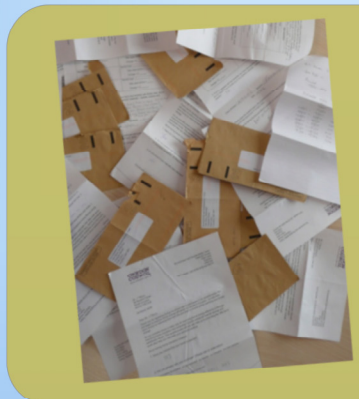
Evaluation of Environmental Audits and Insulation Case Studies



Jonathan Ahn
Helena Alfonzo
Bradley Scoville

Evaluation of Environmental Audits and Insulation Case Studies

An Interactive Qualifying Project submitted to the faculty of Worcester Polytechnic Institute in partial fulfillment of the requirements for the Degree of Bachelor of Science

London, Project Centre

Submitted by:

Jonathan Ahn

Helena Alfonzo

Bradley Scoville

Sponsoring Agency:

Environment and Sustainability Team
Croydon Council, London Borough of Croydon

Submitted to:

Project Advisors:
Peter Hansen
Stanley Selkow

Project Liaison:
Ruth Coulson

April 26, 2008

Abstract

To reduce carbon emissions and improve the environment, Croydon Council Environment and Sustainability Team (EaST) encourages homes, churches and schools to become environmentally conscious. We gathered quotes and financial savings from homeowners who purchased insulation through British Gas for use in future publicity. With more participants this will reduce the amount of fuel needed to heat homes in the London Borough of Croydon. We also developed and conducted audits for churches and schools in areas of energy, water, waste and purchasing habits to recommend measures for improvement. Lastly, we provided areas in which EaST can support these organizations in the future as well as developed resources to strengthen communication between the community and the Council.

Acknowledgements

The Croydon Audit team would like to thank the following for their assistance over the course of the project:

Ruth Coulson

Diana Battaglia

Will Walker

Anna Eltringham

The rest of the Environment and Sustainability Team

Professor Peter Hansen

Professor Stanley Selkow

Andrew Vane from Bianco Sales

The Road Safety Team

Executive Summary

Providing buildings with basic necessities such as electricity, water and heating requires a great amount of energy. It is estimated that schools in the United Kingdom account for 25% of public sector energy costs (Think Leadership). In London England, the heating of homes accounts for 38% of the carbon emissions (British Gas, 2000). Without encouraging positive environmental changes, the world will not only continue contaminating the environment and depleting resources but also incurring avoidable financial expenses.

Croydon Council's Environment and Sustainability Team (EaST) is an organization that has been continuously working to reduce carbon emissions and improve overall environmental practices. Our project has aided EaST in addressing these environmental concerns on the community level through faith groups and schools and on the individual level through homeowners. Additionally, our project has improved communication between Croydon Council and houses of worship, schools and homeowners.

To improve environmental practices on the community level, our team created observation templates for conducting environmental audits in churches and schools. EaST already possessed the Environmental Business Excellence (ENVIBE) environmental audit observation template which was used during a walk-through of businesses; however they did not have observation templates for churches and schools. In order to create these templates we first researched the ways in which churches and schools operate differently from businesses. We were then trained on general auditing based on the ENVIBE audit. We took the information from the training and integrated previous knowledge of the differences between businesses and churches and schools to determine items to look for during auditing. These items dealt with four main categories of interest; energy, waste, water, and purchasing of supplies.

Using the audit framework that we developed, we conducted a total of eight audits. Four audits took place in primary schools and four were conducted in churches. Once the audits were completed, we created an audit report for each institution that highlighted good practice and possible areas for improvement. Our recommendations for those areas that needed improvement varied in initial costs. These variations range from no-cost solutions, such as turning lights off in unoccupied areas, to long-term investments such as replacing boiler systems. At the end of each report we provided an action plan that summarized our recommendations, along with a table for the churches and schools to keep track of their progress.

Furthermore, we compiled the Green Resource Guide. The guide provides churches and schools with information on available funding and opportunities ranging from recycling services to environmental support groups. The guide also contained information on various contacts at the Council in hopes of improving the amount of communication between the Council and churches and schools. The audit report and action plan were sent along with the Green Resource Guide to each audited church and school.

Based on the findings from all of the audits we conducted, we determined the common strengths and weaknesses of churches and schools in the Borough. We presented EaST with a list of the areas that need particular focus and attention within these type of institutions.

All four schools had established student gardening programs and acquired an onsite composter to reduce general waste. Most schools practiced some form of recycling and used reusable dishes and silverware. However, we determined that the majority of schools did not support fair-trade products due to a strict budget. Fair-trade guarantees that third world farmers receive a fair price for the goods that they supply. In regards to energy efficiency, the majority of schools kept on electric lighting even though day light was sufficient to illuminate the rooms and halls. Other concerns in these facilities dealt with multiple washrooms; only half of the schools installed push taps and a majority used flush-timer urinals that flushed every twenty minutes even when the buildings were unoccupied.

Similar to schools, churches recycled and used washable dishware. Yet, in addition, the majority of the four churches supported fair-trade, made use of day light, and reduced light bulbs in multi-bulb light strips. However, we learned that the majority of churches hold historical value and are limited in making renovations by external committees. Due to these constraints, it was very difficult for these historical churches to install double-glazed windows or weather strips to improve the facilities' energy efficiency. Contrary to the schools, none of the churches possessed an onsite composter, which decreases the amount of general waste.

The common weaknesses found in both churches and schools were energy consumption and purchasing habits. We found that recording and comparing meter readings to the utility bill was a rare practice among both organizations and needed to be recommended since occasionally energy suppliers charge more than the actual energy used by a structure. Also, a majority of both organizations did not use eco-friendly cleaning products because they believed these products

were more expensive. Only a few organizations used recycled products due to lack of awareness or limitations with purchasing on a strict budget.

While comparing our two final audit templates, one for churches and one for schools, to the original ENVIBE business audit template, we noticed minor differences. One such difference is the method of observation varies between audits. Many observation findings are time dependent; for example when auditing a school, the audit should be conducted with students present to view problems, such as windows being open while the heating is on. Other observation findings are not time dependent such as an inefficient boiler.

In addition to creating observation templates we used our auditing experiences to produce instructions for EaST on how to conduct future environmental audits. The content describes how to conduct background research of the organization, find past audits, interview necessary people as well as prepare agendas, and develop strategies for observation.

On the individual level we developed supporting evidence for Croydon Council to promote their insulation offer. Croydon Council, in conjunction with British Gas Company, has been offering discounts on the installation of insulation with tax reductions. Yet, still a large percentage of homeowners have not installed insulation. Homes without proper insulation are not capable of retaining as much heat. In turn, more heating-fuel is used to maintain a constant temperature. By investing in insulation this will reduce the resident's financial expenses and more importantly carbon emissions. To further promote this offer, our team developed publication material derived from residents that previously participated in this insulation offer.

We selected residents with insulation installed in March of 2007 to compare their most recent month prior to insulation and the same month of the following year with insulation. We made initial phone calls seeking residents willing to participate in our study and then we mailed our survey questionnaire. The survey questionnaire was designed to gauge customer satisfaction and collect fuel bill data.

From the responses, we developed case studies that displayed the customer satisfaction. In particular, we found that all residents that responded to our survey were satisfied with their insulation purchase. When asking the residents if their homes feel warmer, twelve of fourteen responded yes and specified a range of comments from noticeably warmer at night to warm throughout the winter. Two residents did not answer the question. We organized the residents'

heating bill data into a chart, displaying the bill charge with regards to the month as well as the date of insulation installation.

From the fuel bill data of all responding residents, we found the average fuel bill savings to be 14%. We took the findings and created publication material including quotes and savings from homeowners who participated in our study. All the findings were categorized for EaST to use in future insulation advertisements. We also included information on the most appropriate way to advertise the supplied information.

The final product of our project was an evaluation of the environmental performance of churches and schools, as well as the benefits of insulation installment for residences in Croydon. We provided focus areas where churches and schools need attention and support. In doing so we improved the Council's communication with these institutions. Lastly our project delivered resources to promote environmental sustainability both at the community and individual levels. Through our project, we addressed the Council's goal of reducing carbon emissions within the London Borough of Croydon.

