

APPENDIX I

ANNUAL ENERGY REPORT 2016/17

Contents

- 1 Introduction
- 1.1 Aims and Objectives
- 2 Performance
- 2.1 Consumption and Costs
- 2.1.1 Combined Energy Consumption
- 2.1.2 Heating-related Energy Consumption
- 2.1.3 Water Consumption
- 2.1.4 Relative Energy Efficiency Performance - Benchmarks
- 2.2 Energy Performance Certificates (EPCs)
- 2.3 Street Lighting
- 2.4 Carbon
- 3 Utility Management
- 3.1 Utility Contracts
- 3.2 Utility Cost Management
- 3.2.1 Budget Monitoring
- 3.2.2 Utility Expenditure
- 3.2.3 Commodity Market Factors
- 3.2.4 Carbon Reduction Commitment (CRC)
- 3.2.5 Renewable Heat Incentive (RHI)
- 3.3 Invoice Processing
- 4 Policy & Strategy
- 4.1 Policies and Strategies
- 4.1.1 Energy Policy & Strategy
- 4.1.2 Corporate Heating Strategy
- 4.1.3 Strategic Energy Action Plan (SEAP)
- 4.2 Scottish Government
- 4.2.1 Climate Change Plan and Scotland's Climate Change Targets
- 4.2.2 Related Legislation
- 4.2.3 Mandatory Carbon Reporting
- 5 Building Energy Management Systems (BEMS)
- 6 Energy Initiatives
- 6.1 Energy Awareness
- 6.1.1 Energy Website
- 6.1.2 Corporate Training
- 6.1.3 Energy Team Training
- 6.2 Energy Audits
- 6.3 Energy Projects
- 6.4 Future Energy Initiatives
- 6.5 Funding

1 Introduction

The Scottish Government designated energy efficiency as a national infrastructure priority in June 2015, covering energy efficiency and heat decarbonisation of both domestic and non-domestic buildings, the cornerstone of which will be Scotland's Energy Efficiency Programme (SEEP) – a 15 to 20 year programme with commitment to invest more than half a billion pounds over the next four years. The vision is that by 2035, through SEEP, the energy efficiency and heating of buildings in Scotland will be transformed so that, wherever technically feasible, and practical, buildings are near zero carbon.

Energy performance is increasingly an important factor in assessing the overall performance of property assets and in operational and investment decision making.

During the financial year 2016/17 Moray Council's expenditure on utilities (including street lighting) was approximately £3.7M, with associated carbon emissions of 13,571 tonnes CO₂.

1.1 Aims and Objectives

The Community Planning Partnership's Moray 2026 "A Plan for the Future" states that the Sustainability and Communities Partnership (SCP) is responsible for reducing energy consumption. The Local Outcome Improvement Plan (LOIP) will replace the Moray 2026 Plan. Once the LOIP is finalised the Community Planning Board will take a view on the working arrangements needed for implementation including the role of the existing six partnerships of which the SCP is one.

Reducing energy consumption in the Council's non-domestic operational properties by 2% per annum is the main objective of the Council's Energy Policy.

2 Performance

2.1 Consumption and Costs

Table 1 provides a summary of the Council's utilities' consumption, costs and emissions during 2016/17.

Table 1

Commodity	Consumption (kWh/m³)	Net Cost (£)	Carbon (tonnes CO₂)
Biomass	2,730,300	£129,460	-
Oil	3,742,658	£166,303	949
Gas	22,162,873	£516,388	4,070
Electricity	13,175,455	£1,653,936	5,884
Street Lighting & Unmetered Elec	5,972,737	£718,855	2,668
Water (m3)	136,116	£485,021	143
Totals		£3,669,963	13,714

The operation of the Council's 236 non domestic buildings cost £2,974,980, with a further expenditure of £718,855 on street lighting and unmetered electricity.

