

Mr Stuart Richardson  
Manager, Skills and Information Projects, Industrial Energy Efficiency Branch  
Department of Resources, Energy and Tourism  
Email: [energyauditstandard@ret.gov.au](mailto:energyauditstandard@ret.gov.au)

Dear Mr Richardson,

The Department of Resources, Energy and Tourism (DRET) released a discussion paper and background paper 'Towards a revision of AS/NZS3598:2000 Energy Audits' in April 2011. This submission sets out the Energy Efficiency Council's initial response to these papers, and the Council's preliminary recommendations on a new Energy Audit Standard.

The Energy Efficiency Council brings together Australia's expertise in energy efficiency to support the development of policy and programs. Incorporating expert advice into the design of energy efficiency programs significantly improves their effectiveness and reduces program risk. The Council looks forward to working with DRET and other key organisations to develop the Audit Standard, particularly the Energy Efficiency Conservation Authority (EECA) and Energy Management Association of New Zealand (EMANZ).

The Council strongly supports a revision of the AS/NZS3598:2000. The Council's initial recommendations in relation to the Audit Standard are set out in the attached document. In summary, the Council recommends that the revised Audit Standard should:

- Provide guidance to energy users identify what kind of audit they need and develop a suitable scope of work and budget for an audit
- Help energy users manage auditors to ensure that they deliver adequate audits
- Provide guidance to auditors to deliver effective energy audits

The current standard, AS/NZS3598:2000, has delivered some value but does not provide energy users with sufficient guidance to determine the type of audit that they need, nor sufficient detail to implement an audit.

The Energy Efficiency Council recommends that the audit standard is restricted so that each sector (commercial buildings, industry and transport) has its own audit standard. The commercial building standard should have a single standard, as commercial buildings share a similar set of technology and there are interactions between these technologies. However, the industrial site standard should have a core standard and a range of technology-specific guidelines, to address the significantly greater heterogeneity in this sector.

The commercial building standard and the industrial site core standard should set out guidance on:

- Three levels of accuracy for a benchmarking audit, depending on energy spend
- Three levels of accuracy for a scoping audit, depending on energy spend
- Three levels of accuracy for an investment-grade audit, depending on energy spend

Companies that use more than 0.5PJ should be directed to the Energy Efficiency Opportunities (EEO) program standard, which will be more rigorous than the audit standards for smaller energy users. However, the audit standard may be valuable for EEO participants in assessing their smaller sites (e.g. EEO participants that occupy or own multiple commercial buildings).

The Council looks forward to working through these issues with DRET. Please contact me on 03 8327 8422 should you require further information on any of the issues raised in this submission.

Yours sincerely



Rob Murray-Leach  
Chief Executive Officer

## Review of AS/NZS3598:2000 Energy Audits Energy Efficiency Council Submission

The Department of Resources, Energy and Tourism (DRET) released a discussion paper and background paper *'Towards a revision of AS/NZS3598:2000 Energy Audits'* in April 2011. This submission sets out the Energy Efficiency Council's initial response to these papers, and the Council's initial recommendations on a new Energy Audit Standard.

The Council's response is set out in the following sections:

1. What is the purpose of an Audit Standard?
2. Based on the purpose of the Audit Standard, what are the failings of the current Standard?
3. Based on the purpose of the Audit Standard, how should it be structured?
4. Responses to the questions in the DRET Discussion Paper

## 1. What is the purpose of an Audit Standard?

Improving the energy efficiency of Australia's commercial buildings and industry will deliver substantial energy savings, excellent financial returns and reductions in greenhouse gas emissions. However, there are a range of barriers that reduce the level of energy efficiency improvement in Australia, including:

- Information and skill gaps
- Information asymmetries
- Bounded rationality
- Principal-agent problems
- Economic externalities (e.g. the negative impacts of carbon emissions)
- Research and development spill-overs
- Regulatory problems in the energy market

A range of programs are required to tackle these barriers. Accreditation and standards are not a universal panacea to all the barriers to retrofitting, but they are critical as part of a broad suite of policies.

Accreditations and standards are effective at addressing some of the barriers caused by gaps in information and skills, misaligned incentives and information asymmetries.

