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Non-Domestic Renewable Heat Incentive (NDRHI) scheme

Independent review of Ofgem's Audit Activities in relation to the NDRHI scheme

Tranche 2

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ofgem e-serve

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1   Executive summary

1.1   Introduction

Ofgem is responsible for administering a number of environmental programmes that aim to reduce carbon dioxide emissions in Great Britain. The Non-Domestic Renewable Heat Incentive (NDRHI) is a government environmental programme that provides financial incentives to increase the uptake of renewable heat, for industrial, commercial, public sector and non-for-profit organisations.

The NDRHI makes regular payments for 20 years to scheme participants that generate, and use, renewable energy. Eligible technologies include solid biomass, CHP, heat pumps, solar thermal, geothermal, bio-methane and biogas. Now almost three years old with payments in 2013/14 of £36m[1], the scheme uptake is growing, with solid biomass boilers being the most popular at 93% of approved installations. In 2013, significant changes and improvements to the NDRHI regulations were introduced including simplified metering requirements, allowing heat to be used for processes other than in a building and in certain circumstances, allowing accredited installations to be moved.

1.2   Background

As administrators, Ofgem E-Serve has responsibility to approve applications, ensure compliance by undertaking audits of installations and make payments to accredited installations. Analysis has been carried out on the continuing trend in non-compliance, to enable Ofgem E-Serve to

[1] RHI Annual Report July 2014

develop a number of short and long term actions to address this and the likely financial impact. As a result, consideration is being given to shift audit focus towards those areas of non-compliance where the impact on the scheme is most significant, away from the most frequently occurring causes which have the lowest financial impact.

1.3   Scope

We have been commissioned to carry out an independent review to draw up proposals for developing the NDRHI strategy, in order to optimise risk mitigation within an acceptable cost. This review is split into two tranches. The first tranche includes reviewing the current audit programme to provide assurance that scheme losses are within an appropriate range and that this risk based approach provides an effective means of identifying installations for audit. The second tranche, covered by this report, will provide pragmatic advice on future sample sizes and appropriate levels of confidence, to address the needs of Ofgem into the future. A detailed programme of work, showing the scope for each tranche, is provided in Appendix B.

Grant Thornton visited Ofgem during October 2014 and undertook a series of interviews, attended a risk workshop and reviewed documentation. This report is prepared on the basis of the limitations set out in 'The small print' (Appendix E).

1.4 Overall conclusion

In our tranche 1 report we concluded that the current NDRHI approach is robust and has evolved over its first few years in operation to respond to emerging risks. The team has accumulated a wealth of knowledge and information to help target high risk sites and developed a comprehensive list of the different types of non-compliances that have been encountered.

However, as the scheme grows there is a need to re-focus the audit activity to ensure the underlying audit objectives are met and ensure that management's time is focussed on the most significant areas of non-compliance.

The targeted risk based approach adopted can offer value for money where resources are limited by focusing the audit activity on the more likely or higher impact sources of error. However, the key drawback of this approach is that the sample results will not be representative and therefore conclusions cannot be drawn over the whole population.

In order to harness the benefits of both statistical and targeted sampling techniques we would recommend the audit approach is split into two separate parts. The first part would be a representative statistical sample to give a view of overall compliance rates for the entire population, allowing results to be extrapolated and overall conclusions to be drawn on the scheme as a whole. The second part would focus on targeted sampling based on the audit team's experience, allowing audit resource to focus on the areas of highest risk. Further details of how this approach would work in practice are set out in Section 3 and 4 of this report.

1.5 Recommendations

We have made a number of recommendations that management may wish to consider when implementing the new NDRHI audit strategy.

- We recommend that senior stakeholders (Associate Directors) approve the final confidence levels, materiality and error rates adopted for the

NDRHI audit programme. We have provided suggestions based on our experience and demonstrated the range of sample sizes implied by these decisions.
- In the first year of implementation, management will need to decide whether they wish to perform one statistical sample over all of the historic payments, or whether they wish to split the historical data and perform separate statistical samples on separate scheme years. We have provided data on the applied sample sizes for both approaches in Section 3 of this report.
- Stakeholders should review and approve the rationale for site selection under the targeted sample each year.
- We recommend that management determine their approach to re-auditing sites that have previously been audited. Further details on what factors should be considered in this determination are included in Section 4.6.
- If any potential errors associated with non-compliances are revised following an annual review, we recommend that both the new and the old potential error should be logged in a central library. For the year following a change in potential error, we would recommend that when the results are reported, a footnote is included to illustrate the impact resulting from the 're-grading'. This will allow comparability year on year.

1.6 Acknowledgements

We would like to take this opportunity to record our appreciation for the kind assistance provided by Jacqueline Balian and Amy Powell Tuck and their team during our visit.

2 Determining future audit strategy

2.1 Overview
In our tranche 1 report we reviewed key considerations in determining an appropriate audit strategy for the NDRHI scheme going forward. In this section we recap these considerations and provide a brief overview of the future audit strategy that we recommend.

2.2 Audit objectives
In designing an audit strategy it is important that the underlying objectives of the audit are fully understood. From the NDRHI audit strategy document, we understand the NDRHI audit objectives are to:

- monitor participant compliance against RHI eligibility criteria and obligations;
- detect instances of suspected abuse, misuse, fraud or non-compliance;
- act as a deterrent to those that may be tempted to break the rules of the scheme; and
- provide indicative information on the quality of system design, installation and operation where these would indicate a need for further training.