2.1.1 Combined Energy Consumption

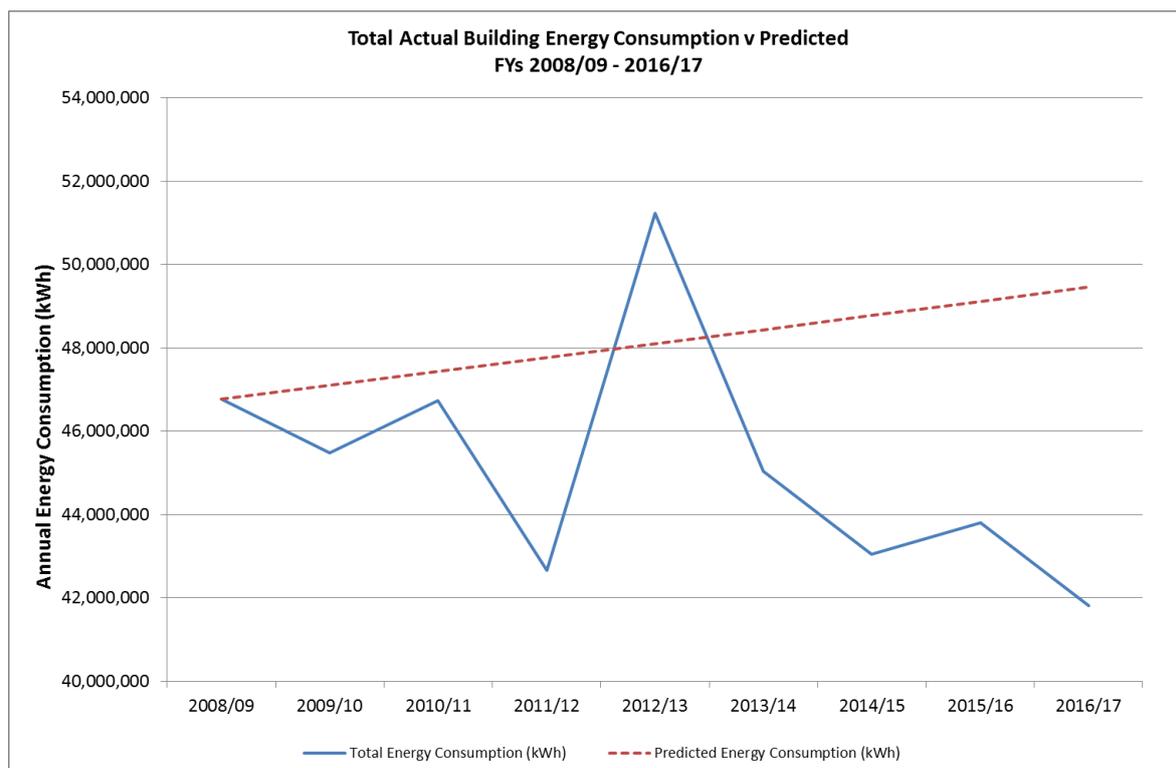
Table 2 below provides a comparison between 2015/16 and 2016/17 for individual utilities.

Table 2

Consumption				
Utility	15-16	16-17	Difference	%
Biomass	2,034,746	2,730,300	695,554	34%
Oil	4,063,998	3,742,658	-321,340	-8%
Gas	24,044,179	22,162,873	-1,881,306	-8%
Electricity	13,668,381	13,175,455	-492,926	-4%
Overall Building Total (kWh)	43,811,304	41,811,286	-2,000,018	-4.6%
Street Lighting & Unmetered Elec	6,457,972	5,972,737	-485,235	-8%
Overall Total (kWh)	50,269,276	47,784,023	-2,485,253	-4.9%
Water (m3)	135,839	136,116	277	0.2%

The combined energy consumption from the Council's buildings, (the measure to which the annual reduction target is assessed), for 2016/17 was 41,811,286 kWh compared with consumption of 43,801,304 kWh for 2015/16, equivalent to a 4.6% decrease.

