

Quality of Service Incentive Scheme – Exceptional Events

Appointed Examiner's Report	
Reporting year	2010/11
DNO	ENWL
Cause	Theft of 132/33kV Grid Transformer components
Date of event	27 October 2010

Submitted to:

Ofgem

Submitted by:

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Glossary

AE	Appointed Examiner
BPI	British Power International
BSP	Bulk Supply Point
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
ENWL	Electricity North West Limited
HV	High Voltage – all voltages above 1kV up to and including 20kV
IIS	Information and Incentives Scheme
NG	National Grid
QoS	Quality of Service
RIGs	Regulatory Instructions and Guidance
SCADA	System Control and Data Acquisition
SoF	Statement of Facts
ToR	Terms of Reference

Note:

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

Ofgem has appointed British Power International Limited (the Appointed Examiner) to audit the submission made by Electricity North West Limited (ENWL) under the “one-off” exceptional event mechanism that theft of components from its 132/33kV transformers at its Wigan Grid Substation on Wednesday, 27 October 2010 materially and adversely affected its reported performance for the reporting year 2010/11.

The Appointed Examiner (AE) has visited ENWL 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.

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.

The AE therefore proceeded to part 2 of the “one-off” exceptional event process, assessing ENWL’s performance in mitigating the impact of the event upon its customers.

The AE also concludes that ENWL had taken steps beyond normal UK practice to safeguard its Wigan Grid Substation from attack by thieves.

The AE concludes that ENWL restored its customers’ supplies without delay.

The AE further concludes that ENWL’s personnel acted with due diligence to source and fit replacement drain cocks and to refill the two transformers so as to restore security of supply to ENWL’s customers as quickly as possible.

The AE concludes that ENWL had met the criteria of Appendix 4 to paragraph 8.58 of Special Licence Condition CRC 8 and that the incident is therefore deemed to be eligible for adjustment in the DNO’s reported performance.

The AE therefore recommends that an adjustment to ENWL’s 2010/11 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	2.34	1.24	1.24
CML	0.46	0	0

1. Audit part 1

Summary of main facts

- 1.1 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.
- 1.2 ENWL has furnished evidence to support its claim that theft of the oil drain cocks from its two 132/33kV transformers at Wigan Grid Substation led to the loss of the oil from within the transformer casings and their associated cooling banks.
- 1.3 The loss of oil resulted in a Buchholz alarm from the number one transformer (GT1) and ENWL's control engineer requested duty standby personnel to attend site.
- 1.4 Good practice is to de-energise a transformer that has sent a Buchholz alarm to prevent potential catastrophic failure and ENWL's control engineer was in the process of so doing when transformer number 2 (GT2) sent a Buchholz alarm, followed by the circuit tripping a short time later.
- 1.5 The protection operated correctly to auto-isolate GT2 at Wigan Grid Substation and to re-energise GT2 at ENWL's Skelmersdale Grid Substation from National Grid's (NG) infeed at Washway Farm.
- 1.6 ENWL's personnel reported from site that the bunds around both transformers were full of oil; that GT1 was still energised and, to safeguard it, it should be switched out without delay.
- 1.7 They also reported that earthing conductors had been stolen from various structures within the Substation site.
- 1.8 To prevent catastrophic failure resulting from any electric arcing due to tap changing, GT1 was placed on fixed tap and ENWL's control engineer de-energised it via tele-controlled switching, thus de-energising the 33kV busbars at Wigan Grid Substation and disconnecting supplies to six of ENWL's Primary Substations.
- 1.9 ENWL's control engineer commenced tele-controlled switching to restore supplies from alternative sources via interconnections in ENWL's 33kV network. Care was taken during the restoration to avoid overloading any of the alternative sources and to keep a major customer connected to ENWL's 6.6kV Kitt Green Primary Substation fully apprised of the situation throughout.
- 1.10 55,100 of ENWL's customers' supplies were interrupted for periods of between ten and sixty eight minutes.
- 1.11 A simplified view of the section of ENWL's 132/33kV network affected by this event is shown in Figure 1.