Other considerations
From our discussions with management we also identified the following factors to be important in determining an appropriate audit strategy:

- given the NDRHI scheme involves making regular direct payments to participants, financial loss headlines are particularly important for this scheme;
- it is important to have a measure of the level of risk and financial loss of the overall scheme;
- site selection methodology should be easy to apply;
- audit approach needs to allow year on year comparability;
- there should be some flexibility in site selection;
- achieving synergy in the location of the audit visits is important to ensure costs are minimised; and
- to act as an effective deterrent, all sites should have the chance of being selected at least once in their lifetime.

Future approach
In order to harness the benefits of both statistical and targeted sampling techniques we recommend the audit approach is split into two separate parts. The first part should be a representative statistical sample to give a view of overall compliance rates for the entire population, allowing results to be extrapolated and overall conclusions to be drawn on the scheme as a whole. The second part would focus on targeted sampling based on the audit teams experience, allowing audit resource to focus on the areas of highest risk.

Part 1 – statistical sample

We would recommend that the first tranche of audit sampling uses monetary unit sampling ('MUS') techniques and is based on installation applications approved in the previous financial year. Monetary unit sampling provides a direct linkage between the financial value of payments and sample selection, applying materiality (an 'acceptable' level of error) and confidence levels to reflect the risks in a population. Each monetary unit (£) has an equal chance of selection, and therefore any payments in excess of the sampling interval will automatically be selected. In addition, methodology can lead to large payments being selected twice.

The results of this audit work can be reported both in terms of the assurance rating framework (see Appendix C) and an overall extrapolated and actual financial loss figure. This can be compared to previous years to gain an understanding of whether the risks presented by the scheme are increasing or decreasing over time.

Further details of how to implement this approach are provided in Section 3 of this report.

Part 2 – targeted sample

The second audit sample should be used for targeted sampling. We suggest a sample size of 100 is used for this sample for next year. This sample size can be increased or decreased in subsequent years depending on whether the error rate indicated by the statistical sampling increases or decreases. Given that the statistical sampling will only focus on the previous year's applications, the targeted sampling should be selected from the entire population of installations from the beginning of the scheme (which have not been audited previously). This would avoid the risk that installations are only audited in the first year of operation and thereby reducing the effectiveness of the audit programme as a fraud deterrent.

The results for the targeted sample should be reported separately to the representative sample and should not be extrapolated. Given that the installations in this sample would be deemed 'higher risk', it could

reasonably be expected that the non-compliance rate of this sample will be higher than the MUS representative sample. This could be a useful tool in determining whether the targeting criteria is effective.

Further details of how to implement this approach are provided in Section 4 of this report.

3 Statistical sampling

3.1 Introduction

In this section we outline the key variables and factors management will need to consider in using monetary unit sampling. We also investigate appropriate sample sizes, based on a range of confidence levels and error rates. We will introduce key tools that the Audit team can use to determine future sample sizes based on simple sample size calculators, so that the audit approach can be adapted appropriately as the scheme evolves.

3.2 Definition of key variables

As previously mentioned, monetary unit sampling provides a direct linkage between the financial value of payments and sample selection, applying materiality (an 'acceptable' level of error) and confidence levels to reflect the risks in a population. Each monetary unit (£) has an equal chance of selection, therefore not all installations have the same chance of selection. The sample is weighted towards installations that receive larger payments.

There are a number of variables that will determine the sample size and these need to be understood in order to apply monetary unit sampling. We have outlined these below.

Population

For the NDRHI scheme, the population is the list of installations which is being tested. We suggest monetary unit sampling ('MUS') is carried out each audit year on the installations that were approved[2] in the previous financial year (regardless of whether they have been previously audited as part of the targeted sample[3]). The population value would be the sum of the lifetime payment figure for the installations within the population. We have outlined the approach used to calculate lifetime payments, based on technology load factors and installation capacity, in our Tranche 1 report. We believe this is an appropriate methodology for use in MUS.

Confidence level

The confidence level is a measure of the reliability of a result. A confidence level of 80% (or 0.8) means that there you can be 80% confident that the population is not misstated by an amount greater than materiality. For 100% confidence level the whole population will need to be tested. Lower confidence levels will result in smaller sample sizes.

Typically 95% confidence level is considered a 'high' level of confidence and is often used in financial auditing. Other confidence levels typically used are 80-90% for a 'moderate' level of confidence and 60-75% for a 'low' level of confidence.

[2] By basing the population on the approved applications this provides a clear cut off point, with any applications which are received in the previous financial year but not approved by 31 March, falling within the population for the following financial year.

[3] If an installation has previously been audited as part of the targeted sample, the results of the previous audit can be pre-populated into the results table, and there will be no need to re-perform the audit visit.

Materiality

Materiality is the maximum monetary misstatement that would be acceptable in the population. This can also be referred to as tolerable error or precision. This is often expressed as a percentage of the population value. There is an inverse relationship between materiality and the required sample size, so a lower level of materiality will result in a higher sample size.

Setting materiality is a matter of judgement. In financial audits materiality typically ranges from 0.5%-2% for revenue and 5-10% for profit before tax. In Section 3.3 we will show the impact of the sample size for using different levels of materiality and suggest an indicative percentage. However, it is important that senior stakeholders approve the materiality level adopted for the NDRHI audit programme.

Expected error rate

The expected error rate is the exception rate anticipated to exist in the population. For example, a 2% expected error rate in a population value of £100,000, means that the auditor expects the population value to be misstated by £2,000.