Authorship

1. Abstract (Bradley Scoville)
2. Executive Summary (Helena Alfonzo)
3. Introduction (Helena Alfonzo)
4. Background (Jonathan Ahn)
5. Methodology (Bradley Scoville)
6. Results (Jonathan Ahn)
7. Recommendations (Helena Alfonzo)
8. Conclusion (Bradley Scoville)

Primary Editors

1. Abstract (Jonathan Ahn, Helena Alfonzo)
2. Executive Summary (Jonathan Ahn, Bradley Scoville)
3. Introduction (Jonathan Ahn, Bradley Scoville)
4. Background (Bradley Scoville, Helena Alfonzo)
5. Methodology (Jonathan Ahn, Helena Alfonzo)
6. Results (Bradley Scoville, Helena Alfonzo)
7. Recommendations (Jonathan Ahn, Bradley Scoville)
8. Conclusion (Jonathan Ahn, Helena Alfonzo)

Table of Contents

List of Figures

List of Tables

1. Introduction

As populations grow and the world's economies expand, consumption rates are increased. As a consequence of human behavior, increased pressure is put on the environment (Cora, 2007). Every year the demand for energy increases at a rate of 1.6%; if behavior does not change or if the current rate of increase continues, the energy demand in the year 2030 will be 50% more than 2006 (International Energy Agency, 2006). The continuous inefficiency results in a rapid depletion of raw materials. This in turn causes an excess of avoidable financial losses since people are not using resources to the fullest. In the US it is estimated that, in approximately 10 years, about 32 quads (800 billion liters of oil equivalents) or nearly 33% of US energy consumption and about $438 billion could be saved per year (Pimentel et al., 2004). In addition, extensive use of these resources leads to contamination of the environment affecting wildlife and people alike.

The United Kingdom is among the countries that have taken the initiative to improve current conditions of the environment. They have implemented action plans in and around the London area with the aim of reducing the amount of environmental contamination. This not only improves the environment and people's living conditions, but it also benefits the economy. One example of an action being currently implemented is the London Low Emission Zone that aims to address London's poor air quality.

The London Borough of Croydon has also taken steps toward being more environmentally efficient and conscious. In 1999, Croydon Council established the Green Commitment which pledged to improve and pursue environmental performance and sustainability within the Borough (Croydon Council, 1999). Croydon also established the Environment and Sustainability Team (EaST) to promote environmental procurement throughout the Borough. EaST has been auditing local schools, businesses, and churches, to evaluate where energy and water are being wasted and increase the environmental awareness of the Borough's population. The Sustainable Community Strategy is one of the Council's projects highlighting the goals for 2007-2010. The strategy focuses on improving the overall environment and education to secondary and primary schools (Croydon Council Environmental Division, 2007). EaST is also dedicated to inspecting and making adjustments to public buildings throughout the Borough while collecting and distributing information to both the Council and residents.This

information usually consists of a list of factors that are damaging the environment as well as proposed solutions to those problems.

Environmental audits are an effective way to determine areas for improvement. Before these audits can be carried out successfully, they must be tailored to fit the specific organization that is being audited. They should also be intuitive enough for the person that is carrying out these audits (Tinsley, 2001). EaST is mainly interested in evaluating Croydon's faith groups and schools. One of the goals in the Sustainable Community Strategy for 2007-2008 is to "support community organizations and faith groups to improve their environmental practice…" (Croydon Council Environmental Division, 2007). Since Croydon is home to 156 schools and 160 recognized faith groups, it is reasonable to target these public facilities when seeking a means of improving the environment (Borough Team, 2007). The results of these audits can be used to propose feasible solutions, to improve energy consumption, and to reduce waste production, while promoting programs like recycling projects and carpooling. These audits can also be used to educate the residents of Croydon about the environment and the benefits of protecting it. For example, if a school makes an effort to implement the recommendations given by the auditors, the students might learn from that experience and may try to implement similar ideas at home, in turn educating their family.

Croydon Council is implementing another type of plan to reduce energy consumption. They are attempting to lower energy bills by targeting homes in need of proper insulation. A contract between the Council and British Gas allows residents of Croydon to obtain a reduced price for the installation of insulation and a £100 tax break. The idea is to encourage Croydon's residents to buy the insulation so that they can lower the amount of energy needed to heat their homes. The goal for 2007-2008, stated in the Croydon Strategic Partnership, is to promote the insulation offer such that there is a savings of 920 tons of carbon dioxide emissions per year (Croydon Council Environmental Division, 2007).

We collaborated with EaST to support current efforts in providing churches and schools with adequate audits. The main objectives of this project were: to perform and analyze environmental audits, to present feasible solutions to the problems identified in the audits, and to create case studies on the British Gas insulation offer so EaST can better promote the offer. Upon the team's arrival in Croydon, the Environmental and Sustainability Team trained our group on the appropriate protocols to perform audits. From that point, we completed eight audits

over four weeks. Then remaining time was used to investigate energy bills in order to develop the case studies for the British Gas insulation offer. Once the data had been collected, the team analyzed the data and presented the results with appropriate recommended actions. The recommendations provided three types of solutions for the problems identified in the audits. These solutions were either easy to implement low cost solutions, minimum work and investment solutions, or long term investment solutions.

The recommendations given by our group have the potential to not only reduce the amount of unnecessary funds being spent in Croydon's churches and schools, but also continue protecting the environment. Furthermore, the case studies of the British Gas insulation offer can be used to further promote the offer, which will help the Council reach their goal of reducing 920 tons of carbon emissions annually.

2. Background

Our project aimed to reduce the carbon emission and increase environmental performance. We have addressed issues on the community and individual levels to achieve these environmental goals. On the community level we created two environmental audit templates for London Borough of Croydon churches and schools along with suggested improvements, based off an existing environmental business audit. On the individual level we investigated insulation using resident's gas and financial savings to help promote the British Gas insulation offer in the future, which will in turn reduce carbon emissions.

This chapter supplies the necessary background information for the two objectives of our project. We begin with an overview of the London Borough of Croydon and some recent actions they have taken to protect the environment. Then we provide background information for the first objective of our project, environmental audits. We discuss the ENVIBE environmental audit and the impact of this audit on businesses within Croydon. We then discuss how environmental audits have benefited schools and places of worship outside of Croydon. In the second part we provide detail on the motivation behind initiating the British Gas insulation offer for London homeowners. We then continue to discuss prior statistics of Croydon homes lacking insulation and the resulting losses.

2.1 The London Borough of Croydon

The Borough of Croydon is located in London, United Kingdom; it is one of the southern outer boroughs as seen in Figure 1 (Government Statistics, 2003). Croydon is home to over 342,000 people making it the most populous borough in London (Borough Team, 2007). Over a quarter of Croydon's population is under the age of 19. To provide education for all children and young adults, 156 schools are located within the Borough; this number is also the highest in a single borough of London (Borough Team, 2007). In addition, to accommodate the population's religious needs, there are more than 160 recognized faith group facilities representing numerous religions (The Southwark Bridge, 1998).

Figure 1: Geographic map of London Boroughs

With a large population there is a great consumption of resources and production of waste. From 2003 to 2004, the London Council estimated a total fuel consumption of 6,900 tons in the Borough of Croydon, excluding gas and any other transportation fuel (King, Sturman, & Passant, 2007). In 2006, the average weight of waste collected per person in a household was 438 kilograms in Croydon (London Council, 2006). In 2007, the average household water bill was £312, which was a £49 increase since 2002 (Ofwat, 2008). There are also a large percentage of homes without insulation that require more energy to maintain a constant temperature.

To satisfy the ever-growing needs of Croydon, the Borough has established many new environmental policies. The Croydon Council is responsible for overseeing the Borough's concerns and improvements in such areas as economy, education, environment, health, regeneration and restoration, and safety (Strategic Partnership Croydon, 2007). EaST is in charge of environmental protection and procurement and reports to the Croydon Council (Croydon Council, 2003). The Environment and Sustainability Team (EaST) encourages community awareness by offering free recycling, energy, and water assemblies in schools. EaST also provides environmental audits to help reduce waste and improve overall efficiency.

Croydon Council and EaST have put numerous plans into action. In 1999, the Council adopted the Green Commitment, which aimed to promote environmental sustainability through changes within Croydon (Croydon Council, 1999). More recently, Croydon Council and EaST have initiated the Sustainable Community Strategy 2007-2010 that highlights the Borough's priorities to be addressed within the next few years. This strategic plan addresses population health, safety, financial stability, child and educational programs, and environmental improvements (Strategic Partnership Croydon, 2007).

The environmental improvement goals of the Strategic Community Partnership are to increase environmental awareness through community education programs. The Croydon Council plans on reaching out to more schools, clubs, and churches by raising awareness through the use of community and interfaith networks. Other goals are to incorporate renewable energy systems throughout the Borough; one of these new energy systems is solar water heating. Also, starting this year the Council aims to reduce a minimum of 920 tons of carbon dioxide annually partly through installment of insulation in private homes. These are only a few of the twenty-six goals the Council expects to achieve before 2009. The larger goal is to protect and improve the Borough's environment through small incremental changes (Strategic Partnership Croydon, 2007). Because Croydon is the most populous borough, Croydon is an ideal Borough to influence a large multitude of people to become more environmentally conscious.

2.2 Environmental Audits

Environmental audits assist organizations in improving their overall environmental performance. The International Auditing Practice Committee (IAPC) has defined an environmental audit as a "systematic, documented, periodic, and objective checking process of a company's environmental performance against pre-set standards and objectives" (Hillary, 1998, p. 74). Although the definition of an audit may vary between organizations, one idea remains the same. An organization is being evaluated on its environmental performance against standards. These standards are based on desirable environmental performance in the topics of energy, purchasing habits, as well as waste and water practices.