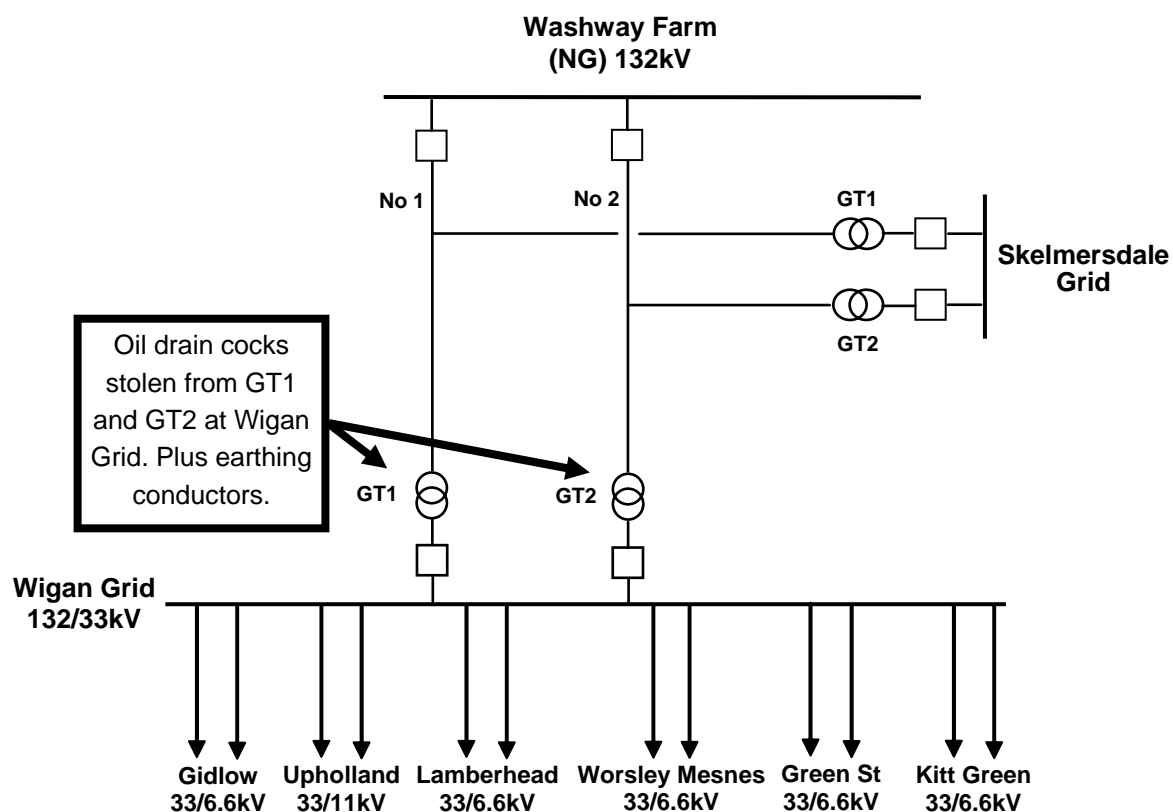


Figure 1 – Simplified Network Diagram of ENWL’s 132/33kV distribution network affected by the incident

Notes:

1. ENWL’s distribution system affected by this incident was running normally at the time of the incident.
2. All supplies were restored via tele-controlled switching from ENWL’s 33kV network.
3. For clarity, only the salient items of switchgear are shown.
4. ENWL supplies a major high voltage customer from its Kitt Green Primary Substation.
5. Part of Green Street Primary Substation is fed from an alternative source so not all customers supplied from there were affected by the incident.

Exceptionality requirements

Does the event qualify for exclusion?

- 1.12 The AE considers that the event falls within the category of an “other event” as described in paragraph 8.57 of Special Licence Condition CRC 8, and meets the exceptionality requirements set out in Appendix 3 thereof.
- 1.13 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.