The expected error rate should be based on historic experience and we look at appropriate ranges in Section 3.3. The larger the expected error rate is, the larger the required sample size will be. If the expected error rate is similar to the percentage determined for materiality then the sample size will become prohibitively large. For monetary unit sampling to be an efficient sampling approach, ideally the expected error rate should be less than 50% of materiality.

3.3 Sample size

The sample size and sampling interval can be determined using the following;

- population value;
- confidence level;
- materiality; and
- expected error rate.

We have created a simple excel spreadsheet that will calculate the sample size and sampling interval, based on the four inputs above. Our recommended approach is to use Poisson sampling which is population-size independent. This approach provides a relatively easy method for calculating sample size, without the need for software or extensive tables. It is a commonly used technique [4] often associated with MUS, however it relies on management determination of appropriate confidence levels, materiality and expected error rates.

The population value is determined by the population and therefore there is no judgement required to set this input. We propose that materiality is set as a proportion of the population value (rather than an absolute amount). This means that the sample size will vary with the materiality percentage but be unaffected by the overall population value. The population value will only impact the sampling interval. This will allow future sample sizes to be calculated in advance based on the desired confidence level, materiality and expected error rate.

[4] Further details of how Poisson sampling works can be found 'Technical Notes on the AICPA Audit Guide, Audit Sampling, 1 March 2012.

These three inputs are judgemental and will affect the sample size produced. Using the lifetime payments for installations that were approved between April 2013 to March 2014[5] as reference data, we will show the effect of these different variables and provide suggestions for an appropriate value to use going forward.

Confidence level
The table below shows that the sample size reduces dramatically as the confidence level decreases.

Confidence level	Materiality	Expected error rate	Sample size
99%	3%	1%	373
95%	3%	1%	220
90%	3%	1%	158
86%	3%	1%	129
70%	3%	1%	69

The table above shows that if the expected error rate is 1%, a sample size of 220 would be required to provide 95% confidence that NDRHI payments are not misstated by more than 3%.

We would suggest using a 95% confidence level as this is considered a 'high' level of confidence and is often used in financial auditing. We are also aware, from our supplier reviews undertaken on behalf of Ofgem, that a number of suppliers obligated under the ECO scheme use a 95% confidence level, to calculate the sample size of documentation checks they will perform.

[5] This is the latest full year of data available provided by Ofgem.

Materiality
The table below demonstrates the inverse relationship between materiality and sample size.

Materiality	Expected error rate	Confidence level	Sample size
2%	1%	95%	577
3%	1%	95%	220
4%	1%	95%	131
5%	1%	95%	93

Setting the materiality level requires a large amount of judgement and the materiality used should be approved by senior stakeholders and reviewed each year. We would suggest that initially a 3% materiality figure is used, as this will provide comfort that NDRHI payments are not misstated by more than 3% and will result in reasonable sample sizes. In financial audits materiality typically ranges from 0.5%-2% for revenue and 5-10% for profit before tax and therefore we deem 3% to be an appropriate benchmark. In future years, management may wish to reduce the materiality level if the expected error rate decreases or if the amount of annual payments increases significantly. For example, should the annual NDRHI payments from 2013/14 increase from £36m to £50m, then the materiality (based on 3%) would increase from £1.08m to £1.5m. If management believe this quantum is too high, then the materiality percentage could be reduced, however, this will result in larger sample sizes. In the example above, the revised materiality would need to decrease to 2.2% to obtain the same absolute materiality value and this would increase the sample size from 220 to 443 (with a 1% expected error rate). We recommend that senior stakeholders determine the absolute materiality that they are willing to accept.

Expected error rate

The table below demonstrates the relationship between the expected error rate and sample size.

Expected error rate	Materiality	Confidence level	Sample size
0.5%	3%	95%	143
0.75%	3%	95%	175
1%	3%	95%	220
1.5%	3%	95%	385
1.5%	4%	95%	187
2%	4%	95%	289

A small change in the expected error rate will have a large impact on the sample size. In addition, if the expected error rate increases above 1.5%, management may wish to consider increasing the materiality level as well to provide reasonable sample sizes (as ideally the materiality should be at least double the expected error rate).

The approach to estimating error rate for the NDRHI scheme would normally be based on total potential loss identified within the sample year divided by the total payments made to the sample in the year. Based on the 2013/14 audit data this would give an error rate of 0.5%[6]. We would expect this approach to be an appropriate method to estimate the error rate going forward, once statistical sampling has been introduced. For the 2013/14 audits, statistical sampling was not in place and targeted sampling was used. A headline maximum 'Percentage Financial impact across

scheme' was calculated to be 0.7%[7], To be prudent, we would therefore suggest using 0.75% as the expected error rate for the first year of statistical sampling, to increase the likelihood that the overall findings from the statistical sampling are robust and sufficient to meet the required confidence level and materiality. This material error rate should then be reviewed on the basis of the findings from the statistical sample for future years. We note also that if emerging trends or robust interim data are available based on experience in 2014/15, management may need to take this into account when reaching a decision on the most appropriate material error rate to use for 2015/16.

Sample size

It is important to note the that sample size will not necessarily be the same as the number of installations that require auditing. As mentioned previously, each monetary unit (£) has an equal chance of selection, and therefore any payments in excess of the sampling interval will automatically be selected and may well be selected multiple times. In these circumstances, a site selected multiple times only requires one audit visit, and therefore this will result in the difference between the selected audit size and calculated sample size. We have run several scenario planning samples based on historic data and have found that typically the sample size is approximately ten higher than the number of installations that require auditing.