### **Information and skill gaps**

A wide range of individuals are involved in improving the energy efficiency of a site, including numerous 'demand-side' roles (e.g. Chief Financial Officers) and 'supply-side' roles (e.g. energy efficiency auditors). If any of these individuals lack the necessary skills to fulfil their role it can impede retrofitting. As one interviewee noted in a recent Council study, "the quality of a retrofit is determined by the least qualified person on site".

For example, in order to demand (and fund) a quality energy efficiency improvement program, key staff within an energy user need to understand the benefits that energy efficiency delivers and the broad details of how to implement an energy management plan.

Similarly, in order to deliver a quality energy efficiency improvement, a wide range of internal and external experts need skills in areas such as measuring energy use, identifying energy efficiency measures and developing a sound business case.

### **Misaligned incentives and information asymmetries**

Even where contractors have the appropriate skills, if they have an incentive to 'cut corners', and their clients are unable to enforce quality control, it can lower the quality of energy efficiency upgrades. This is commonly called 'misaligned incentives'. Issues with skills, resources and misaligned incentives are exacerbated when 'principals' (e.g. building owners) engage or oversee 'agents' (e.g. staff or contractors) and the principals lack the ability to either identify if the agents have suitable skills (hiring), or to determine if agents have delivered adequate services (managing). This situation where principals don't have the information required to control agents is termed 'information asymmetry'.

## Addressing Barriers with Standards and Accreditations

Standards and accreditations can partly address information gaps. For example, an audit standard should provide information to a site manager about the type of audit that they should commission for that site. The standard should also provide guidance for auditors in delivering an audit.

Standards can also address information asymmetries, enabling energy users to manage contractors and demand that they deliver an adequate quality of service. In turn, this encourages individuals and companies to invest in training to ensure that they can meet the standard.

Therefore, accreditation and standards are relevant where there are:

- Significant gaps in the skill sets of critical individuals; or
- Significant gaps in the resources or processes of companies; or
- Misaligned incentives between managers and contractors.

## Types of accreditation and standards

There are a number of different types of accreditation and standards.

<b>Individual accreditation</b>	<p>Accreditation at the individual level is best focused where key skills and experience are naturally held by individuals, or decision-making is taken by an individual with limited oversight by a company.</p> <p>For example, the decisions involved in connecting a light fitting are made by an individual electrician. As a result, the individual electrician is the appropriate point of accreditation for safety training. Conversely, project management decisions are typically made in line with company protocols.</p>
<b>Company accreditation</b>	<p>Companies are the appropriate point for accreditation where the features being considered sit at the company level.</p> <p>For example, accreditations for processes, procedures, hiring practices and resources are appropriately targeted at the company level.</p>
<b>Standards for Services</b>	<p>Standards for services (e.g. audit standards) are appropriate when the quality of a process is critical and there is a risk that either:</p> <ul style="list-style-type: none"> <li>- The client seeks an inappropriate process</li> <li>- A contractor cuts corners and/or has insufficient skills and so delivers an inappropriate process. This is particularly the case where the quality of the service is difficult to determine.</li> </ul>

**Table 1. Types of accreditation and standards**

Based on these principles, there is a case for an audit standard, as clients often request inappropriately structured / under-resourced audits and some auditors deliver poor quality audits. In particular, it is not possible for clients to determine the quality of an audit simply by the outcome (i.e. the quantum of energy savings identified), as the quantum of potential energy savings will vary from site-to-site. Instead, the client needs to insist that a certain degree of rigour is put into an audit, and they cannot do this without an audit standard.

### What is the role and limitations of an Audit Standard?

An audit is only one part of an effective Energy Management process. For example, the US Environmental Protection Agency *Guidelines for Energy Management* articulates a seven step process for energy management<sup>1</sup>.



**Figure 1: The US EPA ENERGY STAR energy management process**

An Audit Standard can help improve the quality of one part of this process (the audit) but it cannot improve the quality of other parts of an energy management process (e.g. make a commitment). Therefore, the Energy Efficiency Council supports the development of an audit standard as just one part of a broader process that involves training, standards and accreditations for other parts of the energy management process.

The Council recommends that DRET pursue the following priorities alongside developing an Audit Standard:

- Develop an Energy Management Standard
- Implement the priority accreditation schemes identified in the Energy Efficiency Council report “Energy Efficiency in Commercial Buildings, Accreditation and Skills Scoping Report”
- Work with the Energy Efficiency Council to identify the priority training programs, accreditations and standards required to deliver energy efficiency in other parts of the economy, particularly industry.