Exceptionality test results

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

Table 1-1: Number of incidents attributed to the event

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

1.15 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 1-2.

Table 1-2: Summary of exceptionality test results

Test	Threshold	Claimed number	Audited number	Pass / Fail	Amount above threshold
CI exceptionality	1.1	2.34	2.34	Pass	1.24
CML exceptionality	0.8	0.46	0.46	Fail	0

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 threshold 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 2010/11

ENWL's views of its performance

- 1.16 ENWL has a robust, commercially confidential approach towards the security of its sites. The policy details the various degrees of security risk and the associated preventative measures that ENWL applies. *[AE's note: The AE has seen ENWL's risk assessment policy. ENWL does not wish the inherent security arrangements of its policy to become public knowledge – hence the commercially confidential classification].*
- 1.17 ENWL is satisfied that its enhanced security policy was fully applied prior to the theft of the oil drain cocks from GT1 and GT2 and the earthing conductors from its Wigan Grid Substation.
- 1.18 ENWL is pleased to note that its standby personnel immediately fixed the taps on GT1 at Wigan Grid so as to prevent any arcing from the tap changer causing catastrophic failure within the empty transformer / tap-changer casing.
- 1.19 In accordance with good engineering practice, it was essential to immediately de-energise GT1 at Wigan Grid Substation which ENWL's control engineer completed via tele-controlled switching.
- 1.20 ENWL's control engineer then used tele-controlled switching to restore supplies to the six affected Primary Substations.
- 1.21 ENWL considers that the protection applied to its Washway Farm to Wigan Grid teed Skelmersdale Grid n° 2 132kV feeder operated correctly in response to the Buchholz alarm from GT2 at Wigan Grid Substation.
- 1.22 ENWL has determined the cause of the mal-operation (i.e. failure to trip) of the Buchholz relay on GT1 at Wigan Grid Substation and has put in place a cure to prevent a reoccurrence here and elsewhere.
- 1.23 ENWL considers that its duty control engineers reacted well in assessing the alarms generated by the event, contacting ENWL's standby personnel, beginning to restore supplies in ten minutes, carefully monitoring the system loadings and completing supply restoration within sixty eight minutes.
- 1.24 During the whole time, ENWL's control engineers kept in close touch with a major customer affected by the supply interruption, for which the major customer was most grateful.
- 1.25 ENWL also considers that its engineering team did well in sourcing and installing replacement drain cocks, re-processing a considerable quantity of oil and restoring GT2 to service within 23 hours of it having tripped.

ENWL's answers to questions on its performance

- 1.26 Within the last four years, the AE has reviewed ENWL's design standards, construction methods and maintenance procedures during previous visits to audit exceptional event claims and found them fit for purpose.

- 1.27 ENWL's SoF indicates that it has examined the engineering implications of this incident and is actively reviewing the security measures at all its Grid Substations.
- 1.28 As part of the audit of this claim, the AE therefore included a discussion on how far ENWL had progressed in its deliberations. Whilst much of ENWL's post-event activity is commercially confidential, the company has made public the fact that it has placed Wigan Grid Substation on its high risk register. *[AE's note: The AE understands that the electric fence at Wigan Grid Substation was installed as a virtual 'blanket coverage' at the time that the National Grid installed similar equipment at its Grid Substation sites. Therefore, no individual site risk assessments were carried out in conjunction with this work].*
- 1.29 The AE confirms that ENWL's emergency procedures provide for the type of event being examined here.
- 1.30 To aid understanding of the background to ENWL's SoF, the AE prepared a list of initial questions regarding this incident. These questions were used as the basis for the examination of ENWL's claim.
- 1.31 The initial questions were discussed during the AE's visit to ENWL's Manchester Control Centre on 22 June 2011, when the records of ENWL's SCADA system, the incident report and other information were made available.
- 1.32 The initial questions were also discussed during the AE's visit to ENWL's Wigan Grid Substation on 23 June 2011, when the details of the site security and the details of the site inspection reports both pre and post the incident were discussed.
- 1.33 ENWL 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 ENWL's answers being printed in normal font.