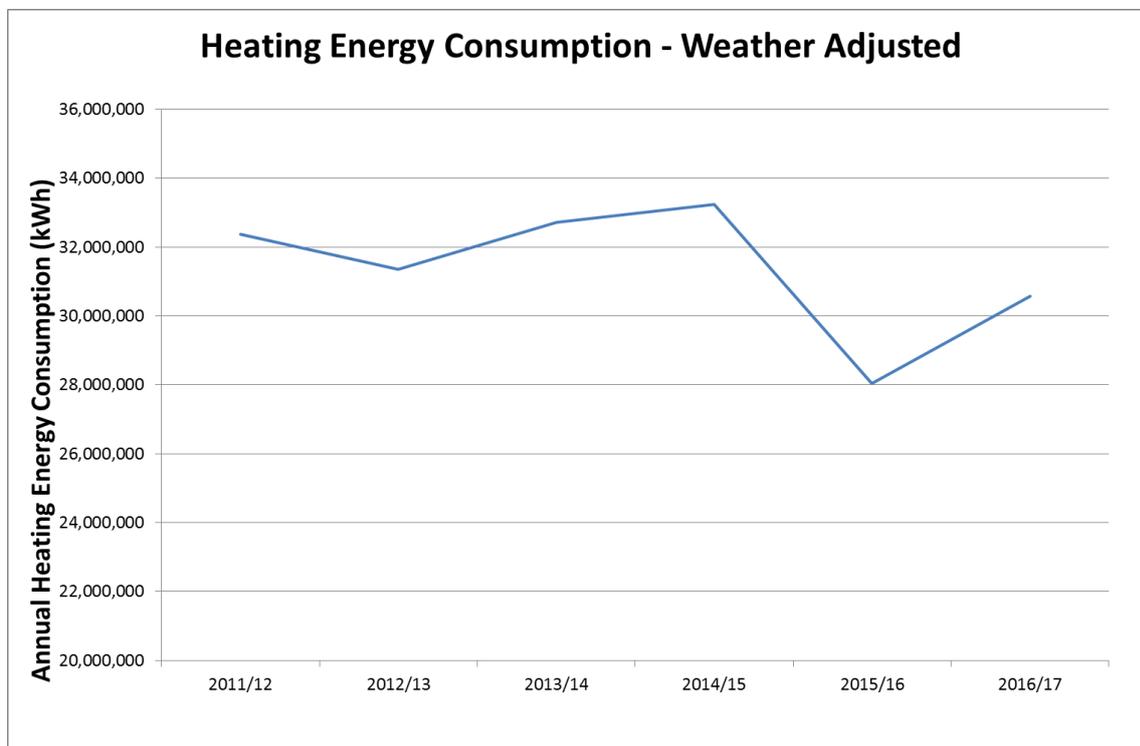
The graph below shows the Council's total energy consumption in its non-domestic buildings for the last 8 years, compared to the predicted increases, (based upon Government forecasts of a Business-as-Usual uplift of 0.7% per annum).



2.1.2 Heating-related Energy Consumption

To take account of weather conditions a measure termed “Degree Days” is utilised to incorporate the effect of warmer or colder conditions – permitting a comparison of heating related efficiency.

The graph below shows the Council’s weather adjusted heating consumption for the last 5 years.



Heating accounts for a significant proportion of the Council’s energy consumption. The weather in 2016/17 was 13% warmer than in 2015/16 and the graph above shows a weather adjusted increase in heating consumption of 15.5% compared to 2015/16. This indicates that the overall efficiency of heating provision within Moray Council properties has reduced, i.e. became less efficient.

- The majority of the assessed increase is attributable to educational properties. However this is primarily due to the size of the estate and in relative terms thermal energy consumption increased by 11%.
- The largest reduction recorded was for swimming pools, attributable to the temporary closure of Forres Pool.
- Large percentage increases (greater than 20%) were recorded for
 - Community Centres
 - Depots
- Large percentage decreases (greater than 20%) were recorded for
 - Museums

Given the number of potential factors which affect heating related performance, it is very difficult, without detailed and time consuming analysis, to identify exactly why

consumption has increased. Investigation of selected properties indicates that the following contributory factors are the primary cause:-

- Windier and wetter (but not necessarily colder) weather gave a perception that heating systems required to be on. This human factor is a key aspect of heating related energy efficiency which remains very difficult to influence.
- Lack of automatic adjustment to warmer conditions, i.e. heating control systems not used to full capability.
- Staff operating heating systems longer than required, as a building fabric protection measure.
- Efficiency of boilers reducing.