<sup>1</sup> US EPA Guidelines for Energy Management Overview [Online]  
[http://www.energystar.gov/index.cfm?c=guidelines.guidelines\\_index](http://www.energystar.gov/index.cfm?c=guidelines.guidelines_index)

## Summary – what is the purpose of an Audit Standard?

Standards for audits should:

- Provide guidance to energy users identify what kind of audit they need and develop a suitable scope of work and budget for an audit
- Help energy users manage auditors to ensure that they deliver adequate audits
- Provide guidance to auditors to deliver effective energy audits

Some individuals that carry out 'stand-alone' audits have developed an excellent reputation and provide high-quality audits even in the absence of a standard. However, in the absence of a standard these high-quality providers can be undercut by lower-quality, less scrupulous providers. This may result in 'adverse selection', where competitive pressures reduce the overall quality of audits.

An audit standard has already been developed (AS/NZS 3598:2000), but there are significant concerns about its quality. The EEC endorses the decision by the Australian Department of Resources, Energy and Tourism to update the audit standard. The audit standard should focus on commercial buildings first, as the demand for audit services in this sector is likely to grow rapidly over the next five years.

## 2. What are the failings of the current Audit Standard?

The current Audit Standard AS/NZS 3598:2000 was developed at a time when there was limited experience in good energy auditing. As a result, the current Standard has improved practice in the auditing industry, but there is substantial scope to update the standard in line with the considerable experience of the audit industry over the last decade, particularly in relation to the success of the Energy Efficiency Opportunities program.

Based on the purposes for the Audit standard set out in the previous section, the Council believes that there is significant scope to improve the Audit Standard.

### **1. The Audit Standard should provide guidance to energy users identify what kind of audit they need and develop a suitable scope of work and budget for an audit**

The current Audit Standard AS/NZS 3598:2000 does not provide clear guidance to energy users about the kind of audit they need. As a result, companies tend to over-specify or under-specify audits and tend to 'pick-and-mix' between the current levels. The next section of this submission suggests how the standard could be structured to provide more guidance to energy users to identify the kind of audit that they need.

### **2. The Audit Standard should help energy users manage auditors to ensure that they deliver adequate audits**

The current Audit Standard has not provided energy users with the ability to effectively manage auditors, with the result that many audits are sub-standard.

### **3. Provide guidance to auditors to deliver effective energy audits**

The current Audit Standard provides some guidance on how to develop an audit, particularly the audit report, but limited guidance on auditing specific types of equipment or implementing energy mass balances.

### 3. How should the new audit standard be structured?

#### The standard should be structured to help energy users define their needs

The Energy Efficiency Council recommends that the audit standard needs to first help energy users understand what type of audit they require. The Council believes that the levels for the audit proposed on pages 21 and 22 of the Background Paper are inappropriate and would significantly increase the difficulty for energy users in determining what type of audit they require.

Instead, the Council recommends that energy users are guided through a simple three step process:

#### 1. What kind of energy user are you?

At the moment, the Council recommends three broad classifications, noting that these may need to be refined:

- Commercial building
- Industry, processing and manufacturing
- Transport

This question would then guide the energy user to one of three 'overarching standards'.

#### 2. What kind of audit do you want?

The kind of audit that an energy user needs should be determined by the **outcomes** that they want from the audit. The Council recommends three levels for audits:

##### - **Benchmarking and making the case for an audit**

The first level of audit would identify the possible scale of savings on a site using benchmarking and/or a basic audit. For example, in a commercial building, this stage could involve a NABERS assessment and broad identification of the scale of energy saving opportunities on a site.

##### - **Scoping out opportunities**

A scoping audit would identify energy saving opportunities and determine their feasibility, costs and benefits to a reasonable level of accuracy. The level of accuracy would depend on the energy spend on the site (see below).