Q1. BPI last visited the erstwhile UUES on 15 March 2007 to audit an exceptional event claim. What changes, if any, has ENWL made to its emergency plans and procedures since that audit visit to UUES?

- A1. ENWL's Incident Plan (Code of Practice 604) is currently being redrafted, largely to take account of the change in ownership of the company, the change of DTI to DECC, an update of contact details and the inclusion of flood plans which have been developed in conjunction with the Environment Agency. The incident that occurred in 2007 was already catered for in the Incident Plan, as was the response to the loss of a major site like Wigan.

In terms of specific contingency planning at Wigan, other than the inherent system security and the default restoration plans for the loss of the site, nothing specific was prepared as the system was running normally at the time of the event, with both Grid Transformers in full service.

Q2. ENWL's Statement of Facts (SoF) for the incident indicates that the supply to a major customer connected to ENWL's 6.6kV Kitt Green Primary Substation was fully restored 'sometime after 15:34 on 01 November', i.e. following the restoration of GT1. The SoF also states that Wigan GT2 was 'placed on load at 20:52 on 28 October'. What was the reason for the delay in restoring full supply to this major customer?

- A2. At 23:44 on 28 October Kitt Green primary substation was restored to full capacity. A major customer connected to Kitt Green Primary Substation has 4 directly fed feeders and at this point full capacity was restored. There was therefore no delay in restoring full capacity to this customer.

Regular dialogue was maintained with the major customer throughout the supply restoration process and the return to service of GT2 in order to ensure that the sensitive production processes that it operates would not be affected by any switching operations that were undertaken. Given the nature of the production processes of this major customer, it is common practice for ENWL in terms of managing a relationship with a major customer.

Wigan GT2 was placed on load at 20:52 on 28 October, but load was transferred to GT2 in a controlled manner to avoid a re-trip as a consequence of gassing, which can occur after transformer oil changes. At 12:01 on 29 October, Wigan Grid was returned to normal running arrangements and the major customer was informed that we had finished our restoration works and that we no longer needed to continue dialogue with respect to its production.

Q3. Regarding the electric fence at Wigan Grid Substation:

Unfortunately we have been unable to locate any specific records regarding the installation of the electric fence at Wigan. The absence of this information has made it difficult to answer some of the following questions:

a. what was the reasoning behind it being installed?

- A3(a). The specific reasons for the installation of the electric fence are not known. Its installation is likely to have formed part of a wider programme of deployment of such devices at Grid Supply Points throughout the region.

b. when was it installed?

- A3(b). Again, the absence of specific records means that an exact answer cannot be offered. However, engineers with local knowledge have estimated its year of installation to be circa 1990.

c. what type is it? (e.g. solid wire or electronic beam)?

- A3(c). It is a solid wire electric fence.

d. what warning notices were deployed to alert people of its presence?

- A3(d). There are warning signs on the compound gates alerting people of the need to turn off the electric fence before entering and the wires of the electric fence itself carry warning signs as to its electrified nature.

e. what was the frequency of inspection and testing of it, and any other anti-intruder device(s), prior to the incident?

- A3(e). Grid Substations of the types at Wigan are inspected every 3 months during which a visual inspection of the security arrangements is required.

[AE's note: during the AE's site visit, the palisade panel that was replaced following the intrusion is evident, as are the repairs to the wires of the electric fence.

At ENWL's Wigan Grid Substation there is a visual indication that the electric fence is operational – this is checked during every substation inspection, as are the physical integrity of the palisade fencing and the wires of the electric fence].

Q4. What are / were the running conditions of ENWL's 33kV network associated with Wigan Grid Substation:**a. in its 'normal' mode;**

A4(a). GT1 and GT2 in parallel fed at 132kV from NG's Washway Farm Substation, both feeders teed to Skelmersdale Grid Substation.