The Energy Team will be contacting relevant service managers prior to the start of the new heating season to address these issues.

Climate change is likely to exacerbate fluctuations in weather conditions in future.

2.1.3 Water Consumption

The Council's water consumption for 2016/17 was 136,116 m³ compared with consumption of 135,839 m³ for 2015/16, equivalent to a 0.2% increase.

2.1.4 Relative Energy Efficiency Performance - Benchmarks

United Kingdom wide benchmarks are available for different property types. However these are now dated and make no allowance for location and are considered of limited merit in assessing the Council's properties.

However the public sector Scottish Energy Officers Network (SEON) is currently working with Resource Efficient Scotland to collate energy consumption data from all Scottish Local Authorities, with a view to developing a reliable set of benchmarks for schools and other properties in Scotland. It is envisaged that, once available, the benchmarks will be used to re-assess the energy performance of Council properties.

2.2 Energy Performance Certificates (EPCs)

The Council remains statutorily obliged to provide EPCs for its public buildings with a floor area above 250m² as well as all properties for lease or sale (including Housing Revenue Account dwellings).

2.3 Street Lighting

The management and maintenance of street lighting is undertaken by Direct Services. The associated energy consumption in 2016/17 was 5,972,737 kWh, 7.5% lower than the 2015/16 consumption of 6,457,972 kWh. A five year programme to upgrade existing street lighting to LED technology began in 2015 and is scheduled to complete in 2020.

2.4 Carbon

Carbon dioxide emissions are increasingly the measure by which energy management and sustainability activities are monitored and evaluated. It provides a single common denominator between disparate activities such as electricity, transport and waste recycling. The following table details the carbon emissions associated with energy and water consumptions attributable to Moray Council.

Table 3

Commodity	15-16	16-17	Difference	%
Biomass	-	-	0	0
Oil	1,030	949	-81	-8%
Gas	4,425	4,070	-355	-8%
Electricity	6,787	5,884	-903	-13%
Street Lighting & Unmetered Elec	3,205	2,668	-537	-17%
Water	143	143	0.3	0.2%
Overall Total (tonnes CO₂)	15,590	13,714	-1,876	-12%

The carbon emissions from the Council's non-domestic buildings in 2016/17 were 12% lower than in in 2015/16. Reductions in carbon emissions were recorded against all utilities. Contributory factors which would have impacted on the above performance include:-

- Reduced carbon intensity of grid electricity
- Increased heat provision from biomass, with an associated reduction in gas and oil consumption
- Warmer external temperatures, reducing the need for heating
- More street lighting provided from LED technology

3 Utility Management

3.1 Utility Contracts

Electricity - A final one year extension option has been granted to EDF Energy, and the framework will now expire on 31 March 2019. Scottish Procurement has estimated that the electricity contract framework continues to deliver around £15m of savings annually to the Scottish public sector.

Gas - The current contract with Total Gas & Power is due to expire in March 2019; however it is expected that a 12 month extension will be applied to the incumbent provider by Scottish Procurement.

Water - Anglian Water replaced Business Stream for water services on 1 March 2016 and the Council continues to experience significant difficulties with the new supplier. It should be noted that these issues are not restricted to Moray Council and are common across the Scottish public sector.

Payment for water services is made annually in advance to realise a 2% discount on all charges.

Biomass - The Energy Team participated with the Council's Maintenance Section in on-going discussions with the framework suppliers, HW Energy, as part of contract liaison meetings. Following a joint procurement exercise with Highland Council a new Biomass Heat contract was recently awarded to the HW Energy. Moray Council's Energy Team took the lead in developing the client performance specification for the new contract.

