

GREEN AUDIT THEME: THE WAY WE OPERATE OUR BUILDINGS - IMPROVEMENT PLAN, 2008

1. INTRODUCTION

- 1.1 Growing awareness about the vital importance of the environmental impact produced by our operations has led the council to set up and run a 'Green Audit' process. Operational managers have been tasked with critically examining current practices, particularly with a view to the way that these generate pollution; then seek changes & improvements so that the service impact can be reduced.
- 1.2 The threat of climate change generated by atmospheric pollution by carbon dioxide is the most significant focus for improvements, although there are others. Carbon dioxide is inevitably emitted when fossil fuels are burnt to provide the heat and power which energise our services. The civic buildings carbon footprint for 2007 was 2,856 tonnes CO₂. There are broadly three strategies for reducing increments to this carbon burden:
- Change practices so that they require less (or no) energy
 - Burn any fossil fuels that are required at maximum efficiency
 - Substitute ambient (carbon neutral) energy sources in place of fossil fuels.
- 1.3 This report builds on a previous one to the Green Audits Board [3 September 2008] and the main purpose here is to make Cabinet aware of the proposed # Improvement Plan [Appendix 1], and to seek their views on it and their support for it.

2. BACKGROUND

- 2.1 For more than twenty years this council, unlike most other district councils, has had the foresight to employ a full-time Energy Manager and to provide a budget so that energy use can be monitored and reported on, and so that fossil fuel efficiency and substitution can be introduced. Much has been done - but there is always more to do.
- 2.2 **Efficient Use of Office Space:**
Property Services fulfils many functions and less attention than might have been has been directed to maximising the efficient use of office and other spaces, so that the energy used to provide heat and power could be minimised. This strategy for reducing impact is now a more important part of the work [and indeed the 'One Site' project will enhance this focus].
- 2.3 **Efficient use of Energy:**
Energy surveys of all the larger civic buildings were undertaken about fifteen years ago. These generated many energy efficiency and some renewable energy projects and many more have been undertaken over the years since. As a prelude to the green audit process, new surveys were commissioned at three main sites [Applimore H&L Centre, Marsh Lane Depot and Town Hall

Lymington]. These were carried out [free] by the Carbon Trust, but that's the limit of their free help; the Plan calls for seven further site surveys but these will be commissioned from commercial suppliers. [Appletree Court has recently been surveyed and six more sites are yet to be visited].

- 2.4 The Carbon Trust reports commend the present energy performance of the council, both in terms of management and the technology deployed, but also go on to make recommendations for improvements. The recommendations are detailed as to process, cost, pay-back and impact reduction [carbon savings]. A distillation of these recommendations is the basis for the Improvement Plan appended to this report.
- 2.5 The draft Plan was subject to a Challenge Event which included members and officers. It was successful in the sense that participation was active and provided a critique from an 'outside perspective'. The main criticism was that the Plan was too conservative and that more renewables [longer pay-back] projects should be evaluated. This was undertaken, resulting in some additions to the Plan, which were subsequently accepted by the Green Audits Board.
- 2.6 Cabinet will be well aware that energy prices have been rising and this long term trend is most likely to continue, notwithstanding short term fluctuations. However financially painful this might be, the effect should be to depress the use of fossil fuels. Projects to reduce or replace fossil fuel use are becoming economically more attractive, as the fuel cost [saved] is inflating well beyond general economic inflation, as a general trend.

3. FINANCIAL IMPLICATIONS

- 3.1 As it stands now, implementation of the Improvement Plan is estimated to cost energy efficiency budgets £40k per year over the next 2 years. This accounts for training and infrastructure improvements and the additional cost of the most efficient replacement plant. The plant costs will largely be met from property maintenance budgets, with only an 'efficiency top-up' required from energy efficiency budgets.
- 3.2 These sums exclude for two potential Expenditure Plan items, [replacement heaters, MLD 2009, and the pool pumps project, AH&L 2010, see App.1]. Otherwise, costs can be met from within existing resources. Average pay-back of these 'spend-to-save' proposals is estimated at 3 years at current energy prices.

