaven Grid Substation and the consequential restoration of supplies to the remaining customers at 09:35 on 21 August 2013.
60. An examination of UKPN's measurement systems and a SCADA representation of its distribution network confirm that UKPN did all it could to restore supplies as expeditiously as possible.



61. The AE concludes that, prior to this incident occurring, UKPN had done all it could reasonably have been expected to do in considering that its outdoor 33kV equipment at its Newhaven Grid Substation was protected from the effects of third party interference, windborne material and large birds in accordance with accepted good practice within the UK electricity supply industry.

4.2 UKPN's performance in mitigating the effects of the event

62. The dead sea-bird found below the exposed 33kV conductors is consistent with an electric arc having occurred and with the operation of overcurrent relays that detected a flashover of the 33kV conductors within the protection zone of the 132/33kV Grid Transformer which, in turn, inter-tripped the number 2 132kV circuit-breaker at Lewes 132kV Substation.
63. The AE has studied the running arrangements of UKPN's 132/33kV distribution network supplying its Newhaven Grid Substation and concludes that UKPN's protection systems worked correctly to clear the incident from UKPN's distribution system.
64. The AE commends UKPN's control engineers for analysing the situation, contacting UKPN's person in charge of the outage on the number 1 circuit and for restoring supplies as rapidly as possible, thereby minimising the duration of the interruption.

4.3 Recommended performance adjustments

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

Table 3 – Recommended performance adjustments

	Amount above threshold	Audit part 2 recommendation
CI	1.66	1.66
CML	0	0

4.4 Detailed justification

66. In reaching a judgement on a recommendation, the AE has firstly considered whether or not UKPN could have reasonably taken any different course of action that would have prevented the sea-bird from precipitating a 33kV flashover at its Newhaven Grid Substation.
67. In viewing UKPN's performance in preventing this event, the AE has taken into account his personal knowledge of the United Kingdom's distribution system practice and that of his colleagues who have considerable operational experience of incidents due to many causes.
68. The AE notes that UKPN has no previous records of incidents of this type at its Newhaven Grid Substation and that it therefore had no cause to consider any additional preventative measures other than those consistent with good UK practice.



69. The AE is satisfied that UKPN took all reasonable steps to ensure its number 2 132kV circuit between Lewes 132kV Substation and Lewes Grid Substation feed Newhaven Grid Substation was as free from defects as possible before the outage began on the number 1 circuit.
70. The AE considers that UKPN was mindful of maximising the security of supplies to its customers by restoring the number 1 132kV circuit at the end of each working day.
71. In considering UKPN's restoration strategy, the AE is conscious that UKPN's duty control engineer acted with commendable skill and speed in analysing the SCADA alarms and indications generated by this incident; contacting UKPN's personnel on site at Lewes Grid Substation and restoring supplies as rapidly as possible.
72. The AE is satisfied that UKPN's distribution network supplying its Lewes and Newhaven Grid Substation complies with the requirements of Security of Supply Standard P2/6 (106.5 MVA firm).
73. The Appointed Examiner therefore concludes that UKPN's claim is justified and recommends to Ofgem that the amount of CI above the threshold values should be excluded from SPN's performance for reporting year 2013/14.