Audits are generally performed by contractors, environmental quality personnel, as well as government and regulatory agencies (trained and certified auditors). Audit teams consist of technical and administrative personnel capable of identifying concerns with energy and water use

and overlooking the functions of the organization. Auditors exercise a combination of general tools such as observation and inspection of organization practices and interviews with focus groups to obtain feedback (Tinsley, 2001).

Once the auditor has compiled the findings, a report is created incorporating all of the information regarding the audit and remarks of any concerns. In order to provide a useful report, the writing of an audit should be easily understood by its audience (Johnson, 1997). The auditor needs to make these considerations before carrying out the audit in order to provide the best analysis. This includes choosing the level of terminology in the report based on the audience's knowledge on environmental audits (Alred, Brusaw, & Oliu, 2006).

ENVIBE (Environmental Business Excellence) is an organization that is coordinated by the Council to support Croydon businesses in making positive improvements to their environmental performance. Since they are primarily financed by government funds they provide several free services to businesses. One of their free services is an environmental audit. A member of the ENVIBE team first conducts an interview with a member of the business, preferably the site manager, to discuss the environmental policy of the organization. During the interview the ENVIBE member attempts to find answers to as many questions as possible on the ENVIBE business audit template. This template has questions for the auditor to ask during the interview as well as areas to look for during observation.

The four main areas that the auditor evaluates are energy consumption, water use, waste management and the purchasing of goods. After evaluating these four areas the auditor submits an action plan that includes a list of problems with viable solutions that the business can implement. By carrying out these solutions businesses can help save the environment, save money and improve their corporate image (ENVIBE, 2006).

2.3 Benefits of Environmental Audits

ENVIBE provides case studies of businesses that have benefited from the services that they offer. The first business is Future Supplies and Support Services Limited. They have saved over £4,500 by completing simple measures to help the environment. In order to reduce their energy consumption they have purchased appliance timers, turned off computers when not in use and made use of natural daylight. To reduce the amount of waste produced they have started

double-sided printing and begun to use more electronic means of mailing and faxing. To reduce the amount of water used Future Supplies fixed leaking taps and started using cistern devices.

Centrale Shopping Centre has saved over £8,500 by separating general waste from recyclable waste. Since teaming up with ENVIBE they have recycled over 18 tons of cardboard. GRANTS entertainment complex has saved over £9,000 each year by recycling 24 tons of glass and cardboard each month. Besides the financial savings of these organizations they have improved their business relations and improved their public image (ENVIBE, 2006).

2.4 Case Studies of Environmental Audits in Schools and Religious Facilities

The results of environmental audits explain areas of concern where improvements can be made on commercial and residential buildings. The Environmental and Sustainability Team (EaST) in the London Borough of Croydon is interested in auditing schools and religious facilities. We have researched four case studies outside Croydon to understand the benefits of conducting environmental audits in the context of schools and religious facilities. The purpose of these case studies is to illustrate the types of problems found by the audits and the solutions implemented.

2.4.1 Cathedral High School, Springfield, Massachusetts

Cathedral High School in Springfield, Massachusetts was built in the 1960's. The school had an environmental audit conducted in hopes of improving the school's quality. Through the audit process of inspection of basic energy use, the school was notified that a large fraction of the light fixtures and current exit signs were using excessive energy while not providing much intensity. The audit also summarized the observation of inefficient use of lighting in unoccupied rooms or when daylight was sufficient (Weller & Michal Architects, 2004). Following the audit results, the school took steps to improve the lighting conditions by working with Western Massachusetts Electric Company to install T-8 lamps in the classrooms. The new lights are not only more energy efficient but also reduced glare on computer screens and provided better quality light. To solve the issue of unnecessary lighting, automatic lighting control circuits were installed to automatically turn off classroom lights when daylight was sufficient or when there was no detected movement. Additionally, the old exit signs were replaced with newer LED signs that consume much less power. This was an important renovation since the exit signs remain on at all times of the day.

The total renovation cost amounted to $226,070, the equivalent of £113,040. Although this may seem to be a significant initial investment, the estimated annual utility savings cost is $31,900 (£15,965). Not only will this simple renovation pay for itself over time, but the school administrators believe, as a result of the renovations, student performance has already improved (Weller & Michal Architects, 2004).

2.4.2 North Santiam School District, Oregon

North Santiam School District in Oregon hired a new facilities manager, Tom Hogstad, in August of 2000. He quickly realized, after reviewing utility bills, that there were basic problems in all of the schools throughout the district. They had high financial expenses from lighting, heating, and cooling systems. In order to obtain financial assistance from the government, an official energy audit was carried out to pinpoint all of the existing problems. With government funding, Phase I of the improvements was initiated in the district. Older lights were replaced with T-8 fluorescent lights, exit signs were converted to LED exit signs and a distributed digital control system was installed to improve temperature comfort in the classrooms.

The first phase of renovations cost $491,239 which is £245,632; however the school districts received a 15-year fixed-rate energy loan from the Office of Energy. To further reduce the costs, the local government provided tax credit to the school district. In 2002 the benefits of the renovation project became clear. The electrical bill was reduced by 39% for one of the schools, and the gas bill was reduced by 50% for one school and 29% for the other. Overall the project has equated to annual fuel savings of $29,800 (£14,902). Phase II of the project is the proposal stage with estimated costs of $820,000 (£409,044) (Weller & Michal Architects, 2004).

2.4.3 St. Thomas Church, Ottawa, Ontario

In Ottawa, Ontario, St. Thomas the Apostle Anglican Church has taken the initiative to become more energy efficient. The church's first audit was in 2003, where the church clergy were informed of the need for structural and electrical renovation. Following the audit results, changes were implemented with the help of EnerGuide for Existing Buildings (EEB). Throughout the church, old lighting fixtures and bulbs were upgraded to fluorescent and metal halide element bulbs, which provided better intensity for less energy. The audit inspections identified that the entrance and exit doors and windows were leaking a large amount of the building's heat, which resulted in more frequent use of the heaters. To solve the heat loss the

doors received new weather stripping while windows were replaced with energy efficient windows. Also rather than replacing the stain glass windows to maintain the church's original arts, special custom seals were installed reducing the heat loss. Finally, the two existing outdated and inefficient boilers were replaced with one mid-efficient boiler, along with installing open and close toggle vents throughout the rooms in the church.

With all energy efficient installments, there was an upfront cost. The cost to replace and install all of the changes mentioned above amounted to $109,800 (£54,939). However the energy savings per year were 772 gigajoules (GJ), which is equivalent to saving 214,461 kilowatt hours (kWh) of energy. The energy savings is equivalent to financial savings of $8,300 (£4,129) per year. The initial estimation to financially break even is set for 17 years. This projection includes normal maintenance costs (KAIROS, 2003).

2.4.4 Brown University, Providence, Rhode Island

Brown University had an environmental audit in 1992 for water conservation. From the audit, the school discovered the need to replace the showerheads in all resident buildings. The current showerheads provided a water flow of 3.5 gallons per minute, while the new showerheads are reduced to 2 gallons per minute. The auditor also made recommendations to senior administrations to incorporate a water efficient design when replacing plumbing systems, and wash school vehicles only once a month. To further promote the residences to reduce water usage, a monetary reward was offered to the resident building that saved the most per capita. With the changes incorporated by the audit, the school was estimated to save annually 120 million gallons of water, equivalent to $308,000 (£153,531) (Mount Allison University, 1998).

2.4.5 Review of the Case Studies

By reviewing these case studies of schools and religious facilities, we were able see the similarities between business, school and religious facility audits. In each case study problems are identified then specific solutions were implemented depending on the magnitude of resources. The case studies also demonstrate solutions that go about addressing constraints. St. Thomas church hoped to preserve its historical stain glass windows and the solution was to modify these windows rather than do a full replacement. Many schools faced financial difficulties until researching external discounts and sponsorships.

By studying the general audit in these case studies, we were able to associate the relevance of the current ENVIBE business environmental audit to school and religious facilities. In doing so we used this information to tailor an environmental audit specific to schools and religious facilities.

2.4.6 Possible Sources of Error in Auditing

When performing an audit, there are concerns of errors that can render the audit inaccurate or even useless. Some of these errors are from organizations providing inaccurate accounts and others can be due to inexperienced auditors.

Often audits will include information from people through interviews, focus groups, and questionnaires. These interaction techniques can only collect information that is willingly given by the respondent. If a respondent provides falsified information, this inaccuracy will carry throughout the entire process. In a study of questionnaire-based surveys of businesses in the London Borough of Croydon, Merritt mentions sources of error. Some errors occur with respondents giving inaccurate information; it is not determined whether this is done unconsciously or otherwise (Merritt, 1998). To minimize this issue, the auditor should decide in advance whether the questions are meant to express facts or personal opinions.