3.4 Sample selection

Once the sample size has been determined, the sampling interval can be used to select a sample. This methodology ensures that every £1 has an equal chance of being picked.

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[6] Error rate calculated by dividing the maximum identified potential losses for one year (£32,266) by the total sample payments in 2013/14 (£6,514,098). Figures taken from the 2013/14 annual report.

[7] This was calculated as the total potential loss (£32,266) divided by the total payments with a non-compliance (£2,074,777) multiplied by the non-compliance rate (43 %) for 2013/14.

The sampling interval is calculated as the population value divided by the sample size. The sample is selected based on a random starting point and then selecting every nth monetary unit (£), where 'n' is the sampling interval. This can be a laborious process if performed manually, however, the excel spreadsheet we will provide you with will perform this procedure automatically.

3.5   Evaluating the sample results

Once the selected installations have been audited, the results can be populated onto the spreadsheet we have provided you with. The results of any installation that is selected multiple times, only needs to be entered once.

Sum of tainting

When the original sample is selected, the sample calculator will provide a 'acceptable sum of tainting limit'. A tainting is the percentage difference between the recorded lifetime installation payment and the 'expected' lifetime installation payment following audit. As the expected lifetime payment is based on the potential error percentage, the potential error percentage is the equivalent to the tainting percentage. The 'sum of tainting' can be calculated by adding the tainting for each installation together. If too many errors are found, then the 'sum of tainting' will exceed the 'acceptable sum of tainting limit'; in this case, the sample has 'failed' and the original conclusion will not be valid. This usually occurs where the expected error rate was set too low. For example, to obtain a 95% confidence level that NDRHI payments are not misstated by more than 3%, when the expected error rate is 0.5%, the sample size calculator requires the sum of tainting to be below 72%. If this limit is exceeded then there is insufficient evidence to draw the original conclusion.

Where a sample has 'failed', the spreadsheet has been configured to revise the audit conclusion based on the results. For example, if the actual sum of tainting in the example above was 100%, then the conclusion would be revised to say we could be 95% confident that the NDRHI payments are not misstated by more than 9% (based on example data entered into our results calculator).

3.6   2015/16 audit approach

In the first year of implementation, we propose two options for how to perform the statistical sampling on historic data. Management will need to decide which is the preferred option.

Option 1 – one statistical sample

One statistical sample is performed on the lifetime payments from the beginning of the scheme to 31 March 2015. Using this method, a sample size of 175 would be required to gain 95% confidence that the payments are not misstated by more than 3% (assuming an error rate of 0.75%).

Pros – this approach will lead to a smaller number of audits and therefore reduced audit cost.

Cons - The sample cannot be selected until after 31 March 2015 and therefore the exact number of installations which require auditing will not be known until this point. (This number will not exceed 175, but the exact number will depend on the number of large payments that are selected multiple times and the number of selected sites that have already been audited previously). This will also be the case for future years. From an operational point of view, the number of sites selected should not vary significantly from the calculated amount. If it is desirable to select sites before the 1 April, then the targeted sample referred to in Section 4 of this report could be selected first.

Option 2 – two statistical samples

This is a similar approach to option 1 and uses the same confidence level and materiality assumptions. However with this option, the population is split in two parts; scheme years 1-3 and scheme year 4. One statistical sample of 175 is performed on the lifetime payments from the beginning

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of the scheme to 31 March 2014. A further statistical sample of 175 is performed on the lifetime payments from 1 April 2014 – 31 March 2015.

Pros – More granular information can be gained about the level of non-compliances in scheme years 1-3 compared to scheme year 4. In addition, the initial sample up to 31 March 2014 can be selected now. Based on the list of live applications for installations accredited between scheme years 1-3 and a sample size of 175, our sample selector tool selects a sample of 169 installations (of which 30 have been audited in previous years).

Cons – Performing two samples would reduce the amount of budget left for targeted sampling.

3.7 Future considerations

The methodology described above should allow the Audit team to determine future sample sizes based on simple sample size calculators, so that the audit approach can be revised appropriately as the scheme evolves. We set out opposite illustrations of how the sample size might vary over the next five years depending on the error rates encountered.

Scenario 1 - error rate increases

	Year 1	Year 2	Year 3	Year 4	Year 5
Confidence level	95%	95%	95%	95%	95%
Materiality	3%	3%	3%	4%	5%
Error rate	0.75%	1%	1.5%	2%	2.5%
Statistical sample size	175	220	385	289	231
Targeted[8] sample size	100	100	110	116	122
Total sample size	275	320	495	405	353

[8] Refer to Section 4.2 for suggested approach to calculating targeted sample sizes

Scenario 2 - error rate remains constant

	Year 1	Year 2	Year 3	Year 4	Year 5
Confidence level	95%	95%	95%	95%	95%
Materiality	3%	3%	3%	3%	3%
Error rate	0.75%	0.75%	0.75%	0.75%	0.75%
Statistical sample size	175	175	175	175	175
Targeted sample size	100	100	100	100	100
Total sample size	275	275	275	275	275

Scenario 3 - error rate falls

	Year 1	Year 2	Year 3	Year 4	Year 5
Confidence level	95%	95%	95%	95%	95%
Materiality	3%	3%	3%	3%	3%
Error rate	0.75%	0.4%	0.3%	0.2%	0.1%
Statistical sample size	175	132	123	115	107
Targeted sample size	100	100	100	95	95
Total sample size	275	232	223	210	202

Segmentation

In the future, this methodology could be adapted to include segmentation – where the population is split into separate groups depending on their risk profile. This would allow separate sample sizes to be calculated for each group and the results would also need to be separately reported. This might be useful, if for example, the audit team discovers that large installations have a particularly high error rate. Therefore large installations could be treated as one separate group, with a higher expected error rate and materiality. Likewise segmentation could be done on the basis of technology type. An illustration of how segmentation could work in practice is shown overleaf.