33kV busbars run with bus-section closed and with a Grid T/F on each side.

b. at the time of the incident;

A4(b). Wigan Grid was running normal at the time of the incident.

c. if it was abnormal at the time of the incident, for what reason(s) and over what period of time this had been the case?

A4(c). Not applicable.

Q5. What was the restoration strategy adopted by ENWL, including any loading restrictions in addition to that reported in ENWL's SoF?

A5. The restoration strategy was to restore all customers via the 33kV interconnections from Skelmersdale, Wrightington, Golborne, Westhoughton and Atherton Bulk Supply Points BSPs. Wigan BSP has a high level of interconnectivity providing a high level of restoration. The 33kV circuits providing emergency restoration were loaded up to their maximum permissible ratings.

Kitt Green and Lamberhead Primary Substations were restored from Skelmersdale BSP via the AM Paper / Pimbo 33kV circuit, limited to 356A/450A by the Upholland to Lamberhead 33kV circuit. This limitation did not, however, prevent full restoration of supply to all affected customers.

Q6. Since the submission of its SoF, what learning points has ENWL incorporated into its policies and procedures as a result of this incident?

A6. ENWL is continuously reviewing its policies and procedures in the light of known events both within ENWL and the wider industry. As per the information provided to the AE during the audit visits, ENWL is developing enhanced test regimes for its security devices.

Q7. What further learning points should be considered as a result of the application of the "one-off" Exceptional Event Claims process?

A7. Whilst this event has been fairly straightforward to explain and replay, it would be beneficial to all concerned if the audit could be conducted closer to the actual event taking place and wherever possible within the same reporting year.

Whilst the information and evidence that the AE wanted to see could largely be assumed, it was helpful to receive a list of points to be covered in advance of the visit.

1.34 ENWL also provided further information during the audit visits. This includes:

- sight of the most recent substation inspection reports for Wigan Grid Substation;
- a confidential discussion regarding ENWL's review of its current practice for the testing of its electric fences and associated alarms with a view to enhancing the regime;
- a copy of ENWL's control room log;

- copies of ENWL's SCADA alarms received during this incident;
- a representation of the incident on ENWL's 'CRMS' system in planning mode;
- a simplified SLD of the relevant sections of ENWLs 33 kV network showing all the Primary Substations affected by the loss of supply during this incident; and
- ENWL's incident report from which it calculated the CI and CML attributed to the event.

2. Audit part 2

ENWL's performance in preventing the event

- 2.1 In viewing ENWL's performance in preventing this event, the AE has considered what more ENWL could have reasonably done to ensure that its equipment at Wigan Grid Substation was safeguarded from theft.
- 2.2 The AE has discussed the history of this Substation with ENWL and is satisfied that there is no previous history of incidents of this nature.
- 2.3 ENWL's incident report clearly states the situation regarding the evidence of theft and the cause of the interruption to be the loss of oil. *[AE's note: the incident start time is the time at which GT1 was de-energised].*
- 2.4 The palisade fence surrounding Wigan Grid Substation is of the 'unclimbable' type and complies with the statutory minimum height of 2.4 metres. The historic national guidance on further measures had long been implemented. E.g. preventing the locking arrangements of the compound gates providing footholds and the maximum gap between fixed parts being 100 millimetres.
- 2.5 Statutory notices are clearly displayed on the outside of the palisade fencing and gates as shown in the AE's photograph 1 of the general view from the access road.
- 2.6 In addition, there is an open-wire electric fence around the whole of the inside of the palisade fencing and around the roof of the 33kV switchroom where it abuts the compound.
- 2.7 The horizontal spacing of the wires of the electric fence is approximately 100 mm and the fence stretches from ground level to above the top of the palisade fencing.
- 2.8 There are warning signs, visible from the outside of the Grid Substation, to alert people to the presence of the electric fence as shown in the AE's photograph 2. *[AE's note: this photograph also shows the electric fence over topping the palisade fence]*
- 2.9 There are also warning signs on the outside of the Substation alerting people to the fact that equipment within the Grid Substation has been treated with the "Smartwater" detection fluid as shown in the AE's photograph 3.
- 2.10 A general view of the location of ENWL's Wigan Grid Substation is shown in the AE's photograph 4.
- 2.11 ENWL's measurement systems confirm the tripping of GT2 at 22:06 and the de-energising of GT1 at 22:36 on 27 October 2010, both as reported in ENWL's SoF.
- 2.12 ENWL's measurement systems also confirm the restoration times of the supplies to its customers fed from the six affected Primary Substations via tele-controlled switching.