The other concern is the lack of participation when conducting an audit. Generally the auditor(s) will intend on gathering feedback from an equal number of individuals in each division. If the number of responses varies between each division then the data will not represent the organization as a whole. From the same study regarding the questionnaire-based surveys, the author planned on obtaining an equal number of responses from each of the categorized businesses. However, when not all businesses responded, the cumulated results of the questionnaires were deemed inaccurate (Merritt, 1998).

The organization and respondents being audited are one possible source of error while other errors can occur due to an inexperienced auditor. There are common mistakes auditors must be aware of such as drawing conclusions before identifying the source of the problem, which leads to premature conclusions. This can be a costly mistake when expensive renovations do not fix the problem. However, these issues can be minimized by turning to a third-party such as another more experienced auditor (Maes, 2004).

Auditors must carefully consider all of these sources of error in order to conduct an effective audit. These errors can cause superficial renovations that do not address the real problems since the audit results do not properly locate the problem source.

2.5 British Gas Insulation Offer

The second part of the project was to aid in promoting the British Gas insulation offer to ultimately reduce the carbon emission throughout London. To support the offer, we have developed case studies of homeowners who have installed insulation about a year ago. The purpose of these case studies was to collect evidence on whether the presence of insulation has helped reduce the heating-fuel bill and lower carbon emissions. This background section discusses the motives for the British Gas to create the insulation offer, defines the discounts of the offer and analyzes the past statistics of Croydon homes with insulation.

In 2007, London homes were estimated to be accountable for 38% of London's carbon dioxide emissions. One reason for this large percentage is that not all London homes installed insulation. To reduce emissions, the London Council in partnership with the British Gas Company has been promoting insulation installations throughout London. The offer consists of installation service discounts ranging from £250 to £274 and an initial £100 tax reduction (British Gas, 2007). Initially in September of 2000 the British Gas company began this offer to provide relief to customers who spend more than 10% of their income on heating bills. The residents have the option of purchasing cavity-wall insulation, loft insulation, or both cavity-wall and loft insulation (British Gas, 2000).

Since 2004, Croydon Council has studied the number of homes lacking insulation and created a map displaying the demographics of these homes as shown in Figure 2. There are a substantial number of homes in Croydon that do not have cavity-wall or loft insulation. Without proper housing insulation, heat escapes and homeowners spend more money than would otherwise be necessary to heat their homes which results in higher carbon emissions for the community.

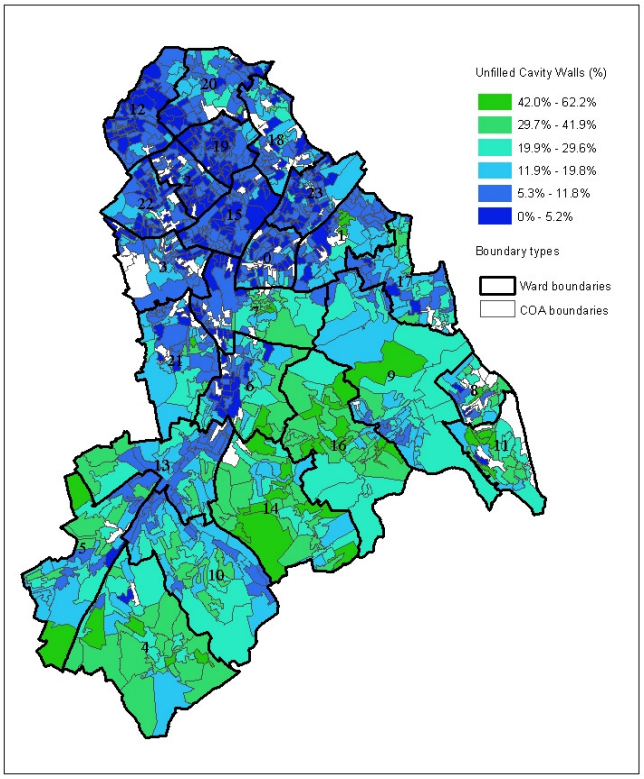


Figure 2: Map of insulated homes in Croydon

Figure 2 presents the Borough of Croydon and the percent of homes with insulation. The legend located in the top-right of Figure 2 is color categorized. The shades of green represent the homes with higher percentages of insulation while the shades of blue represent the homes with lower percentages of insulation in Croydon (Shewan, 2004).

In summary, not all homes in Croydon have insulation, which may be due to the public being unaware of or unconvinced by savings that result from investing in insulation for heat retention. Either way these homes burn more fuel to maintain a desired temperature, which generates more carbon emissions. By developing solid evidence of real savings through case studies of the Borough's own residents, more homeowners may reconsider installing insulation.

2.6 Summary of Background

The function of the background chapter was to provide insight on the Borough of Croydon and its current environmental status. The case studies of past environmental audits provide information on some problems that have been encountered in the past and the solutions that were fabricated to meet their financial and time commitments.

The second part of the background discussed the emission statistics of London homes and defined the British Gas insulation offer. By understanding the initial motives behind the original offer, we possess a brief history of what this offer is ultimately aiming towards, which is to reduce the carbon emissions.

3. Methodology Chapter

This chapter describes how our project team has aided the Environment and Sustainability Team (EaST) on both the community and individual levels. The objectives of our project are shown in Figure 3. The first objective was to perform and analyze environmental audits for churches and schools in the London Borough of Croydon, working on a community level. We have produced audit reports for each institution that highlight their environmental issues and provide viable solutions. These issues have included items such as a significant amount of waste from the school cafeteria, inefficient light fixtures, or a leaky faucet. These issues fall under the four key environmental categories of energy, waste, water, and purchasing.

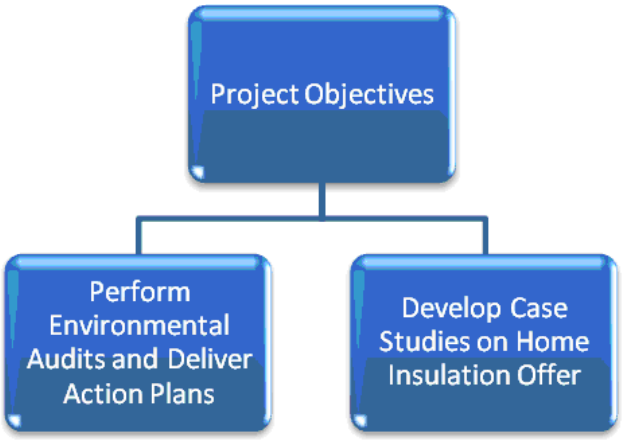


Figure 3: Project Objective Tree

With each issue that we identified during the audit we attempted to provide a variety of solutions. Each solution required a different financial and time commitment. We provided these different types of solutions in hopes of increasing the likeliness that they would be implemented. At the completion of the project we presented to EaST the issues that schools and churches share in the Borough. We also provided a template for conducting a school audit and a separate template that can be used to conduct a church audit. EaST can use these templates to audit institutions in the future or provide them to the institution so they can conduct an internal audit.

Our second objective dealt with working on the individual level, which was to develop case studies on Croydon's home insulation offer through British Gas. We analyzed how much homeowners have saved on their fuel bills by participating in the offer and collected anecdotes from satisfied customers. EaST will use the data and quotes to promote the offer in the future. By

promoting this offer EaST can reduce the carbon emissions of the Borough. In the following sections we discuss how we have completed both project objectives.

3.1 Objective 1: Perform and Analyze Environmental Audits

The Environment and Sustainability Team (EaST) is dedicated to promoting environmental procurement within the London Borough of Croydon. We aided EaST in their efforts by environmentally auditing churches and schools in the Croydon area. There were three phases involved in completing these audits. These phases are shown in Figure 4.