Segment – installation size	Risk assessment	Confidence level	Materiality	Expected error rate	Sample size
Large	High	95%	4%	1%	131
Medium	Low	86%	3%	0.5%	89
Small	Low	86%	3%	0.5%	89

We do not recommend that segmentation is adopted at this stage, as there is insufficient knowledge to determine an appropriate basis for any segmentation. In addition, segmentation can involve a significant amount of time and effort in justifying the sample segments and analysing the results. Therefore, we would only suggest this approach if the error rate increases significantly.

3.8 Recommendations

- We recommend that senior stakeholders approve the final confidence levels, materiality and error rates adopted for the NDRHI audit programme. We have provided suggestions based on our experience and demonstrated the range of sample sizes implied by these decisions.
- In the first year of implementation, management need to decide whether they wish to perform one statistical sample over all of the historic payments, or whether they wish to split the historical data and perform separate statistical samples on separate scheme years.

4 Targeted sampling

4.1 Introduction
In this section we outline the key features of a targeted sampling approach for the NDRHI scheme. As this methodology is very similar to the current methodology employed by the NDRHI team, we focus here on the key features that can be adapted when used in combination with statistical sampling.

4.2 Sample size
As the targeted sample is not a statistical sample, the sample size is judgemental and not determined by materiality and confidence levels. The larger the sample size the more chance there is of detecting any overpayments or non-compliances within the population, but this needs to be balanced with the implied costs of higher levels of sampling. As a minimum, the targeted sample size should be large enough to visit all sites where there is any suspected fraud or material error.

Sample sizes of 60 are commonly used in sample testing in financial audits. Next financial year, we suggest a sample size of 100 is used for the targeted sample. Based on the level of targeted sampling performed to date in relation to the NDRHI scheme, a sample size of 100 should be sufficiently large to ensure any 'high risk' installations can be targeted.

In future years, the number of targeted audits should be varied depending on the results of the monetary unit sampling from the previous year. If these results indicate that there is an increased error rate associated with the scheme, then the number of installations visited as part of the targeted sampling should be increased. Equally, if the error rate associated with the scheme decreases, the targeted sample size can decrease. As a guideline, if the error rate increases/decreases by 0.5% we propose that the targeted sample size is increased/decreased by 5%. Management will, however, need to keep the sample size used for targeted audits under review to ensure that it is sufficiently large to allow 'high risk' installations to be visited.

From a practical point of view, management may wish to use any unused budget from the statistical sampling (as a result of sites being selected that have already been visited, or large sites being selected multiple times), to increase the targeted sample size. However, as noted previously we anticipate this will only affect a handful of installations.

4.3 Targeting criteria
Targeting criteria can be based on similar risk factors to those used under the current audit programme, for example, suggested sites identified by the team as high risk during pre-accreditation. As there is judgement in selecting a risk based sample, it is important that the rationale for site selection is clearly documented and agreed by senior stakeholders.

The sample should be selected from the entire population of installations to date (which have not been audited previously). This would avoid the risk that installations are only audited in the first year of operation and thereby reduce the effectiveness of the audit programme as a fraud deterrent.

By judgementally selecting sites, this would give the Audit team the flexibility to supplement the statistical sample to achieve synergy in the audit approach. For example, the statistical sample may select one installation which is part of a multi-site arrangement. The Audit team could then elect to visit the other installations on this site, as part of the targeted sample, if multiple sites had been selected as a key risk criteria for that audit period.

4.4   Effectiveness of targeting
Given that the installations in the targeted sample would be deemed 'higher risk' than the statistical sample, it could reasonably be expected that the non-compliance rate of this sample should be higher than the MUS representative sample. This could be a useful tool in determining whether the targeting criteria is effective.

4.5   Timing
We understand that management need to set the audit budget for the next financial year in the preceding August. Management should have sufficient information to set the budget for the targeted sample based on the previous year error rate and the number of targeted audits performed in the previous year. Equally for the statistical sample, the confidence level, materiality and expected error rate that underpin the statistical sample size can be determined at this point in time.

The targeted sample can be selected at any point in the year. Management may wish to perform the targeted audits alongside the statistical sample to generate synergy in the geographical spread of audit visits. Alternatively management may wish to focus the targeted visits to the second part of the audit year, once the statistical sample is complete. Either way, the results of the targeted sample should be reported separately to the statistical sample. This is discussed further in Section 5.

4.6   Future considerations
In future years, management may wish to increase the number of targeted audits, if the error rate in the statistical sampling is increasing year on year. See Section 3.7 for further details and illustrative sample sizes.