4. ENVIRONMENTAL IMPLICATIONS

- 4.1 On completion of the Plan, the target impact reduction is 380 tonnes CO₂ per year, equivalent to 13% of the 2007 level of emissions.

5. CRIME & DISORDER IMPLICATIONS AND EQUALITY & DIVERSITY IMPLICATIONS

5.1 There are none arising directly from this report.

6. PORTFOLIO HOLDER'S COMMENTS

6.1 The Environment Portfolio Holder supports the recommendation contained in this report.

7. RECOMMENDATION

7.1 It is recommended that Cabinet approve that the package of measures contained in the Improvement Plan as attached at Appendix 1 to this report.

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Background Papers:

THE WAY WE OPERATE OUR BUILDINGS**DRAFT IMPROVEMENT PLAN**

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SYSTEMS AND PROCEDURES			
ISSUE	PROPOSED ACTION	RESPONSIBILITY	TIMESCALE
Buildings Energy Surveys	<ul style="list-style-type: none"> Arrange for the 'top 10' sites to be surveyed by external consultants, to provide recommendations for improvements with cost estimates, so that priorities can be assessed and form the basis of action planning. 	EW	Phased, to Dec 2009
<p><i>Performance Measure/Target : Extensive surveys last undertaken in early 1990s since when much work has been completed but more remains to be done. Three site surveys/reports now completed by Carbon Trust. These reports made recommendations which form the basis of the following Proposed Actions. Four more reports are to be commissioned in March 2008 and a further three sites will be surveyed in March 2009 These later surveys will cost in the region of £2k each.</i></p>			
Policy and Strategy Documents	<ul style="list-style-type: none"> A refreshed version of the Energy Policy to be drafted, to provide an overall context within which the place and purpose of individual strategies and targets can be understood. Emphasis to be on cost-efficient carbon reductions. Links to be made to Corporate Sustainability policy. 	EW / PF	Dec 2008
Training and Awareness	<ul style="list-style-type: none"> Identify staff who, by reference to their impact on energy-use, could improve energy efficiency either if made more aware, or if given brief formal training. Arrange for general awareness sessions for some staff (inc. Energy Champions), and arrange with external provider to deliver up to 10 site-based more detailed energy training sessions. 	EW	Dec 2008
Utilities Sub-metering	<ul style="list-style-type: none"> Arrange for s/meters to be installed, on larger energy-use areas, in larger sites, to assist in identifying waste and to provide the data to support spend-to-save proposals (and data to prove savings level after schemes completed). Phased approach to implementation. 	EW	Phased, to May 2009
<p><i>Performance Measure/Target : Sub-meters were installed in 1995 at Lynington Town Hall and at Appletree Court which allow a more detailed picture of electricity use. Technology has moved on and now much less expensive sub-meters are available which can upload data to the Internet for direct browsing centrally. To avoid data overload it is proposed that 2 or 3 site installations are undertaken in each of the next 2 years – so that a detailed breakdown of electrical consumption will be available at the 8 largest sites by May 2009.</i></p>			

ISSUE	PROPOSED ACTION	RESPONSIBILITY	TIMESCALE
Automated meter reading	<ul style="list-style-type: none"> Extend the implementation of automated meter data-loggers on mains electricity, gas and water meters; to provide half-hourly consumption data, allowing use profiles and analysis. 	EW	April 2009
<i>Performance Measures: Automated meter reading was installed at three sites in Lymington in 2007 and this (radio transmission of data) system could be extended across the district. At this point it is considered cost-effective to apply this technology to a further five sites in the next 12 months.</i>			
Reducing electricity consumption arising from the provision of ICT	<ul style="list-style-type: none"> Ensuring the ICT Strategy is geared to achieving a reduction in the energy use of ICT hardware 	RP	July 2008
<i>Performance Measure/Target : Publication of the strategy containing a Green Theme aimed at reducing energy consumption.</i>			

GENERAL OPPORTUNITIES (ALL SITES)