Appendix A - Record of Audit part 1

Table A-1: Appointed Examiner's Information Log

"One-Off" Exceptional Event	Reporting Year 2011/12
Licensed Area	UKPN (SPN)
Date of event	21 August 2013
Cause	Flashover of exposed 33kV conductors caused by a large sea-bird
Notification to Ofgem	22 August 2013
SoF received	30 April 2014
SoF information	<ul style="list-style-type: none"> The n° 1 132kV circuit from Lewes 132kV to Lewes Grid feed Newhaven Grid was under a daily outage for proximity working associated with the installation of bunding around the number 1 132kV Grid Transformer at Lewes Grid; Prior to this outage the n° 2 circuit had been surveyed and declared 'okay'; Thus at the time of the incident Lewes and Newhaven Grids, were on a single (feed) 132kV circuit infeed; At 09:27 on Wednesday 21 August 2013 the 132kV circuit-breaker at Lewes 132kV Substation operated on the n° 2 Lewes Grid feed Newhaven Grid ; Supplies to 8 of UKPN's 33/11kV Primary Substations fed from Lewes and Newhaven Grids were interrupted (62,394 customers); The system automation at Buxted Primary switched-in alternative supplies and the control engineer used tele-controlled switching to provide alternative supplies to Peacehaven. Both of these were within 3 minutes (Sis). They affected a total of 3,953 of UKPN's customers; The person in charge of the outage on the n°1 circuit was contacted – 'all okay with the work' - it was agreed to restore that circuit – and this was done via tele-controlled switching at 09:35, the number 1 33kV circuit-breakers at Lewes and Newhaven Primaries were also closed at 09:35, thus restoring all supplies; UKPN personnel were sent to Newhaven Grid and reported a dead sea-bird on the roof of the noise enclosure below the exposed 33kV connections of the n° 2 132/33kV Grid Transformer; and UKPN's personnel also confirmed no permanent damage - the Grid Transformer was safe to re-energise.
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 UKPN's responses, is contained in paragraph 47 of the report.
Location of audit visit	UKPN's Ipswich Control Centre
Date of audit visit	16 September 2014
Visiting Auditor	Geoff Stott (ep)



UKPN's Representatives	Bill D'Albertanson and John Gudger.
Information provided during and subsequent to the audit visit	<p>Comprehensive documentation / information including:</p> <ul style="list-style-type: none"> • A discussion of the protection arrangements on UKPN's Lewes 132kV to Lewes Grid feed Newhaven Grid 132kV circuits; • The settings applied to the above protection schemes; • A copy of UKPN's switching programme for the incident which shows the loss of supplies from UKPN's Lewes and Newhaven Grids at 09:27 on 21 August 2013; • It also shows, the auto-changeover at Buxted Primary and the tele-controlled changeover switching to put Peacehaven primary on an alternative 33kV infeed within 3 minutes; • Sight of UKPN's switching programmes showing the restoration of the supplies from Lewes and Newhaven Grids at 09:35 on 21 August 2013; • Copies of the relevant 132kV and 33kV SLDs; • Sight of the printout from UKPN's SCADA system that shows the alarms generated by the event; • A copy of UKPN's incident report that shows: <ul style="list-style-type: none"> ◦ the number of customers affected by the incident to be 62,394; and ◦ the customer minutes lost due to the incident to be 471,839; • The AE confirms that these figures agree with those quoted in UKPN's SoF; • Using SPN's total connected customers at 30 September 2013 of 2,262,882 the number of customers affected equates to a CI of 2.76 $[62,394 \times 100 / 2,262,882]$ • Similarly, the customer minutes lost for this event equate to a CML of 0.21 $[471,839 / 2,262,882]$; • UKPN's photographs of the area of the 33kV compound at the point of damage, together with "Google Maps" views showing Newhaven Grid Substation's surrounding compound fence; • No need to visit Newhaven Grid Substation to clarify anything; • Discussed post-fault learning points, including anything to affect the UKPN's future policy on shrouding bushings; • Confirmed P2/6 compliant (106.5 MVA firm (winter)); • UKPN 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	
Voltage (DNO's incident reference)	Claimed	Audited	Claimed	Audited
132kV	0	0	0	0
EHV (F-11164-o)	2.76	2.76	0.21	0.21
HV	0	0	0	0
LV	0	0	0	0
Total	2.76	2.76	0.21	0.21
UKPN (SPN) Threshold (total)	1.1		0.9	
Part 1 Exceptionality Test	Pass		Fail	
Part 1 Precondition of eligibility (meets App 3 to paragraph 8.57 of CRC 8)	Pass			

NOTE: UKPN'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 2013/14.



Appendix B - UKPN's photographs

Photograph 1 – The dead sea-bird on the roof of the noise enclosure





Photograph 2 – Street-level view of Newhaven Grid Substation





Photograph 3 – Aerial view of Newhaven Grid Substation taken from “Google Earth”