3.2 Utility Cost Management

3.2.1 Budget Monitoring

Budget Managers currently receive monthly budget reports including details of utility spend from the Finance Department. The Energy Team supplies utility consumption data in various formats to budget holders and carries out energy audits, walk-rounds and briefings as requested.

3.2.2 Utility Expenditure

In 2016/17 the Council's total utility bill amounted to £3,669,963, a decrease of £174,316 (5.6%) compared to 2015/16 - energy within buildings constituted the largest element at £2,466,087. Table 4 below gives a breakdown of costs.

Table 4

Commodity	15-16	16-17	Difference	%
Biomass	£97,580	£129,460	£31,880	33%
Oil	£148,577	£166,303	£17,726	12%
Gas	£716,630	£516,388	-£200,242	-28%
Electricity	£1,621,512	£1,653,936	£32,424	2%
Water	£541,125	£485,021	-£56,104	-10%
Overall Total - Buildings Only (£)	£3,125,424	£2,951,108	-£174,316	-5.6%
Street Lighting & Unmetered Elec	£724,019	£718,855	-£5,164	-0.7%
Overall Total (£)	£3,849,443	£3,669,963	-£179,480	-4.7%

3.2.3 Commodity Market Factors

The following factors should be noted with regard to the utility costs for 2016/17:

- Biomass unit rate for heat remained relatively constant. The increased cost recorded during 2016/17 reflects increased usage of biomass heat, which matches a significant reduction in gas consumption at Milne's High School and increased Renewable Heat Incentive payments to the Council. There has also been a reduction in gas consumption at Speyside High School and an increase in RHI payments.
- The 15-16 oil price was very low. In 2016-17 prices generally rose throughout the year; however they are still significantly lower than the historic average.
- The average gas price in 2016/17 was 13% lower than 2015/16, but is forecast to increase in 2017/18.

Note: the above costs are exclusive of CRC.

3.2.4 Carbon Reduction Commitment (CRC)

The CRC is a scheme designed to incentivise large commercial and public sector organisations to implement cost effective energy efficiency opportunities at non-domestic properties and street lighting.

The charge per tonne (allowance) of CO₂ emitted increases year-on-year and can vary dependant on when the allowance is purchased. Moray Council purchased 15,000 allowances at £16.10 each in April 2016 for the reporting period 2016/17, at

a cost of £241,500. The actual amount of allowances required for the year was 12,490, at a cost of £206,085, and the Council is therefore able to carry forward 2,510 allowances.

The Energy Team undertake the preparation and submission of the CRC Annual Report and associated evidence pack.

In the 2016 budget the Government announced that the CRC scheme is to be abolished from April 2019 and that the Climate Change Levy will increase from 1 April 2019 to cover the cost of the CRC abolition.

3.2.5 Renewable Heat Incentive (RHI)

The council currently operates 2 biomass heating systems, at Speyside and Milne's High Schools. For the 2016/17 period the Council received RHI payments of £64,694 and £44,806 respectively.

As part of the refurbishment works at Forres Swimming Pool a roof-mounted solar thermal system was installed to supplement the heating of pool water. An RHI application has been submitted to OFGEM and once approved and fully operational the system is predicted to generate RHI income of approximately £2,000 per annum.

3.3 Invoice Processing

All utility invoices go directly to the Energy Team for verification and validation prior to centralised authorisation and payment. The vast majority of utility invoices are received electronically and uploaded directly onto the Council's monitoring and targeting system – TEAM Sigma. The software has been set up to automatically perform validation checks on the data received, highlighting any abnormalities for the Energy Team to investigate. During 2016/17 over 13,000 utility invoices were processed by the Energy Team.

The monitoring and targeting system produces consolidated information for the Energy Team to pass to the Finance Section to facilitate payment. Currently 2 officers in Finance have access to the system to allow financial investigations and specific reports to be handled. The Council receives a discount of 0.3% for paying its electricity and gas invoices by direct debit – this also removes the potential for late payment charges.

The application of new regulations within the electricity industry (referred to as P272) has had a detrimental impact on invoicing at 6 Council sites - some sites not receiving an invoice for several months. Work is continuing to attempt to resolve these issues.