ISSUE	PROPOSED ACTION	RESPONSIBILITY	TIMESCALE
Lighting Strategy	<ul style="list-style-type: none"> Lighting has been installed/improved over many years in an ad hoc fashion. Efficiency gains from replacement lighting should be undertaken in a strategic way, based on a survey of equipment and present performance, set against the lighting levels required in each area/room. 	EW	March 2010
Lighting Controls	<ul style="list-style-type: none"> As with the lighting, so with the lighting controls. These vary widely across the estate, determined by appropriateness in each location and by the technology available when installed over the last 25 years. Assessing as for the lighting, controls should also be changed / up-rated on a strategic basis. 	EW	March 2010
<i>Performance Measures/Targets : Performance data and asset database data collection estimated at £2,300 per site, with simple pay-back at about 2 years. CO₂ savings for 'top ten' sites, targets will vary by site but in the region of 10 tonnes annually per site.</i>			
Pipe-work etc Insulation	<ul style="list-style-type: none"> Arrange for improved Pipe work and Equipment insulation. 	EW	May 2009
<i>Performance Measures/Targets : Most of the pipe work and equipment in Plant Rooms has been insulated to a high standard for many years now, but there are pipe runs and peripherally located plant which should also be thermally insulated. The cost estimate for additional insulation is £1,000 per site with a pay-back period of 18 months. Average annual site reduction in CO₂ is 5 tonnes.</i>			

ISSUE	PROPOSED ACTION	RESPONSIBILITY	TIMESCALE
Time Controls	<ul style="list-style-type: none"> Arrange for an audit of all time-clock type controls, whether on heating and hot water plant or on other equipment. Check / set clock for correct time and check / set ON and OFF times as required for efficient operation. Consider / replace mechanical controls with electronic controls. 	EW	Dec 2008
<i>Performance Measures/Targets : The surveys revealed a moderately large number of old time-clocks controlling start and run times of a variety of plant at the three sites visited, and not all were set-up or working. Clocks to be re-commissioned (older ones replaced) to meet present needs and provide energy efficient control. Cost estimate for 10 sites is £3k, pay-back at 6 months, saving 5 tonnes CO₂ per site.</i>			
External Door Seals	<ul style="list-style-type: none"> Arrange audit of external doors and fit new seals or replace defective or worn seals as required to reduce heat losses. 	EW	May 2009
<i>Performance measures/Targets : Surveys revealed that some door seals are the originals and some were worn or damaged. Following an audit, replacements should be installed – cost estimate at 10 sites is £8k, pay-back is 18 months, saving 4 tonnes CO₂ per site.</i>			
PC Procurement	<ul style="list-style-type: none"> Server virtualisation will facilitate the use of lower specification PCs. These PCs to incorporate the new breed of more energy efficient motherboards' 	RP	March 2011
To be considered			
Multifunctional Devices (MFDs)	<ul style="list-style-type: none"> Implement an established plan to install MFDs so as to reduce the number of printers and faxes [Links to theme 'The way we operate our services'] 	RP	March 2010
<i>Performance Measures/Targets : To reduce the number of printers and faxes by 70%.</i>			

SITE – SPECIFIC ACTIONS

ISSUE	PROPOSED ACTION	RESPONSIBILITY	TIMESCALE
BMS Controls at Applemore	<ul style="list-style-type: none"> Review, correct and extend electronic Building Management System controls (heating, ventilation, etc). 	EW	Aug 2009
<i>Performance Measures/Targets : The surveyor noted a problem with BMS controls on the pool hall heating plant at Applemore (which was already being investigated, now corrected) and suggested this fault be rectified plus consider extending this system to cover the remaining plant (currently using individual controllers). Cost estimate is £5k, pay-back is 4 years, saving 40 tonnes CO₂ per annum.</i>			