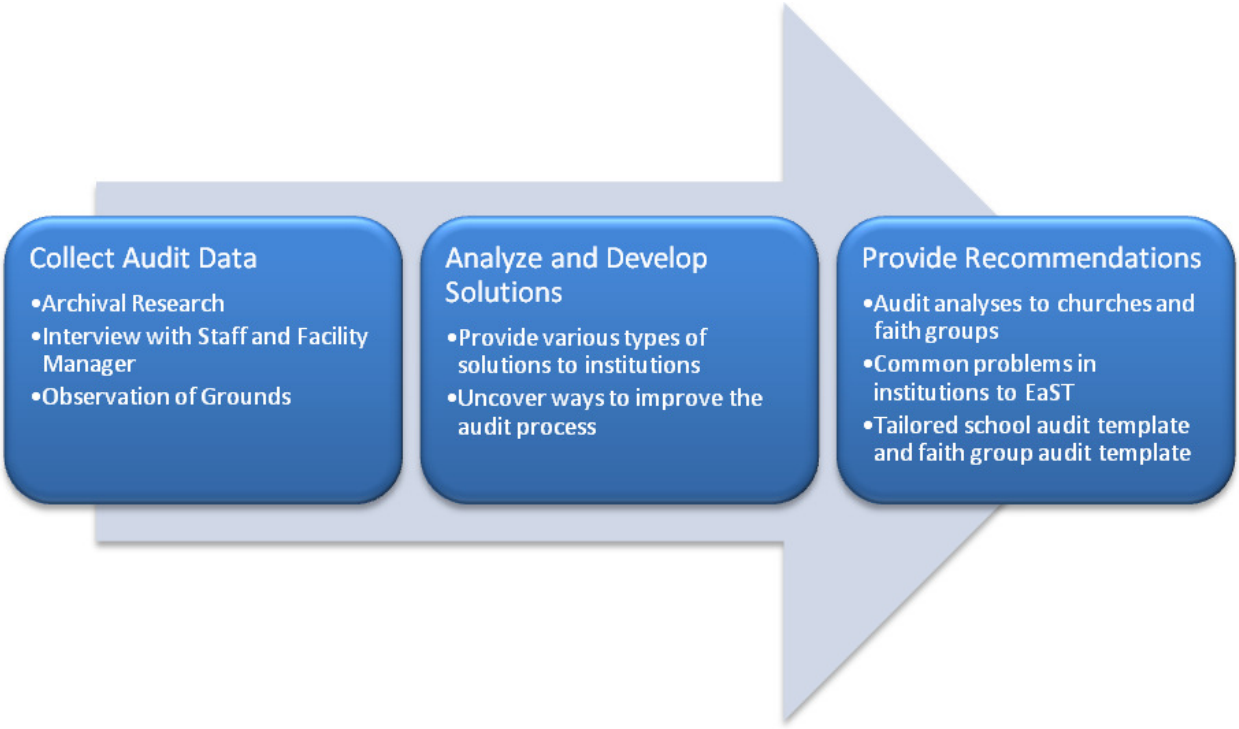


Figure 4: Phases of the Environmental Audit Process

3.1.1 Phase 1: Methods for Collecting Audit Data

The first phase of the audit process includes how we developed methods to collect audit data. We first received training from two members of EaST, Ms. Diana Battaglia and Ms. Anna Eltringham. Ms. Battaglia works with the Community Initiative program that deals with churches and schools. She also coordinates interfaith events with the Environment and Sustainability Team. Ms. Eltringham works closely with ENVIBE (Environmental Business Excellence), which is an organization dedicated to improving environmental performance in local businesses.

One of their free services to businesses is an environmental audit. During our training we reviewed the template that has been used in these business audits.

We determined during training that upon completion of the project, it would be very useful to supply EaST with two new audit templates, one that could be used specifically for schools and one that could be used for churches. These templates can be used by EaST to conduct future audits and can be supplied to the institutions in order to conduct internal audits.

Based on the knowledge we received from training we were responsible for auditing churches and schools in the Croydon area. EaST had already initiated contact with churches and schools upon our arrival and had received a few letters of interest. Ms. Battaglia had mostly worked with schools and suggested that the majority of our audits be done in primary schools that were registered for LSEA, the London Schools Environment Awards. She felt that since these schools were already trying to improve their environmental performance that our audit would particularly be useful for their institution. The majority of churches that we audited were Christian since EaST was able to contact many churches within the Diocese of Southwark through Reverend Barry Goodwin. The following section details the three steps we have taken to complete environmental audits. The steps of our environmental audit are shown in Figure 5.

Figure 5: Steps to Collecting Audit Data

The first step of our environmental audit was to conduct archival research. Archival research included gathering background information on the institution prior to the audit. We gained familiarity with the school or church and its practices by reading its website. In most cases the churches also had a website. The information we obtained from the websites were 1) how the site was used 2) who used the facility and 3) recent news. This information helped us in

formulating relevant questions during the interview. In addition to researching websites we also obtained information on prior audits conducted in the institution. Will Walker, the finance officer of EaST, had records on these previous audits as well as major renovations. He also had a list of audits that were to be conducted in the future. Many of the schools we audited were also receiving a Thames Water Audit or an energy audit.

The analysis of prior audit results of the institution assisted us in inspecting whether noted problems were settled and if suggestions were taken into account. These results helped in noticing any positive changes that had emerged since then. However, we also took into consideration the date in which the audit was performed and if any recommendations were soon to be executed.

The second step of our environmental audit was to obtain information from people in the institution. It is important to understand that the auditor may observe the organization for a couple hours but those in the institution have much more knowledge of their environmental state. Problems might go undetected unless someone who has worked or participated in the institution makes them known to the auditor. For example, the head teacher might have seen a problem on the playground that we could overlook during observation.

In order to determine these problem areas we conducted a staff interview for the second step of our environmental audit. Upon arrival at the institution we supplied an agenda to those that we were interviewing. The agenda is included in Appendix B. For schools we usually met with the head teacher, financial officer, and facility manager. The head teacher was able to inform us about problem areas in school operations as well as the environmental policy of the school. The head teacher was often very useful in detailing the recycling program of the facility and the involvement of the students. By interviewing the financial officer, we were able to determine how the school purchases appliances, office supplies and other materials. The facility manager was able to help us identify issues with energy consumption, water usage, and waste management. In churches we usually met with a financial officer and facility manager.

The third step of our environmental audit was observation, which was vital to a complete audit. In the observation step, we investigated the problems found during archival research as well as the problems brought to our attention through staff interviews. Observation also helped in finding problems that were not brought to our attention in the other steps. Observation refers to the process of walking around the institution grounds to identify environmental problems. For

example we checked the use of lights, the contents of general waste bins, and the water taps in bathrooms as well the heating and ventilation system. We used an observation checklist that we created with problems that we identified during training as well as items from the ENVIBE business audit. This template is shown in Appendix E. Upon completion of observations, we compiled a list of environmental problems in the institution. The list often included items such as an inefficient boiler, windows which are open while the heat is on, or computers left on during lunch hours. These problems were analyzed in Phase 2.

3.1.2 Phase 2: Analyze and Develop Solutions

This section describes the goal for the second phase of our environmental audit. The goal was to analyze and develop solutions from the list of problems determined in Phase 1. In order to promote environmental sustainability, we attempted to provide as many solutions as possible for each problem. These solutions were typically from three different categories. The solutions were either a) easy to implement, low cost solutions, b) minimum work and investment solutions, and c) long term investment solutions. The three types of solutions are shown in Figure 6. We first describe the types of solutions we provided and then describe how we analyzed the data from Phase 1 to arrive at solutions.

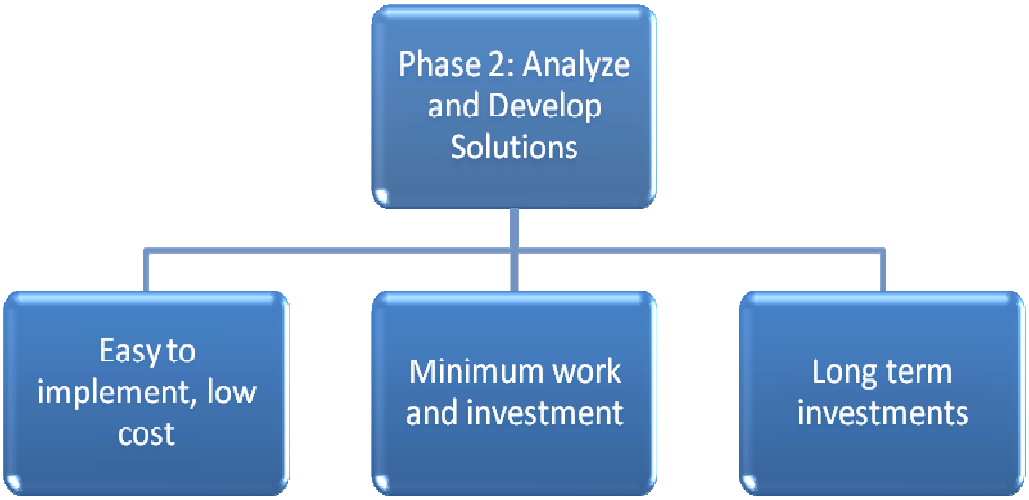


Figure 6: Types of Solutions provided by Phase 2

The first types of solutions are easy to implement and require very little expense. These solutions may be temporary solutions to problems until a permanent solution can be implemented. They also suit an institution that does not have the budget or time to make more permanent improvements. For example, instead of replacing inefficient windows, which require

a substantial investment, the institution might purchase a new window sealant to temporarily fix the problem.

The second type of solution requires more investment and work. These solutions fix the problem at hand, but may not have long-term benefits. For example, a broken water heater could be replaced with a new one that would have the same heating efficiency. The institution could choose this solution because they could not afford the new energy efficient heater. There is no long-term savings in purchasing the same heater; however, the problem is solved with minimum work and investment.