The provider of the Council's monitoring and targeting software, TEAM Sigma, has highlighted that support for self-hosted systems (such as the Council's) will now be run down to permit greater support of supplier-hosted systems. During 2017/18 the Energy Team will undertake an evaluation of the impact and an appraisal of alternative solutions, including any cost implications.

4 Policy & Strategy

4.1 Policies and Strategies

4.1.1 Energy Policy & Strategy

The Council's current Energy Policy and Strategy was first produced in 2005 and subsequent revisions have been agreed by this Committee and made available publicly via the Council's Energy Internet website. In accordance with the Carbon Trust Management guide CTC733 "An energy management best practice model for Scottish local authorities", the Policy and Strategy document is reviewed annually. No changes are proposed at present and the current document is attached as **APPENDIX II**. Officers will continue to monitor the position and in particular whether changes will be required due to the imminent introduction of a number of national legislative initiatives in this area, together with on-going consideration of a Moray Council Climate Change Strategy.

4.1.2 Corporate Heating Strategy

A Corporate Heating Strategy containing guidelines on the use and responsibilities for heating at Council buildings was agreed by this Committee at its meeting on 9 September 2014 (paragraph 4 of the Minute refers). This document gives clarity and advice to building occupiers, whilst allowing sufficient flexibility to facilitate local and/or changing circumstances.

The Energy Team monitor heating use and consumption and investigate any inconsistencies and discrepancies with the Heating Policy.

4.1.3 Strategic Energy Action Plan (SEAP)

On-going discussions are taking place between Aberdeen City, Aberdeenshire, and Angus & Moray Councils to agree a regional SEAP, to coordinate and plan efforts for a sustainable, low carbon NE Scotland region.

Further consideration is being given to implementing a dedicated SEAP for the Moray Council Area.

4.2 Scottish Government

4.2.1 Climate Change Plan and Scotland's Climate Change Targets

The Scottish Government published the draft Climate Change Plan (CCP) 2017-2032 on 19 January 2017, which presents policies and proposals to meet Scotland's annual targets until 2032. Based on the most recent Scottish greenhouse gas inventory (2014), these annual targets represent an emissions reduction of 66% compared to baseline levels by 2032. This level of transformational change presents Scotland with significant challenges and opportunities, which are explored within the draft plan.

The principal target of the draft CCP is the "almost complete decarbonisation of Scotland by 2050", with what are considered to be transformational outcomes in transport, heat, electricity generation, and energy efficiency, along with increased natural carbon sinks and more efficient and profitable agricultural practices.

4.2.2 Related Legislation

A consultation is currently open on a draft Scottish Energy Strategy, which sets out the Scottish Government's vision for the future energy system in Scotland, to 2050. It articulates the priorities for an integrated system-wide approach that considers both the use and the supply of energy for heat, power and transport.

Alongside the draft Strategy the Government are also currently consulting on:-

- An on-shore Wind Policy Statement
- Scotland's Energy Efficiency Programme
- Local Heat and Energy Efficiency Strategies
- Regulation of District Heating
- Unconventional Oil and Gas

These consultations are designed to provide focus on specific areas of the energy system and complement the consultation on the draft Scottish Energy Strategy.

4.2.3 Mandatory Carbon Reporting

The Energy Team contributed to the submission of the Council's first Public Sector Climate Change report in November 2016, as per the report submitted to the Policy and Resources Committee on 22 November 2016.

5 **Building Energy Management Systems (BEMS)**

As part of on-going development of the BEMS system a dedicated technical specification was prepared by the Energy Team for application to all future BEMS related works within the Council. The specification is designed to ensure that consistency is achieved across all systems, including:-

- Graphical Design
- Access Protocols
- System Capabilities
- Control Strategies
- Equipment Standardisation

Together the above measures will aid the effective and efficient use of the BEMS Systems.

The new graphical style was applied to Keith Grammar School as part of an on-going project and positive feedback was received from users. Consideration is being given to retrospectively applying the same graphical style to all BEMS systems within the Council Estate.