ISSUE	PROPOSED ACTION	RESPONSIBILITY	TIMESCALE
Variable Speed Motors at Applemore	<ul style="list-style-type: none"> Carry out survey of pool water plant to determine a plan for fitting variable speed drives (VSDs) to motors on circulation pumps, so that flow rate can be varied to just meet need for good quality bathing water. 	EW/RG and Consultants	March 2009
<p><i>Performance Measures/Targets : The surveyor noted that pool pumps were running at constant speed and energy savings were available from installing water condition sensors linked to VSDs. There is dispute amongst pool operators whether this change is beneficial, but a feasibility study will be undertaken. If project goes ahead, there are 9 pools and the costs and savings are considerable. Cost estimate is £45k + prelims./contingencies/fees, pay-back might be 3 years, saving perhaps 130 tonnes CO₂ per annum.</i></p>			
Solar Heating at Applemore	<ul style="list-style-type: none"> Refurbish the solar heating system. 	EW	Completed
<p><i>Performance Measures/Targets : The surveyor noted that the solar hot water system was out of action and anyway in need of refurbishment – it was installed in 1995 and we were aware that a repair was needed but were trying to find a specialist engineer. The works have now been ordered and will be completed in March this year. Cost is £2k and pay-back is under 2 years, providing savings of 9 tonnes per annum CO₂.</i></p>			
Lighting/Controls at Marsh Lane Depot	<ul style="list-style-type: none"> Clean roof-lights and install daylight linked controls to the lighting in the vehicle workshop. 	EW	March 2009
<p><i>Performance Measures/Targets : The roof-lights are difficult to reach and clean but this is necessary maintenance and will be undertaken. The on/off control of lighting based on ambient light levels (partly via roof-lights) will provide energy savings. The cost estimate provided is £500, pay-back at less than 3 years and saving 2 tonnes CO₂ per annum.</i></p>			
Compressed Air System at Marsh Lane Depot	<ul style="list-style-type: none"> Install flow meter on CA system and monitor. Remedy any sources of air leakage. Consider renewal date for compressor. 	EW/JS	Dec 2008
<p><i>Performance Measures/Targets : The surveyor noted that the (shed) housing for this plant was dilapidated, that there was some air leakage, that there was no metering or monitoring of use and that the system is not always switched off (week-end energy use detected by temporary meter). The cost estimate for the proposed actions is £500, pay-back is less than 3 years and annual CO₂ saving is one tonne.</i></p>			
Main Stores Heaters at Marsh Lane Depot	<ul style="list-style-type: none"> Replace the old and inefficient heaters with new efficient units. Investigate and decide whether radiant heating units are suitable and more energy efficient than like-for-like replacement units. 	EW	Ex Plan Bid Oct 2008, Implement July 2009
<p><i>Performance Measures/Targets : The surveyor noted that the existing units are over 30 years old and spares are difficult to come by. A wholesale replacement will cost more than £8k and with fees, H&S & etc costs the scheme might exceed £10k and be subject to expenditure plan bid approval. Although the proposal might save 12 tonnes CO₂ per annum, the pay-back period is likely to be beyond 6 years (at present unit costs for gas).</i></p>			

ISSUE	PROPOSED ACTION	RESPONSIBILITY	TIMESCALE
Boilers Zone Controls at Town Hall Lymington	<ul style="list-style-type: none"> Investigate and modify the methods of sensing room temperatures and varying the provision of heating to rooms. 	EW/Consultants	Aug 2009
<i>Performance Measures/Targets : The surveyor noted that the existing controls on the “zoned” pumping system do not vary heat output to different parts of the building although different heat demands exist for different parts. Further feasibility work is required, but a potential scheme might cost £5k, paying back in 3 years and saving 12 tonnes CO₂ per annum.</i>			
Data Centre at Lymington Town Hall	<ul style="list-style-type: none"> Implement server virtualisation so as to significantly reduce the number of servers and reduce the space requirement 	RP	March 2010
Centralised Data Storage at Lymington Town Hall	<ul style="list-style-type: none"> Implement a software solution that will reduce the volume of electronic storage leading to a reduced hardware requirement 	RP	March 2010
Data Centre at Appletree Court	<ul style="list-style-type: none"> Implement server virtualisation so as to significantly reduce the number of servers and reduce the space requirement 	RP	March 2010
<i>Performance Measures/Targets : Once sub-meters have been installed it will be possible to benchmark energy consumption. The target will be to reduce energy consumption by 50%.</i>			