To date, only one installation has been visited more than once, as a result of ongoing concerns regarding erroneous meter readings. In developing a 10 year audit plan, management need to consider their approach to re-auditing sites. Our understanding is that the majority of audit tests performed during a site visit consider the metering set up and eligibility which is unlikely to change over time. However, there are some factors, e.g. the moisture content of fuel, that would be expected to vary over time. We recommend that management consider the risks and impact associated with each 'non-compliance' in determining whether re-audits of certain sites might be appropriate. Any 're-audits' could be performed as part of the targeted sample testing, with results reported separately to avoid any double counting. We would expect re-audits to be most appropriate for installations that receive large payments and therefore there is a higher risk of financial loss if an error goes undetected.

4.7   Recommendations
- Stakeholders should review and approve the rationale for site selection under the targeted sample each year.
- We recommend that management determine their approach to re-auditing sites that have previously been audited.

5   Other audit types

5.1   Desktop audits

From our tranche 1 report we concluded that desktop audits do not give the full picture of whether an installation is compliant as most non-compliances can only be detected during a site visit. Given the time and resource taken to perform these reviews we recommend limiting desktop audits to those installations where concern has been raised regarding ongoing obligations, instead of performing a fixed percentage of reviews each year.

5.2   Pre-accreditation site audits

Pre-accreditation site audits are undertaken before accreditation is granted to provide early assurance that installations are compliant and improve the efficiency of the application process overall. We recommend that these continue going forward and form part of the targeted audit sample.

6 Reporting results

6.1 Introduction
In this section we review how the results of the statistical and targeted samples should be reported. We also explore how the comparability of results over time can be maintained.

6.2 Reporting results
Statistical sampling
The results of the statistical sampling can be reported in terms of an overall conclusion, the assurance rating framework and an overall extrapolated and actual financial loss figure. For example:

Overall conclusion	We can be 95% confident that the NDRHI payments for 201X are not misstated by more than 3%.			
Assurance rating	Number of installations	% of installations	Lifetime payments error[9] (£)	Lifetime payments extrapolated error (£)
Good	15	15%	-	-
Satisfactory	60	60%	-	-
Weak	20	20%	£10,000	£300,000
Unsatisfactory	5	5%	£2,000	£70,000
TOTAL	100	100%	£12,000	£370,000

These headline results will provide an estimate of the fraud and error rates on a scheme wide basis, that can be tracked each year to monitor trends.

Targeted sampling
The results for the targeted sample should be reported separately to the statistical sample and should not be extrapolated (as it is not representative of the whole population). For example:

Assurance rating	Number of installations	% of installations	Lifetime payments error (£)
Good	5	5%	-
Satisfactory	45	45%	-
Weak	40	40%	£30,000
Unsatisfactory	10	10%	£10,000
TOTAL	100	100%	£40,000

As mentioned previously, it would be reasonable to expect a higher proportion of 'unsatisfactory' and 'weak' installations in this sample if the targeting is effective.

6.3 Reporting and approach to non-compliances
Reporting non-compliances
We have made several suggestions in respect of the non-compliance rates currently used by the NDRHI scheme in Section 2.5 of our tranche 1 report. In terms of reporting the non-compliance categories that underpin

the headline results illustrated in Section 6.2 of this report, we have outlined our suggested approach for both the statistical and targeted samples below.

Non-compliances with a financial impact

For the statistical sample, each non-compliance with a financial impact should be reported with the frequency and the total financial impact for that non-compliance. This will allow management to determine which incidences of non-compliance are leading to the largest financial losses. The frequency of occurrence for each non-compliance can be compared to the previous year's statistical sample results, to determine the year on year trend.

For a targeted sample, the level of non-compliance can be compared to the statistical sample to determine whether the targeting was effective. In addition, analysis can be done to see if certain risk factors have successfully targeted certain non-compliances. For example, has targeting installations in the manufacturing sector resulted in a higher level of contaminated fuel non-compliance than identified in the statistical sample? There is limited value in comparing the results of this sample year on year, as a higher level of non-compliance could either be a result of more successful targeting or of a higher level of non-compliance in the overall NDRHI scheme.

Non-compliances with no financial impact

Non-compliances with no financial impact can be further divided into two categories; those with a high frequency and those with a low frequency of occurrence. We would suggest that low frequency non-compliances with no financial impact are not reported, but recorded internally for monitoring purposes. Non-compliances with a high frequency of occurrence should be recorded alongside their corresponding frequency.

As with non-compliances with a financial impact, the frequency of occurrence for each non-compliance can be compared to previous year's statistical sample results, to determine the year on year trend.

For the targeted sample, the level of non-compliance can be compared to the statistical sample to determine whether the targeting was effective.

Suggested approach to non-compliances

We understand that Ofgem and DECC are currently in the process of devising the best approach to dealing with non-compliances, given the range of non-compliances experienced to date under the NDRHI scheme. We have outlined below our proposed approach to dealing with non-compliances going forward.

Non-compliances with a financial impact

Non-compliances with a financial impact can be further separated into two categories; those with a high financial impact and those with a low financial impact. A non-compliance may have a high financial impact either as a result of a high frequency of occurrence, or due to a high potential error associated with the non-compliance.

Non-compliances with a high financial impact should be targeted in the risk based sampling where possible. In addition, action should be taken to reduce these risks, for example, by introducing specific training to improve industry competence.

Non-compliances with a low financial impact should be targeted in the risk based sampling if there is sufficient budget to do so. Action should be taken to reduce these risks where this is cost effective.

Non-compliances with no financial impact

As mentioned previously, we would suggest that non-compliances with no financial impact and a low frequency of occurrence are monitored for information only. These could be escalated to another category if the frequency increases, or new evidence suggests these may have a material impact.