It has been identified that the BEMS could be improved in relation to access, functionality and communications. The Energy Officer has been allocated the role of BEMS Strategic Lead to co-ordinate and prioritise works to improve the system.

6 Energy Initiatives

6.1 Energy Awareness

6.1.1 Energy Website

The Energy website on the internet and intranet continues to be reviewed and updated. The pages detail how to help the environment by following simple energy saving tips for your home, workplace or school. In March 2017 a successful “Find the Panda” campaign was run to highlight the WWF’s “Earth Hour” event. The Council supported Earth Hour through switching off the electrical lighting to the Landshut Bridge.

Copies of the Council’s latest energy saving posters and the corporate heating strategy are also available on the website.

Regular articles were included in the Connect magazine during 2016/17, covering a variety of energy issues, which are continuing in 2017/18.

6.1.2 Corporate Training

A total of 69 staff and 1,079 primary school pupils attended energy awareness events in 2016/17; these included 4 staff induction sessions, 7 school eco groups and 2 school assemblies.

Energy Awareness briefings are incorporated as part of the Corporate Staff Induction Training programme.

6.1.3 Energy Team Training

The Energy Team have participated in training to improve the benefits provided by the TEAM Sigma energy monitoring & targeting system. A staff member is also undertaking an ECDL Advanced Spreadsheets training course.

Energy Team staff regularly attend Scottish Energy Officers Network meetings.

6.2 Energy Audits

In 2016/17 the Energy Team carried out audits of the following sites:-

- Greenwards Primary School
- Dallas Primary School
- Cullen Primary School
- Knockando Primary School
- Portgordon Primary School
- Tomintoul Primary School

These audits resulted in the identification of several energy saving projects and the implementation of energy saving measures which are being actively pursued. A series of follow up visits to gauge the progress of the measures recommended was carried out and showed that the majority of the recommendations were in the process of being implemented.

Both the initial findings and follow up reports are provided to the particular school and copied to the Educational Resources Manager and the Head of Schools and Curriculum Development.

An expanded programme of audits is in place for 2017/18.

6.3 Energy Projects

Appendix III lists the energy saving projects carried out in 2016/17, including the anticipated savings in kWh and £'s for each. **Appendix III** also lists further energy saving projects being considered.

The project to refurbish, upgrade and extend 4 of the Council's Primary Schools included a number of measures which will substantially improve the energy efficiency of those properties. Analysis is on-going but a full calendar year is required to accurately determine the energy benefits of the refurbishments.

The installation of a new heat recovery system and building fabric upgrade of Forres Swimming Pool has substantially improved the energy efficiency of that property. Initial analysis of gas consumption indicates a reduction of over 50%, although a full 12-month period is required to accurately determine the full impact. Issues with P272, (see section 3.3 above), has prevented access to electricity data and no analysis of performance can yet be undertaken.

It should be noted that the on-going policy of "make do and mend" for future maintenance of Council properties has restricted opportunities to reduce energy consumption.

6.4 Future Energy Initiatives

Although significant progress has been made in recent years in reducing the Council's energy consumption it is considered that there is scope to achieve further significant reductions, principally as a result of:-

- (a) Further energy saving projects.
- (b) Rationalisation of the Council's property assets.
- (c) Raising corporate awareness and corporate training.
- (d) Targeting worst performing schools.
- (e) Better utilisation of BEMS and other systems to analyse accurate energy data and identify energy saving opportunities.

6.5 Funding

The revenue budgets for 2017/18 are as follows:-

Awareness & Information	£ 3,200
Small Projects	£16,000

In addition a sum of £15,000 is allocated in the Council's 2017/18 capital plan for energy saving projects and the Energy Officer will also continue to take forward spend to save proposals.

With respect to Spend-to-Save proposals, the following payback requirements have been agreed with Finance.

Payback	Investment Approval
0 – 3 Years	Likely to be approved
3 – 7 Years	To be assessed on a case by case basis. Other pertinent factors to be taken into account
Above 7 years	Unlikely to be approved