- 2.13 An examination of ENWL's confidential documentation demonstrates its pro-active approach to safeguarding its assets from third party interference, an outward manifestation of this being the security arrangements in place at its Wigan Grid Substation.
- 2.14 ENWL's documentation also shows that there were no known indications that its Wigan Grid Substation had been subjected to a previously unsuccessful attempt at unlawful entry and / or theft.
- 2.15 The AE concludes that ENWL had done all it could reasonably have been expected to do in considering that its equipment at Wigan Grid Substation was safeguarded from third party depredation.

ENWL's performance in mitigating the effects of the event

- 2.16 ENWL's incident report shows the cause of the incident to be "wilful or accidental contact, damage, interference or theft" and is annotated with the site report that valves and plates had to be replaced and the Grid Transformer had to be refilled with oil.
- 2.17 ENWL has a very pro-active approach to site security as amply demonstrated during the audit of this claim.
- 2.18 Whilst the answers to some of the AE's questions are lost in time, the anecdotal evidence provided indicates that ENWL's predecessors introduced very high standards of security some years ago and that ENWL is adding further refinements.
- 2.19 The actions of ENWL's standby personnel and its control engineers resulted in the restoration of customers' supplies without delay.
- 2.20 ENWL's control engineers' careful restoration of customers' supplies ensured that no network component was overloaded which could have resulted in further loss of supplies.
- 2.21 The AE has discussed the running arrangements and protection schemes associated with the affected sections of ENWL's distribution network with ENWL's engineering personnel.
- 2.22 The examination of the protection arrangements on the 132 kV feeders from Washway Farm to Wigan Grid teed Skelmersdale Grid shows that ENWL's protection schemes are appropriate for this type of feeder.
- 2.23 Whilst feeder n° 2 tripped correctly, a problem with the Buchholz equipment on GT1 at Wigan Grid Substation prevented the circuit from tripping. ENWL has identified the problem and has effected a cure.
- 2.24 The AE concludes that ENWL did all it could to restore supplies as expeditiously as possible, thereby minimising the duration of the interruption.
- 2.25 The AE commends ENWL's control engineers in analysing the situation, contacting the major customer affected by the incident and liaising constantly throughout the restoration process.

- 2.26 The AE further commends ENWL’s standby personnel for their actions in fixing the taps on GT1 to prevent its catastrophic failure.
- 2.27 The AE also commends ENWL’s personnel who were involved in the sourcing and fitting of the replacement parts, refilling and re-energising GT2 within 23 hours of it having tripped, thereby restoring the system security as rapidly as possible.
- 2.28 The AE is pleased to note that ENWL continues to learn from this incident and is reviewing its practices with a view to putting in place commercially confidential measures to further enhance the security arrangements of its Wigan Grid Substation in addition to having already placed the Substation on its high-risk register. **[AE’s note: it is understood that ENWL intends to introduce the enhanced arrangements at all its similarly equipped substations].**

Recommended performance adjustment(s)

- 2.29 The AE's recommendations to Ofgem are shown in Table 2-1.