We also suggest that non-compliances with no financial impact and high frequency do not need to be targeted during audit. However, general communication to the industry may be considered appropriate to reduce the levels of non-compliance.

6.4 Comparability of results

In our tranche 1 report we recommended that the potential error associated with each non-compliance is reviewed on an annual basis and revised where appropriate.

In order to maintain comparability over time, we recommend that both the new and the old potential error should be logged in a central library. For the year following a change in potential error, we recommend that when the results are reported, a footnote is included to illustrate the impact resulting from the 're-grading'. This will allow comparability year on year.

6.5 Recommendations

- If any potential errors are revised following an annual review, we recommend that both the new and the old potential error should be logged in a central library. For the year following a change in potential error, we recommend that when the results are reported, a footnote is included to illustrate the impact resulting from the 're-grading'. This will allow comparability year on year.

7 Summary of tranche 1 recommendations

The table below provides a summary of the recommendations we made in relation to the current audit regime in our tranche 1 report.

Section	Priority	Recommendation
Sample size	Medium	We recommend that evidence that the site selection criteria is reviewed and approved by senior stakeholders is retained.
Audit types	High	Given the limited scope of desktop reviews and internal resource required to perform the checks, we recommend that these reviews are restricted to installations where a concern has been raised with the meter readings, fuel records and inhibitor use, rather than performing a fixed percentage of desktop reviews each year.
Categorisation of findings	Medium	We recommend 'observations' are reviewed to identify the risks associated with each one and determine which observations need to be recorded as part of the audit process.
	Medium	It would be useful to categorise 'observations' into three categories; 'further information required', 'best practice point' and 'for Ofgem information only'. This will help determine and prioritise follow up actions.
	Low	The potential error percentages should be reviewed by the Audit and Compliance team to ensure these are consistent with current understanding on a cyclical basis (e.g. annually).
	High	We recommend that each non-material non-compliance should be reviewed and classified as 'major', 'moderate' or 'minor' to ensure consistent treatment under Ofgem E-Serve's assurance framework. From our discussions with the Audit team we do not anticipate many non-material non-compliances to be categorised as 'major' or 'moderate'.
	Medium	We would recommend that the NDRHI quarterly reports are enhanced by quantifying the monetary impact of each non-compliance category reported.
Calculation of impact	High	A library of potential error percentages which records the rationale/source for each figure should be updated to ensure corporate memory is retained.
	High	We would recommend that overpayments calculated by the PDS team are compared to the values used for audit

		purposes to determine whether the potential errors reported are appropriate.
	Low	We recommend that the Audit team coordinates with the PDS team to understand any instances where an underpayment has occurred and the impact this would have on the reported financial loss figures.
Response to non-compliances	Medium	We recommend that the Audit team review any non-material, non-compliances where no further action is taken, to establish whether these should continue to be monitored as part of the audit programme.

8 Summary of tranche 2 recommendations

The table below summarises our recommendations made in our tranche 2 report.

Section	Priority	Recommendation
Audit approach	High	In order to harness the benefits of both statistical and targeted sampling techniques we would recommend the audit approach is split into two separate parts. The first part would be a representative statistical sample to give a view of overall compliance rates for the entire population, allowing results to be extrapolated and overall conclusions to be drawn on the scheme as a whole. The second part would focus on targeted sampling based on the audit team's experience, allowing audit resource to focused on the areas of highest risk. Further details of how this approach would work in practice are set out in Section 3 and 4 of this report.
Audit types	High	We recommend that pre-accreditation audits continue going forward and form part of the targeted audit sample.
Reporting results	High	If any potential errors associated with non-compliances are revised following an annual review, we recommend that both the new and the old potential error should be logged in a central library. For the year following a change in potential error, we would recommend that when the results are reported, a footnote is included to illustrate the impact resulting from the 're-grading'. This will allow comparability year on year.

9 Summary of key decisions

The table below summarises the key decisions to be made by senior management in relation to the proposed audit approach for NDRHI.

	Timescale	Key decision
Sample sizes	Each audit year	We recommend that senior stakeholders (Associate Directors) approve the final confidence levels, materiality and error rates adopted for the NDRHI audit programme. We have provided suggestions based on our experience and demonstrated the range of sample sizes implied by these decisions in Section 3.3 of this report.
Sample sizes	By March 15	In the first year of implementation, management will need to decide whether they wish to perform one statistical sample over all of the historic payments, or whether they wish to split the historical data and perform separate statistical samples on separate scheme years. We have provided data on the applied sample sizes for both approaches in Section 3 of this report.
Site selection	Each audit year	Stakeholders should review and approve the rationale for site selection under the targeted sample each year.
Site re-audits	By March 2017	We recommend that management determine their approach to re-auditing sites that have previously been audited. Further details on what factors should be considered in this determination are included in Section 4.6.

A Glossary of terms

Term	Description
ECO	Energy Companies Obligation
MUS	Monetary Unit Sampling
NDRHI	Non-Domestic Renewable Heat Incentive

B   Scope

Tranche 1 work

The following detailed work programme has been extracted from an email provided by Ofgem.