The third type of solutions requires the most investment and work. These solutions solve the problem of the institution while providing an opportunity for long-term savings. The replacement of energy inefficient windows would require a substantial initial investment and labor, but the institution would save money in heating costs over time. For these types of long-term investments we provided contact information to Will Walker, the finance officer of EaST, who offers funding for these investments.

In order to determine the most effective solutions to each individual problem, we used resources provided by EaST. We constantly updated the EaST team on issues that arose and they helped us arrive at solutions.

3.1.3 Phase 3: Provide Recommendations

This section details how recommendations were offered to both the institutions we audited and EaST. We provided recommendations to each institution we audited in the form of an audit report. Upon completion of the entire project, we presented to EaST common environmental strengths and weaknesses of churches and schools in Croydon. We also provided observation templates that EaST can use to audit churches and schools in the future.

Throughout the project, we provided the institutions that we inspected with feedback on potential ways to improve their environmental performance. Our recommendations to the institution were compiled into the form of an audit report. The audit report consisted of a background section, a section on priority issues, and recommendations in the four main environmental categories. In each section we provided enough information to understand the problems and ways to carry out the solutions, as well as an easy-to-read table with behavioral suggestions and maintenance recommendations. At the end of the report we combined all of the

tables in the individual sections into an action plan. The action plan can be used as a quick way to reference what was described in the body of the audit report. The tables make it easy for the institutions to quickly pick out a problem and carry out a solution.

Along with the audit report to each institution, we gauged the effectiveness of the action plan and determined strengths and weaknesses of the audit that we had conducted. After completing each audit we evaluated our own performance. This document is provided in Appendix C. We recorded what we thought went well and what could be improved during the interview as well as the observation portion of the audit. After each church or school audit, we modified our observation template. Each audit helped us to find more points to include on the template. In the end we developed two templates that EaST can use in future environmental audits. As opposed to returning to the institution and presenting the audit report, due to the time constraints of our project, the action plans were emailed to the schools within a week from completion of the audit.

We planned on attaching a feedback survey with the action plan email however due to time constraints all of the audit reports were sent out after our departure. The survey we planned on sending was simple enough that it could be completed in a matter of minutes. A simple survey allowed for quicker responses to suggestions that were applied to the following audit.

The feedback survey contained a series of open-ended questions. These questions allowed each respondent to discuss their opinions on each topic. The responses to the survey questions assisted in assessing the effectiveness of the audit process. We determined how well we conducted the audits and how helpful our audit report was to the institution. We asked the following questions:

1. Was our audit report helpful? Understandable?
2. Did we provide the right types of solutions? (Please consider financial commitment, time commitment, etc.)
3. Were the solutions described sufficiently?
4. Other considerations and/or recommendations you have about the audit.

Each of the four survey questions was developed with a specific intention in mind. The first question helps the auditors gain feedback on how well the audit results were presented. This question asks the respondents how well they understood the technical writing of our report.

The second question asks the respondents if they can select one of the recommended solutions for implementation. Based on their responses, we can identify how to make solutions more appropriate for the institutions' needs.

The third question inquires whether the presented solutions were thoroughly developed. We want to provide sufficient information in hopes that the institution will be more likely to implement the solutions. From this information we can prepare solutions in future audit analyses that will satisfy the needs of the institutions.

The fourth question allows the possibility for us to receive extra feedback on issues that otherwise might be overlooked. The question was designed so that the respondent can relay thoughts that they may not have mentioned in prior questions.

We planned on learning from these evaluations to make adjustments to the next audit that we conducted. The feedback received after each audit helps to recognize the improvements the auditors need to consider when auditing.

At the conclusion of the project, we presented the results of our audits to the Environment and Sustainability Team. We relayed the common strengths and weaknesses we found in schools and churches in Croydon. Additionally we presented EaST with observation templates that we created and modified throughout the project.

3.2 Objective 2: Develop Case Studies on Home Insulation Offer

The second objective of our project was to develop case studies on the insulation offer provided through British Gas. The Environment and Sustainability Team was interested in obtaining data on how much residents had saved in fuel costs by participating in the offer. We sent out a mail survey to gather quotes from happy customers and data from fuel bills before and after insulation. At the conclusion of the project, we presented EaST with a list of quotes and evidence of financial and fuel savings from individual homeowners. EaST can use this information to promote the insulation offer in the future.

3.2.1 Choose Households of Interest

In order to deliver accurate case studies to EaST, we targeted homeowners who participated in the British Gas insulation offer in March 2007. We chose homeowners who had installed insulation about a year ago in hopes to get a current and past year fuel bill from the same time of year. We were interested in comparing the same months of consecutive years; for example, we wanted to observe March of 2007, without insulation, compared to March of 2008, with insulation.

EaST provided the list of past participants in the British Gas insulation offer. The documents provided a list of people, telephone numbers, the installation date and the type of insulation: cavity-wall insulation, loft insulation or both types. Because this project was initiated in March of 2008, we filtered the list of people who had installation in March of 2007. Selecting the most recent year should increase the possibility for residents to provide their fuel-heating bills before and after installation of the insulation.

3.2.2 Contact Residents

The selected residents with installation in March of 2007 were initially contacted by phone. We created a phone interview template that contained a variety of reply and response options. This template is shown in the Appendix S. After drafting the template we had EaST modify it to include dialect more specific to London. This helped us to engage more residents during the phone call.

When placing phone calls, we first introduced ourselves as part of the Croydon Council Environment and Sustainability Team (EaST) and described the study we were doing. We tried to make it as clear as possible that we were students. We then asked if they had a moment to answer some questions. By using our personal judgment, if the resident did not seem very receptive the call was politely ended.

If the resident answered yes, we first informed him or her that the purpose of the study was to obtain real resident heating bills to help promote the insulation. We then asked simple questions to determine if they felt their home was warmer or if they had noticed a reduction in their fuel bills. Following these simple questions we asked if they had their current and prior year heating bills. If the resident appeared unable to answer these specific questions, we then offered to send a survey form by e-mail or by mail.

If the resident initially answered that they were unable to speak with us at the moment, but they seemed receptive, we followed up by asking if we could send them a survey so they could reply at a more convenient time. With residents who agreed to receive our mail questionnaire, we confirmed their address. The mail survey questionnaires were then prepared and sent out within one business day and mailed with letters and envelopes carrying the Croydon Council insignia.

3.2.3 Data Collection

For those who agreed to participate and response to our survey, we asked five questions in order to gather enough information of the residents for our case study, including:

1. Have you noticed that your home is warmer?
2. Are you pleased with your purchase?
3. Do you know if your fuel bills have reduced?
4. Do you keep your past fuel bills?
5. If you are pleased with the insulation you had installed with British Gas, would you be happy for us to quote you in our publicity materials – leaflets, posters and website?

The full letter that was sent to the residents is documented in the Appendix T. The first question asked the homeowners to repeat, from the phone interview, whether they noticed their home being warmer since installing insulation to obtain an anecdotal response. The second question displayed a fixed rate scale ranging from complete dissatisfaction to satisfaction; this provided the quantitative response for our results. The third question prompted the residents if they had noticed a reduction in their fuel bills, another anecdotal response. The fourth question asked the resident to trace back their fuel bills before insulation and compare them to their current fuel bills after insulation. At this point, we hoped to engage the residents in determining how much money they have saved for their own benefit. The final question asked the resident if they would share any comments which could be quoted to help advertise the insulation offer. At this point the resident would see whether the insulation has made any changes and quote their experience.

The form was designed with a return to sender period, due to the time constraint of the project. Since EaST was interested in using the responses from these questions in promotion we included a section to obtain the residents' consent.

3.2.4 Data Analysis

After we received completed survey responses we compiled the data from the residents into a spreadsheet. We entered in the fuel consumed in kWh and the cost of the fuel from bills of same months of two different years. We took the difference of these values before and after insulation to determine the impact of insulation.

3.2.5 Data Complications

The data analysis was complicated by the presence of several independent variables. The main variable of our study was the presence of installed insulation; however there are environmental and economical variables that changed within the preceding year.

The first complication arises from changes in the fuel prices. Because the price of fuel fluctuates so frequently, one year's fuel price may not be identical to the next. A further study could investigate changes in fuel prices over this period. Due to time constraints and limited resources we were not able to circumvent these variables but noted them in our studies as well as in our future recommendations.

Though the case study compares data over a year span, the seasonal severity of the weather can vary. Not all winters have identical temperatures, so it is difficult for a simple cost comparison to account for these effects of weather on heating from one year to another year. We have noted these complications in the results and focused on the fuel units.

The development of case studies may be simpler without these variables. However these variables create evidential case studies that better reflect Croydon and provide more information to EaST.

3.2.6 Development of Case Studies

Once we received the survey questionnaires we examined the responses to the questions and extracted the most appropriate responses for promoting the offer (positive responses). We first presented to EaST our findings on how many people were receptive towards the initial contact, and how many agreed to receive a mailed survey questionnaire.