Table 2-1: Audit part 2 recommended adjustment(s)

	Amount above threshold	Audit part 2 recommendation
CI	1.24	1.24
CML	0	0

Detailed justification

- 2.30 In reaching a judgement on a recommendation, the AE has firstly considered whether or not ENWL could have reasonably taken any different course of action that would have prevented thieves accessing the compound at its Wigan Grid Substation.
- 2.31 In viewing ENWL’s performance in preventing this event, the AE has taken into account that, notwithstanding the lack of any previous incidents of this type at Wigan Grid Substation, the standard of the security arrangements in place is greater than the statutory requirements of a 2.4 m high ‘unclimbable’ palisade fence with statutory danger notices. **[AE’s note: Subsequent to this incident, ENWL has put in place additional security measures as detailed in its SoF. For reasons of confidentiality, these are not repeated here].**
- 2.32 The AE commends ENWL for its demonstrably pro-active approach to safeguarding its assets and thereby the security of supplies to its customers.
- 2.33 The AE has taken into account ENWL’s commercially confidential deliberations and further actions it has taken to prevent, as far as possible, any further intrusion by thieves.

- 2.34 The AE has also discussed this incident with his colleagues who have considerable operational experience of incidents with many differing causes. In this case they agree with the visiting examiner in that the security measures at Wigan Grid Substation exceed the industry norm, the reasons for which, until this incident occurred, are unknown.
- 2.35 The AE considers that the preventative measures employed by ENWL at its Wigan Grid Substation are in excess of current industry practice and other DNOs may wish to learn from ENWL's example.
- 2.36 In considering ENWL's restoration strategy, the AE is conscious that ENWL's duty control engineers acted as a team and exhibited commendable skill and speed in restoring supplies without overloading any of the switched alternatives.
- 2.37 Similarly, ENWL's operational personnel are to be commended for replacing the stolen components, refilling GT2 with oil and restoring it to service in less than 23 hours.
- 2.38 The AE is satisfied that the affected sections of ENWL's distribution network comply with the relevant requirements of Security of Supply Standard P2/6.
- 2.39 The AE has discussed ENWL's learning from this incident, its incorporation of Wigan Grid Substation into its high risk register and the commercially confidential enhanced security measures it has put in place, and is pleased to note ENWL's continuing pro-active approach.
- 2.40 The AE is satisfied that ENWL has met the criteria for preventative and mitigating actions set out in Appendix 4 to paragraph 8.58 of Special Licence Condition CRC 8.
- 2.41 The AE therefore concludes that ENWL's claim is justified and recommends to Ofgem that the amount of CI above the threshold value should be excluded from its performance for reporting year 2010/11.

Appendix A Record of Audit part 1

Table A-1: Appointed Examiner's Information Log

“One-Off” Exceptional Event	Reporting Year 2010/11
Licensed Area	ENWL
Date of event	27 October 2010
Cause	Theft of oil drain cocks from two Grid T/Fs
Notification to Ofgem	03 November 2010
SoF received	17 December 2010
SoF information	<ul style="list-style-type: none"> • supplies from Wigan 132/33kV Substation were interrupted at 22:36 on Wednesday 27 October 2010 when GT1 was deliberately disconnected due to loss of oil. GT2 had already tripped on Buchholz due to loss of oil. • ENWL’s duty control engineers: <ul style="list-style-type: none"> ○ requested standby staff to attend Wigan Grid; ○ de-energised GT1 at Wigan Grid upon receipt of the ‘loss of oil’ message from the standby personnel on site; ○ began restoring supplies within ten minutes of having de-energised GT1 at Wigan Grid; ○ systematically checked the loadings on ENWL’s distribution system to ensure that no feeder became overloaded due to the loss of the 132kV infeeds to Wigan Grid; ○ completed the restoration of all supplies within 68 minutes of having de-energised GT1 at Wigan Grid; and ○ liaised continuously with the major customer fed from Kitt Green. • ENWL’s standby personnel attending site reported that: <ul style="list-style-type: none"> ○ the bunds around both grid transformers were full of oil; ○ GT1 was still energised and on load; ○ they had immediately fixed taps on GT1; ○ earthing conductors had been stolen from several structures; and ○ the thieves had entered the compound by removing a section of palisade fencing and cut through the electric fence within the site.
Additional pre-visit information provided	Based on the SoF the AE drew up a list of initial questions. These were discussed during the audit visits. This initial list of questions, together with ENWL’s response, is contained in paragraph 1.33 of the report.
Location of audit visits	<ol style="list-style-type: none"> 1. ENWL’s Manchester Control Centre; and 2. ENWL’s Wigan Grid Substation.
Dates of audit visits	<ol style="list-style-type: none"> 1. 22 June 2011; and 2. 23 June 2011
Visiting Auditor	Geoff Stott (BPI)
ENWL’s Representatives	<ol style="list-style-type: none"> 1. Tony Pointon, Dan Randles and Mark Williamson; and 2. Tony Clayton and Dan Randles.