Review whole audit strategy. This will include (but not limited to):

- Sample size (% of applications)
- Risk-based site selection- is this effective at identifying risk installations and does this translate to the wider population
- Type of audit carried out (post/pre/desktop), the checks covered by and proportions of each
- The categorisation of non-compliances (material/non-material),
- The methodology for calculating the impact of non-compliances (percentage error), and the total potential mispayments
- E-Serve's (compliance team) response to non-compliances (material/non-material)

Based on above we would require the auditor to provide the following:

- Does the auditor consider the strategy, scheme losses and cost of the programme as consistent with good practise?
- How should we be calculating our non-compliance rate?
- Interim views on sample sizes for 2015/16
- Areas the auditor will focus on in tranche 2

Tranche 2 work

- Confirmation that our strategy is providing assurance and any observations they may have

- Recommendations and proposals for improvement based on findings of initial review (tranche 1), covering all points

- Proposed sample size/ overall strategy (all points above) for future (5) years. This should include simple to operate methodologies for adjusting the sample size to reflect application volumes and other potential issues

- Based on above, scenario planning for next ten years

- A method for ensuring comparability of results over time (including previous years reviewed by Grant Thornton as part of tranche 2)

- Confirmation regarding the best way to calculate the non-compliance rate (i.e. do we include all non-compliances or only those with a material impact)

- We need them to propose how we should deal with non-compliances assessed as non-material

- An appropriate confidence level (and how to achieve this) to be used by the audit programme based on current and future payments to participants

- How we should estimate fraud and error on a scheme-wide basis (and in the future)

C   Assurance rating framework

The following table summarises the scheme assurance ratings adopted by all the environmental schemes across Ofgem E-Serve for technical audits.

Ofgem E-Serve Technical Audit Assurance Categories			
Assurance Rating	General Description	Trigger Point(s)*	Description
Unsatisfactory	Audit found **major** issues of non-compliance.	General: Major issue with eligibility. OR Financial: Impact on scheme considered to be in excess of £50,000 or 5% of lifetime payments. OR Fraud: There are suspicions of abuse, misuse or fraud	This assurance category will indicate that an audit has found one of the following; 1. The audited station/measure has been incorrectly accredited for scheme participation resulting in the receipt of incorrect payments/savings which will need to be recovered and an assessment made on the possible removal of accreditation. This will include issues that have a significant impact on the wider scheme and/or Ofgem. 2. The impact of the audit findings indicates a large potential loss to the scheme (in excess of £50,000 or 5% of lifetime payments.) 3. There is a suspicion of abuse, misuse, or fraud.
Weak	Audit found **moderate** issues of non-compliance.	General: Moderate issue with eligibility. OR Financial: Impact on scheme considered to be in excess of £1,000 or 2% of lifetime payments, but not exceeding £50,000 or 5% of lifetime payments.	This assurance category will indicate that an audit has found one of the following; 1. The audited station/measure has issues with eligibility which can be rectified within a reasonable timescale to ensure compliance with scheme legislation. This may result in payments/measures being suspended or withheld until this happens. 2. The impact of the audit findings indicates a moderate potential loss to the scheme (in excess of £1,000 or 2% of lifetime payments, but not exceeding £50,000 or 5% of lifetime payments).

Satisfactory	Audit found **minor** issues or has recommended introduction of best practice.	General: Minor issues found on site. OR Financial: Impact on scheme considered to be less than £1,000 or 2% of lifetime payments.	This assurance category will indicate that an audit has found one of the following; 1. The audit has identified areas of poor practice and/or the station/measure has not complied with certain ongoing obligations. The impact of this will have a minor or no impact on the wider scheme and/or Ofgem. 2. The impact of the audit findings indicates a minor potential loss to the scheme (less than £1,000 or 2% of lifetime payments).
Good	No issues found during audit.	N/A	There were no issues noted during the audit.

D   Source data

The underlying source data that has been referred to within this report is summarised here for reference.

April 2013 – March 2014 NDRHI audit data

Description	Data
Total number of non-compliant installations	94
Total number of non-compliant installations with a confirmed financial impact	18
Number of audits finalised	219
Non-compliance rate	43%
Percentage of non-compliant installations with a financial impact (Actual)	19%
Total payments 2013/14 to non-compliant installations	£2,074,777
Total payments 2013/14 to audited installations	£6,514,098
Total payments 2013/14 to non-compliant installations with a financial impact	£408,085
Total potential loss	£32,266
Total payments forecasted 2013/14	£59,922,570

Applications since the start of the scheme

Description	Data
Total number of installations	6,206
Total value of annualised payments	£97,268,778.27

E   The small print

Scope of work and limitations

We performed certain procedures in relation to the review of Ofgem's non-domestic renewable heat incentive scheme. These procedures are referred to in Appendix B of this report. Our work was based primarily on information provided to us by Ofgem and was carried out on the assumption that the information is reliable and, in all material respects, accurate and complete. We have not subjected the information to checking or verification procedures except to the extent expressly stated. This is normal practice when carrying out such limited scope procedures.

For the avoidance of doubt, we stress that the work performed does not constitute an audit; it is more limited in scope than that. If we were to perform a full audit of the company, it is possible that other matters may come to light concerning the specific areas we were asked to look at. Furthermore we stress that the work that you have asked us to perform is not as extensive as we would usually expect to do for a full audit review, and the scope of our work is limited, both in terms of the areas and operations of the company that we review and the extent to which we have reviewed them. Accordingly the results of our work are not necessarily conclusive and our conclusions may be limited.

Forms of report

For your convenience, this report may have been made available to you in electronic as well as hard copy format, multiple copies and versions of this report may therefore exist in different media and in the case of any discrepancy, only the final signed hard copy should be regarded as definitive.

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