LONGER TERM SITE SPECIFIC ISSUES RESULTING FROM CHALLENGE EVENT			
ISSUE	PROPOSED ACTION	RESPONSIBILITY	TIMESCALE
Older boilers at Lymington Health and Leisure Centre	<ul style="list-style-type: none"> Arrange for a feasibility study by external consultants, to consider whether a CHP plant or wood chip burning boilers would be most suitable as replacement for existing boilers Possible outcome: install CHP plant 	EW	March 2011
Older boilers at New Milton Health and Leisure Centre	<ul style="list-style-type: none"> Arrange for a feasibility study by external consultants, to consider whether a CHP plant or ground or air source heat pumps would be most suitable as replacement for existing boilers. Possible outcome: install ground or air source heat pumps 	EW	March 2010
Older boilers at Totton Health and Leisure Centre	<ul style="list-style-type: none"> Dependent on Totton College project, arrange for a feasibility study by external consultants, to consider whether a CHP plant, ground or air source heat pumps or wood chip boilers would be most suitable as replacement for existing boilers. Possible outcome: install wood chip boilers if security of supply is guaranteed 	EW	March 2010 Implement March 2012
Older boilers at Lymington Town Hall	<ul style="list-style-type: none"> Dependent on one site admin project arrange for a feasibility study by external consultants, to consider whether ground or air source heat pumps or wood chip boilers would be most suitable as replacement for existing boilers. Possible outcome: install wood chip boilers if security of supply is guaranteed 	EW	By Sept 2009 Implement Aug 2010
<p><i>Performance Measure/Target : Payback for CHP should be 8 years, it would be supplier financed and save around 182 tonnes of CO₂ a year (TH&L only). Cost estimate for ground source heat and air source heat pumps is £50k net of grant (£100k if no grant). Payback for ground source heat pumps should be 6 years and for air source heat pumps 3-5 years. They should save around 110 tonnes of CO₂ a year. Cost estimate for wood chip boilers is £55k net of grant, payback should be 7.5 years and around 154 tonnes of CO₂ a year should be saved.</i></p>			

ISSUE	PROPOSED ACTION	RESPONSIBILITY	TIMESCALE
High electrical cooling load at Lymington Health and Leisure Centre	<ul style="list-style-type: none"> Apply reflective coating to windows and then consider feasibility of retrofitting 'brises-soleil' shading 	EW	March 2011
High electrical cooling load at Lymington Town Hall	<ul style="list-style-type: none"> Apply reflective coating to windows and then consider feasibility of retrofitting 'brises-soleil' shading 	EW	March 2010
Solar gain at Ringwood Public Offices	<ul style="list-style-type: none"> Apply reflective coating to windows 	EW	March 2010
<i>Performance Measures/Targets : The cost estimate for the proposed activities is £4k, payback for this should be 4.1 years and the scheme should save around 5.6 tonnes of carbon a year, at each site.</i>			
Poor ventilation and suspected poor insulation at Appletree Court	<ul style="list-style-type: none"> Subject to One Site project, arrange ventilation/insulation survey by external surveyors (air tightness, thermography). 	EW	March 2009 Implement any findings by March 2010
<i>Performance Measures/Targets : The cost estimate for this £3k but works and payback not yet known.</i>			
Saving water at Appletree Court	<ul style="list-style-type: none"> Subject to One Site project, review existing / install further water saving measures in toilets (esp North Wing). 	EW	March 2009
<i>Performance Measures/Targets : The cost estimate for this is £2.5 but works and payback not yet known.</i>			
Poor glazing at Ringwood Public Offices	<ul style="list-style-type: none"> Replace or improve glazing (double/secondary) 	EW	March 2011
<i>Performance Measures/Targets : Cost estimate for this is £25k. To be considered as a maintenance capital bid, depending on future use of RPO.</i>			
Water saving at Marsh Lane Depot	<ul style="list-style-type: none"> Consider ways to capture / use water from vehicle wash. 	EW	March 2010
Water saving at Claymeadow Depot	<ul style="list-style-type: none"> Consider ways to capture / use water from vehicle wash. 	EW	March 2009
<i>Performance Measures/Targets : investigate and report on feasibility.</i>			