<p>Information provided during and subsequent to the audit visits</p>	<p>Comprehensive documentation / information including:</p> <ul style="list-style-type: none"> • a discussion of the protection arrangements for the Washway Farm to Wigan Grid teed Skelmersdale 132kV feeders; • copies of the relevant 132kV and 6.6kV SLDs; • sight of the original versions of the two most recent substation inspection reports for Wigan Grid (on 17 Sep '10 no signs of 3rd party interference); • the printout from ENWL's SCADA system that shows the alarms generated by the event and the control engineer's switching schedule; • the switching log shows the loss of supplies from Wigan Grid commenced when GT1 was deliberately de-energised at 22:36 on 27 October 2010; • the normal network running arrangements were demonstrated; • a copy of ENWL's 'PCNaFIRS' incident report that shows: <ul style="list-style-type: none"> ○ the number of customers affected by the incident to be 55,100; and ○ the customer minutes lost to be 1,082,728. • the AE confirms that these figures agree with those quoted in ENWL's SoF; • using ENWL's total connected customers at 30 September 2010 of 2,359,391 the number of customers affected equates to a CI of 2.34. [55100*100/2359391]; • similarly, the customer minutes lost for this event equate to a CML of 0.46. [1082728/2359391]; • discussion regarding when the electric fence was installed at Wigan Grid, and why; • a commercially confidential discussion of the on-going review of ENWL's various policy documents; and • a commercially confidential discussion of ENWL's post-incident internal report. <p>The AE visited Wigan Grid Substation and found it to be in a 'brown field' area that is being redeveloped: a new road system has been laid and two new office buildings (both occupied) have been built on the opposite side of the access road to the Substation.</p> <p>Photographs taken of the location and the signage on the outside of the substation.</p> <p>Palisade is of statutory height and is backed by a continuous, open-wire electric fence from ground level to approximately 5 electrified wires above it.</p> <p>Discussed post-fault learning points, including Wigan Grid now on ENWL's high risk register and subject to commercially confidential enhanced inspection regime.</p> <p>Testing of Buchholz being reviewed re slow loss of oil.</p> <p>Confirmed P2/6 compliant (90 MVA firm).</p> <p>New drain cocks, blanking plates, bolts and gaskets obvious on T/Fs.</p> <p>New palisade fence panel at rear of compound – no green algae yet on horizontals.</p> <p>The list of initial questions was discussed.</p> <p>ENWL provided answers to the initial questions plus additional information both during and subsequent to the audit visits.</p> <p>Ok re compliance with Appendix 4 of Paragraph 8.58 of CRC 8.</p>
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Table A-2: Impact on CI and CML

	CI		CML	
	Claimed	Audited	Claimed	Audited
132kV	2.34	2.34	0.46	0.46
EHV	0	0	0	0
HV	0	0	0	0
LV	0	0	0	0
Total	2.34	2.34	0.46	0.46
ENWL Threshold (total)	1.1		0.8	
Part 1 Exceptionality Test	Pass		Fail	
Part 1 Precondition of eligibility (meets App 3 to paragraph 8.57 of CRC 8)	Pass			

ENWL'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 regulatory reporting year 2010/11.

Appendix B Photographs of Wigan Grid Substation



Photograph 1 – General view from the access road



Photograph 2 – The warning signs on the electric fence



Photograph 3 – “Smartwater” warning signs



Photograph 4 – General view of the location