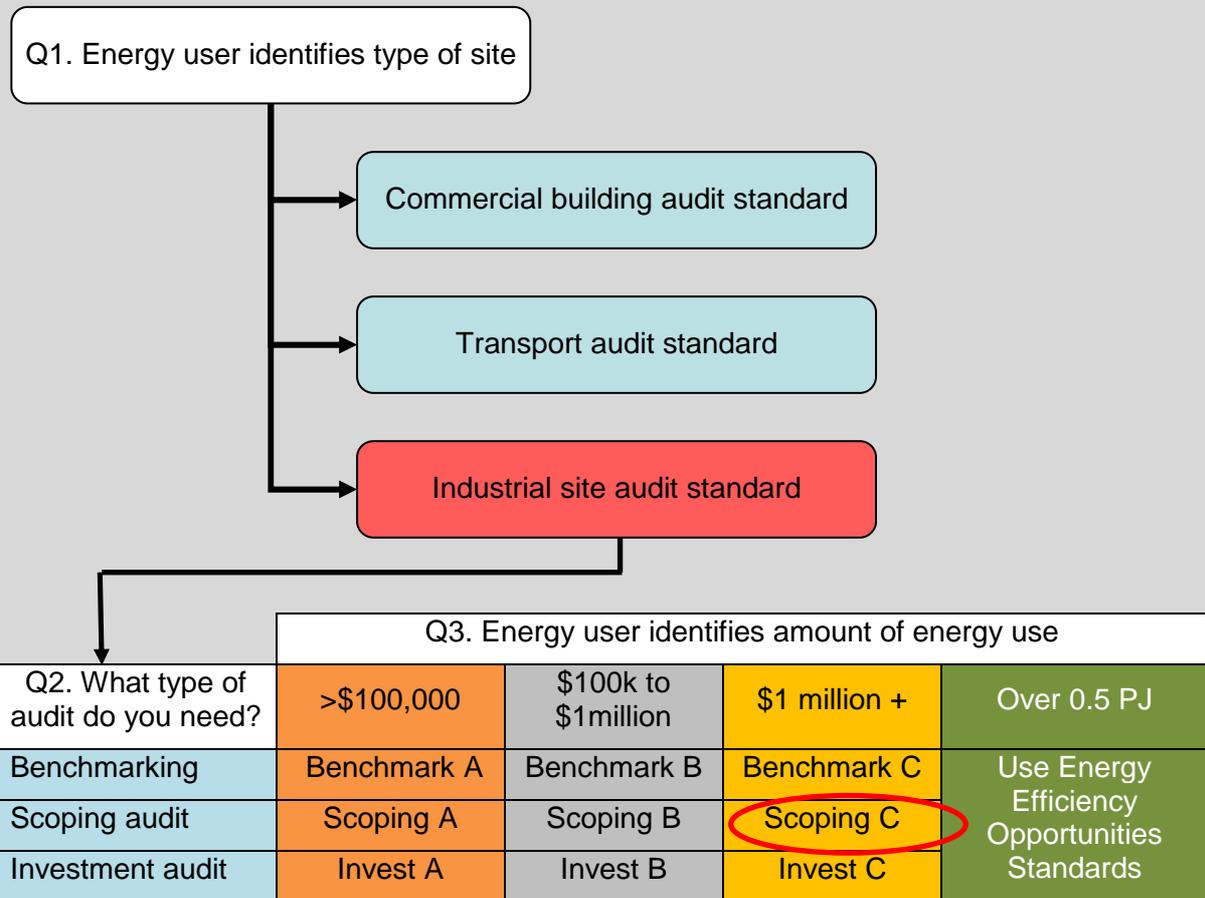
##### - **Investment-grade audit**

An investment-grade audit would build on the scoping exercise and undertake detailed modelling, feasibility studies and costings of some or all of the energy saving measures identified for a site. Although an auditor may further refine their estimates of the costs and benefits of these measures once the energy user has chosen to proceed to implementation, an investment-grade audit must be sufficiently accurate to enable energy users to make investment decisions. Again, the appropriate degree of accuracy (e.g.  $\pm 5$  per cent) would depend on the energy spend of the site.

#### 3. How much energy do you use?

As noted above, the rigour and accuracy of an audit should vary with the amount of energy that a site uses. For example, a site using \$2 million in energy a year should undertake a more rigorous scoping audit than a site using \$100,000 of energy a year.

### Helping an energy user identify which type of audit they need



The Council recommends that audits are specifically referred to as ‘benchmarking’, ‘scoping’ and ‘investment-grade’ as this would guide energy users. The Council recommends that audit levels are no longer referred to as ‘1,2 and 3’ as these are not descriptive and therefore do not help energy users that don’t have a detailed understanding of the standard.

#### The standard should also be structured to help auditors to deliver effective audits

The previous section indicates that the standard would need three sectors (commercial buildings, industrial sites and transport), each with three audit types and three levels of rigour. This structure would also help guide auditors to develop appropriate audits.