The anecdotal responses were compiled in a list corresponding to the questions on the survey. In the list we referenced the residents by Case A, Case B, etc. At the end of the list we provided the names and addresses of those people who agreed to let us use their information in promotion. The other cases remained anonymous.

We then provided different cases of homeowner's fuel bill savings. For each case, if possible, the fuel savings and the financial savings were clearly stated. We also provided the percentage change from before and after insulation. These numbers were effective in quickly demonstrating the effect of the insulation. Table 1 demonstrates how each case was compiled.

Case A	Feb-07	Mar-07	Feb-08
Gas used (kWh)	3526	Loft insulation	3267
Charge £	125		110

Table 1: Fuel Bill Savings

Gas reduction: 259 kWh (7.34%)

Financial Savings: £15 (12%)

3.3 Summary

This chapter has described how we completed the two objectives of our project, performing and analyzing environmental audits and developing case studies based on the British Gas insulation offer. In the first objective of the project we provided viable solutions to environmental problems in churches and schools in the Croydon area. We also presented to EaST our reflections on the project experience, as well as the strengths and weaknesses we found in the audit process. In the second objective of the project we provided EaST with information on how much residents save on their fuel bill by participating in the British Gas insulation offer.

The institutions we audited will be able to use the action plan we provided to solve environmental issues. Since we provided solutions that require different financial commitment, the likelihood that each institution will find the solution that fits their budget will increase.

The recommendations we provided to EaST will allow them to see the effect of the insulation offer for specific cases, and the overall savings within the Borough. They can use this data to promote the insulation offer in the future.

4. Environmental Audit Findings

This section contains our findings from the environmental audits we completed in churches and schools in the London Borough of Croydon. We completed a total of eight environmental audits at a rate of two per week. We conducted four school audits and four church audits. We describe the overall findings of the churches and schools, their strengths and weaknesses as well as the similarities seen in both. We then describe the observation templates that we have created over the course of the project as well as the audit report and action plan we have sent out to each institution.

4.1 School Audit Results

This section describes the overall findings from the four schools we audited. We will discuss the common strengths and weaknesses of these schools in the areas of energy, water, waste and purchasing. The audited schools were Parish Church CE Infant and Primary School, Heavers Farm Primary School, Gresham Primary School, and St. Joseph's Junior School. We have included all of the audit reports from Appendix K to Appendix R.

To summarize the specific environmental performance of the four schools we have identified the common environmental strengths and weaknesses in Table 2. The table displays what we felt were the most important environmental issues in schools.

		Parish Church	Heavers Farm	Gresham	St. Joseph's	Total
Strengths	Composting	✓	✓	✓	✓	**4**
	Student gardens	✓	✓	✓	✓	**4**
	Cutlery/Crockery	✓	✓	✓	✓	**4**
	Recycling	✓	✗	✓	✓	**3**
Weaknesses	Computers off	✗	✓	✗	✓	**2**
	Low flow taps	✗	✗	✓	✓	**2**
	Fair-trade	✗	✗	✗	✓	**1**
	No HVAC issues	✗	✗	✓	✗	**1**
	Eco-friendly products	✗	✓	✗	✗	**1**
	Purchase recycled products	✗	✗	✗	✓	**1**
	Use of daylight	✗	✗	✓	✗	**1**
	Windows closed when HVAC on	✓	✗	✗	✗	**1**
	Meters Recorded	✗	✗	✓	✗	**1**
	Total	**5**	**5**	**8**	**8**	

Table 2: School Audit Strengths and Weaknesses

In Table 2, the strengths and weaknesses have been generalized to display whether the school was strong in the area or not. If the school was sufficient it received a green checkmark otherwise it received a red X. The bottom numbers represent the total number of areas that the school is sufficient in. The numbers in the right column represents the total number of schools that have sufficiently addressed the corresponding area. We have sorted the rows in the table by strengths and weaknesses. If the majority of schools are sufficient in the area then we have considered it a common strength among schools.

The four schools all incorporated a student gardening program to teach students to seed and tend to floral and vegetation. The practice of biodiversity promotes environmental awareness by educating the younger generation to maintain and protect natural habitats.

All the schools practiced composting of uncooked foods. Most often they composted the fruit peels from the students' morning snack. Each of the schools had a composting bin on the school grounds. One school provided fruit compost containers in each classroom. Since each

school has minimized the general waste that needs to be transported off the grounds, the vehicle carbon emission and build up at general waste sites has also been reduced.

The majority of schools have already established a recycling program. Most of the classrooms had a bin for both paper and cardboard. However, Parish Church School did not regularly empty the bins, causing an overflow that resulted in the students placing recyclable materials in the general waste bins. For the schools that regularly emptied the recycle bins, there was little to no recyclable material in the general waste bins.

The schools with recycling programs also provided a variety of programs that engaged parental participation. For example, parents were encouraged to deposit old mobile phones and spectacles in recycling facilities at the school. Once a limit was achieved, an external contractor collects the old mobile phones and spectacles for a nominal price. One school also donated old computers and milk caps to charity. These are other forms of recycling plastics and glass.

The schools that practiced recycling have also integrated reuse programs. These programs engage parents to volunteer at their child's institution. The second hand uniform program encourages parents to donate their child's used uniforms to the school, where they are cleaned then sold or given to other students. The program reduces the quantity of uniforms that need to be reordered and processed by an external company. Parents are also encouraged to donate any books to the school, to build up school libraries. Both these programs reduce the overall financial and carbon emission of transporting these products.

None of the schools use disposable paper towels in the washrooms. Each of the schools used an alternative means of drying hands such as reusable hand towels or hot air dryers. These alternatives reduce the schools' general waste, since paper towels cannot be recycled. Also by not being dependent on a continuous supply of paper towels, the transportation is again reduced for both delivering paper towels and removing general waste.

In three of four schools their washroom sinks were equipped with percussion taps, and one school with conventional faucet handles. The percussion taps, when pressed, deliver a limited volume of water and then stop the flow of water until pressed again. Its water-limiting feature reduces the possibility of an unoccupied faucet being left on. However not all schools have considered adjusting the flow of their faucets. By delivering the same volume of water over a slower flow rate, it provides the user more time to rinse, reducing the need for multiple presses.

Only Gresham School used flush-sensing urinals while the remaining schools' operated on timed flushing urinals. The timed urinals were set to flush every twenty minutes. The timed systems act independently of the number of uses and will still flush without any users. Only two of the three schools using timed flushing systems shut off the timer at closed hours, weekends, and holidays. The flush-sensing system minimizes the need to manually shut down the system for closed school periods. In terms of toilet water conservation, no schools utilized the hippo device, which reduces the amount of water per flush. One school claimed to use hippos, but removed them due to low water pressure complications.

Drinking water was also considered when we audited water usage. All schools had or stated they expected to switch from the large drum bottled water systems to running filtered water off the main water line. The use of drum bottled water requires delivery and pick-up of the empty drum bottles. The schools that ran water from the main line eliminated the need for routine delivery vehicles, again reducing vehicle carbon emissions. Their water expenses have also been consolidated into one utility bill.

The most common issues viewed in all schools dealt with energy usage. All schools' classrooms were designed with large windows, allowing sunlight in. However, most teachers kept on all ceiling lights, rather than switching off ones which were not necessary. The other common practice was keeping lights on in unoccupied rooms. We noted a misconception that was spread throughout the staff that fluorescent lights require more energy to initially turn on than to keep them on for thirty minutes during class breaks. We found that it is better to turn the lights off if the room will not be in use for more than five minutes (National Energy Foundation).

All schools kept unoccupied computers powered on, while two schools kept them on overnight and during the weekends. While examining photocopiers and printers most schools had them set to sleep and power saving mode. However, one school did not shut down the unit when the school was closed. These practices directly waste unnecessary energy and increase the utility expenses.

The findings of HVAC (heating ventilation and air conditioning) and basic temperature management throughout the schools varied. All schools had weather strips on entrance and exit doors and the majority of windows were double-glazed which reduces the amount of energy needed for heating. However in other parts of the schools weather strips and windows were either worn-out, partly stripped, or they did not create a proper seal. One common problem in

schools was that teachers kept windows open while simultaneously running the radiator, as opposed to turning the radiator off or adjusting the thermostat. These issues were generally due to poor ventilation and heat exchange. The boilers of Parish Church School were not maintained or repaired to address heterogeneous heating throughout the old and new infrastructure, whereas the other schools received new efficient boilers by applying for external funding. The boilers that were maintained were timed to reduce their output for closed hours, whereas the non-serviced boilers were set to maintain heating even during closed hours. From interviews with site managers we found that the majority of schools did not regularly record the meter readings. By monitoring meter readings schools can look for unusual changes indicating underlying problems in energy or water systems that are not visible on the surface.