However, auditors will also need to consider technical issues. The Council recommends a approach that blends a sectoral approach and a technology-specific approach.

- Each sector should have an audit standard (commercial buildings, transport and industrial sites).
- The commercial buildings audit would be a **single sector standard**, due to the highly homogenous nature of the equipment in a building (e.g. lighting, HVAC, chiller units etc.) and the need to integrate equipment in developing energy saving measures across buildings.
- The industrial site standard would consist of a **core site-wide methodology** for the different types of audit (e.g. benchmarking and scoping) and rigour (A, B & C), accompanied by technology-specific guidelines (e.g. compressed air, electric motors etc.) to reflect the heterogeneity of industrial sites

In summary, the Energy Efficiency Council recommends the following structure:

- Each sector (commercial buildings, industry and transport<sup>2</sup>) has its own audit standard.
  - o The commercial building standard has a single standard for the whole sector.
  - o The industrial site standard has a core standard and technology-specific guidelines
- Each standard includes:
  - o Three levels of accuracy for a benchmarking audit, based on energy spend
  - o Three levels of accuracy for a scoping audit, based on energy spend
  - o Three levels of accuracy for an investment-grade audit, based on energy spend

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<sup>2</sup> The EEC has no comment on the transport audit standard at this time

## 4. Responses to questions in the discussion paper

### Rationale for the review

1. What are the key gaps/deficiencies that have emerged in relation to AS/NZS3598:2000 over the past decade?
  - AS/NZS3598:2000 does not provide good guidance to energy users on what type of audit to implement.
  - AS/NZS3598:2000 does not provide sufficient detail on delivering an energy audit
  - The audits produced through AS/NZS3598:2000 are often not implemented. This is best addressed through the development of an Energy Management Standard and other policies.
2. To what extent (if any) do, or should, the elements of the current standard complement other standards, guidelines and programs?
  - The current (and future) standard should complement a range of other standards, including an Energy Management Standard and the Energy Service Company accreditation scheme currently being developed by the Energy Efficiency Council.

### Objective

3. What do you believe should be the principal objective (or set of objectives) of the standard?
  - The Audit Standard should:
    - o Provide guidance to help energy users identify what kind of audit they need and develop a suitable scope of work and budget for an audit
    - o Help energy users manage auditors to ensure that they deliver adequate audits
    - o Provide guidance to auditors to deliver effective energy audits
4. To what extent should the standard focus on improving the skills and practice of energy auditors?
  - The Audit Standard should set the appropriate processes and quality benchmarks for an audit. A revised Audit Standard would provide the foundation for the development of a new accreditation program for lead energy auditors, and this in turn would provide the foundation for the development of a training program for energy auditors. While the Audit Standard should bear this in mind, it should focus on setting the appropriate processes and quality benchmarks for an audit.
5. To what extent should the standard outline requirements of auditor training and address accreditation programs?
  - The Audit Standard may, at a later date, indicate that an accredited lead energy auditor should lead the audit and sign off on it. However, the Audit Standard cannot specify this until the accreditation for auditors has been developed.
6. Are there any weaknesses in the current standard that are hindering the effective identification and evaluation of opportunities to improve energy performance?
  - See answer to Question 1

## Scope

7. What areas of the energy audit process should the standard specifically address?
  - The Council will provide a detailed response to this as the standard is refined.
8. How should the standard link with other relevant standards and/or frameworks?
  - The Council will provide a detailed response to this as the standard is refined.
9. Should the standard address energy used in transport applications and materials movement (e.g. in mining, in port facilities, etc.)?
  - Some forms of material movement (e.g. conveyors) should be considered under the technology-specific guidelines that link to an industrial site standard, whereas long-distance freight should be considered under a transport standard.
10. Should the standard incorporate guidance on measurement and verification? Why?
  - The Standard should specify the use of the International Measurement and Verification Protocol (IPMVP), the international benchmark for measurement and verification of energy savings.
11. Should the standard incorporate guidance on performance contracting? Why?
  - The standard should note how an audit fits into an overall integrated energy efficiency upgrade, with advice on how it fits into performance contracting. However, the Audit Standard should focus on auditing, and other standards should focus on other aspects of energy efficiency upgrades (e.g. the Energy Efficiency Council accreditation scheme for Energy Service Companies).
  - The Energy Efficiency Council will update the Best Practice Guide for Energy Performance Contracting to recommend which level of audit standard should be used for the competitive tendering process and which level for a Detailed Feasibility Study. This guidance does not need to be stipulated in the Audit Standard.
12. Should the standard incorporate guidance on energy efficient design? Why?
  - The Council will provide a detailed response to this as the standard is refined.

## Target audience

13. What group or groups (i.e. energy users, energy managers, energy audit providers, training bodies, government agencies) should comprise the target audience for any future revision of the current standard?
  - The audit standard needs to target the following groups:
    - o The individuals within energy users that would commission and fund an energy efficiency audit; and
    - o Energy managers; and
    - o Energy audit providers.

14. Please explain what part/s of the target audience that you represent. What are your specific information requirements on energy auditing?
- The Energy Efficiency Council is the peak body for energy efficiency. Many of the Council's members deliver energy efficiency audits as part of integrated energy efficiency services that focus on implementing energy efficiency upgrades. Council members have a deep understanding of the needs of commercial and industrial energy users when it comes to auditing.
15. Do you believe that it is necessary to make a distinction between the needs of large energy users, medium energy users, and small energy users? Why?
- Yes, it will be essential to distinguish between the needs of different energy users. The amount of energy the site consumes determines the degree of rigour that is cost-effective and appropriate for a site.
  - Companies that use more than 0.5PJ should be directed to the Energy Efficiency Opportunities (EEO) program standard, which will be more rigorous than the audit standards for smaller energy users. However, the audit standard may be valuable for EEO participants in assessing their smaller sites (e.g. that occupy or own multiple commercial buildings).
16. Can the needs of different sized energy users be accommodated by a single standard or is it necessary to find a mechanism for meeting the different needs of small and large businesses. Do you think modifying the level system provides a potential solution?
- The Council recommends that each sector (e.g. commercial buildings, industrial sites and transport) has a core standard that sets out different levels of rigor for different sizes of energy user.
17. What do you consider to be the most appropriate basis for differentiating between the size of different energy users (i.e. employee numbers, annual turnover, annual energy use)?
- Energy users should be differentiated based on annual energy spend, as this determines the rigour that is cost-effective and appropriate for the site. Energy spend would ideally be given in dollars per annum. This would not need to be updated with rising energy prices (as a higher energy price, rather than higher energy user, affects the cost-effectiveness of an audit), but may need to be periodically updated if there is a significant increase or decrease in the cost of energy auditing.
18. What is your opinion on the need for ensuring that any revision of the standard takes due account of energy users with a partial or fully implemented EnMS?
- No comment at this time

## Structure

19. Do you see value in retaining a generic audit standard – as opposed to developing a suite of standards comprising an umbrella standard and sector specific standards?
- The Council recommends a suite of three standards (commercial buildings, industrial sites and transport). The industrial site standard should consist of a core standard for auditing along with technology-specific guidelines.

20. What is your opinion on the development of an outcomes driven standard versus a process driven standard? Some of the options presented in Appendix B adopt both process and outcomes elements. What are your opinions of those options?
- The standard should be largely process-driven. While certain elements can be specified as 'outcomes-driven' (e.g. the accuracy of payback periods in the scoping study), it is impossible to set an 'outcome' for the proportion of energy efficiency opportunities that need to be identified on a site. Therefore, the 'rigour' of the audit will depend largely on procedures.
21. What are the benefits of adopting an industry sector focus to guidance on energy audits – as opposed to the adoption of a technology focus? Can you nominate any existing standards/guidelines that could potentially be used to provide sector/technology specific guidance?
- The standard will need to take a mixed approach. There should be a single 'sector' standard for commercial buildings (as the technology is highly homogenous), but the 'sector' standard for industrial sites would need to be complemented by technology-specific guidelines.

### Other considerations

22. Should the standard refer to energy audits, energy assessments or energy reviews? Why?
- No comment at this time
23. What are the specific requirements of the energy efficiency community in respect of guidance on training content and accreditation?
- The Council will provide a detailed response to this as the standard is refined.
24. What do you believe should be the priority areas for the standard?
- Commercial buildings (due to the rapidly growing market for audits and the limited ability of building owners to identify competent auditors) and industrial sites that sit below the Energy Efficiency Opportunities (EEO) threshold.