Aside from gauging environmental practices, we also incorporated one ethical purchasing practice. EaST promotes purchasing of products from fair-trade companies. Fair-trade is a company practice of paying more for products so farmers and third-world workers receive fair pay. In terms of what we gathered from the interviews regarding purchases, none of the schools completely supported fair-trade companies. In fact, only St. Joseph's Junior supported fair-trade by purchasing such coffee and tea for faculty. In other areas of purchasing only Heavers Farm purchased eco-friendly products. Only St. Joseph's Junior purchases recycled paper. Most of the schools were not interested in environmental purchasing because of their overextended budget.

The common strengths for schools are in recycling, composting, student-run gardens and reusable dishes and silverware. Most schools have problems with HVAC, recording meter readings, taking advantage of day lighting and purchasing environmentally friendly products. These areas are less advertised and considered by schools. In order to advertise eco-friendly contractors and funding available for HVAC repairs we created a Green Resource Guide for both churches schools which is discussed in Section 4.8.

4.2 Church Audit Results

We combined the findings from all the church audits we performed, which helped us identify the general environmental strengths and weaknesses they all shared. The audited churches were St. John the Evangelist, St. Mildred, Parish Church, and St. Mary's the Blessed Virgin. In Table 3 we have grouped and summarized all the churches' results from our auditing in a similar manner as the previous section on schools.

		St. John	St. Mildred	Parish	St. Mary	Total
Strengths	Use of daylight	✓	✓	✓	✓	4
	Dishes and silverware	✓	✓	✓	✓	4
	Support Fair-trade	✓	✓	✓	✓	4
	Recycling	✓	✓	✓	✓	4
	Reduce light bulbs in fixtures	✓	✗	✓	✓	3
	Windows Closed when HVAC on	✓	✗	✓	✓	3
Weaknesses	No HVAC issues	✓	✓	✗	✗	2
	Well-sealed windows and doors	✗	✓	✗	✓	2
	Meters Recorded	✗	✗	✓	✓	2
	Eco-friendly products	✗	✗	✓	✗	1
	Purchase recycled products	✓	✗	✗	✗	1
	Composting	✗	✗	✗	✗	0
	Total	8	6	8	8	

Table 3: Church Audit Strengths and Weaknesses

We found all four churches made use of day light over electrical lights. Churches are generally large facilities and have the potential to consume large amounts of electricity to light all portions of the building. However these four churches relied on windows allowing day light in. St. Mildred, the most recently built and had numerous sky light windows throughout the church facilities. We noted Parish Church provided an open sanctuary daily and used lighting to establish an inviting atmosphere to the community.

Most of the churches minimized the amount of light bulbs in each fixture strip, reducing the energy consumption and financial expenses. Parish Church, St. John, and St. Mary only had single bulb light fixtures. However in these three churches, the light strips capable of powering multiple bulbs only had fifty-percent of the bulbs present.

In terms of heating practices, the majority of churches maintained the boilers on timer systems to run a couple of hours prior to the weekly Sunday services then shut off afterward. Only St. Mildred ran the boilers throughout the day and overnight. Because of this, people opened room and hall windows to find a comfortable temperature. St. John holds regular meetings in the church, however, rather than heating and using larger rooms and the entire

sanctuary, meetings are held in sacristy and heated by a single radiator. Parish and St. Mary also practice a similar method.

As far as managing the boiler systems, St. John and Parish Church have recently replaced their boilers and do not have any problems. Parish Church's boiler system has suffered problems due to the rainy season and flooding, but they are looking to replace it in the near future. St. Mary's boiler is over forty years old and only has a minor leak located in the church hall which is scheduled for maintenance. Overall we were informed all these church have or will have efficiently functioning HVAC systems in the near future.

We also inspected the heat efficiency of their windows and doors in the four churches. Only St. Mildred had double-glazed windows and well-fitted windows and doors, which were renovated when adding the new wing to the church. Parish Church, St. John, and St. Mary are all old churches holding great historical value and are controlled by external committees and the Diocese of Southwark. Because of their history, no structural renovations to windows and doors are permitted.

Along with heating and utility matters, we found only Parish Church and St. Mary record the utility meter readings and compare these to their respective bills. Both these churches have experienced excessive financial charges because the energy suppliers overestimated the amount of energy used and charged at the estimate cost. The other two churches were unaware of the importance of these practices.

All four churches practice recycling paper and cardboard, and reuse misprinted papers. Because all these churches are only provided with paper and cardboard recycling services, there is no place in the church for glass and aluminum can recycling. However, in the churches we were told that parishioners take these recyclable materials to their private homes for recycling. The only other concern was that none of the churches were familiar with how to recycle blown light bulbs. St. John and St. Mildred have been collecting bulbs and storing them in the church.

On the topic of composting, none of the churches possess an on-site composter. However St. Mildred and St. Mary have contracted external services to collect their compost materials and green waste separately. However, this still requires vehicular transportation to remove waste.

Regarding the four churches reusing practices, none of the churches used disposable coffee cups or dinnerware; all the churches used reusable dishes and silverware. St. John and St.

Mary did not possess a dishwasher since they felt it was unnecessary. This practice reduces general waste and also water consumption.

When auditing the churches on their water use, we found that the majority of these churches had at most two restrooms with manual flush levers and few sinks located throughout the facility. Slight recommendations were made, however we were notified renovations are difficult to implement. Only St. Mildred had restrooms with flush-timer urinals, which are obsolete to occupancy sensors.

In terms of purchases, all churches were strong supporters of fair-trade, purchasing coffee, tea, and baked goods. These churches purchase products at a higher price to support third-world farmers and worker. In regards to the purchasing of recycled and eco-friendly cleaning products, only Parish Church purchased eco-friendly products and St. John used recycled products. The other churches did not consider these products or were concerned with higher prices.

The common strengths for churches are in use of day light, minimizing bulbs in light strips, keeping windows closed when using HVAC system, recycling, reusable dishes and silverware, and support of fair-trade. The issues that churches need to focus on pertain to problems with the HVAC systems, the purchasing of recycled and eco-friendly products, onsite composting, and regularly recording meter readings.

4.3 Comparison of Churches and Schools

When comparing the common strength and weakness charts between churches in Table 3 and schools in Table 2, the item list is not identical. This is due to certain schools' items that are irrelevant to churches; for example churches do not have computer classrooms whereas schools integrate basic computer skills into the curriculum. The underlying cause to these differences is due to church and school facilities have different community demands and frequency of uses.

When comparing both charts, some of the items that are presented as school weaknesses are church strengths, and visa-versa. For example, a minority of schools practice using daylight and supporting fair-trade, whereas a majority of churches do both. There are reverse examples as well, since all four schools practice composting whereas three of four churches do not.

Upon closer observation, we can see that there are common areas where both churches and schools succeed. Both churches and schools use reusable dishes and silverware and practice

various forms of recycling. However from these two charts we can also see the common weaknesses these community organizations share, from rarely purchasing recycled products to not regularly recording and comparing meter readings to the utility bills.

These charts represent eight of the Borough of Croydon's educational and religious organizations. By displaying the common strengths and weaknesses, we were able to relay these results to EaST. We prioritized our findings by the level of difficulty of addressing these areas. Where the level of difficulty was the same, then the focus areas were prioritized by the lack of participation from the respective institutions. These items are presented in Table 4. By providing EaST this insight, they can evaluate the importance of each environmental issue and can address each area depending on their available resources.

Priority	Area	Institution	Difficulty
1	Meter readings	Churches and Schools	Easy
2	Composting	Churches	Medium (leadership)
3	Computers off	Schools	Medium (behavioral change)
4	Windows open while HVAC on	Schools	Medium (behavioral change)
5	Use of daylight	Schools	Medium (behavioral change)
6	Purchase recycled products	Churches and Schools	Hard (tight budget and behavioral)
7	Eco-friendly products	Churches and Schools	Hard (tight budgets)
8	Fair-trade	Schools	Hard (tight budgets)

Table 4: Prioritized Focus Areas for Churches and Schools

4.4 Format of Environmental Audit Observation Templates

This section describes how we developed a user-friendly layout for our church and school environmental audit observation templates. Throughout the course of the project we revised the layout of the templates through regular self evaluation after each audit. Our self evaluation is shown in Appendix C.

Our templates were based on the ENVIBE business observation template, shown in Appendix E. Similar to the ENVIBE template we separated questions that prompt the auditor, by main environmental categories (energy, water, waste, purchasing). As opposed to the ENVIBE

template we divided each main category into subcategories. For example, we divided energy into lighting, heating, room management, and information technology.

In order to maximize the amount of space on our templates we designed them in landscape unlike the ENVIBE template in portrait page layout. By laying the templates out in this manner we were able to incorporate Yes and No checkboxes for each question. The ENVIBE template did not provide this option and it also separated the questions, in the top of the page, from the note space, at the bottom of the page. On our templates we provided space to take notes directly to the right of each question. Originally we left white space for notes on the right side of the page; however after testing we found it was difficult to follow the notes on the page and determine what item the notes addressed. To solve this problem we added lines that extend directly from the check boxes. A sample of the final layout is shown in Table 5.

Energy	YES	NO	Notes
Lighting			
Is day lighting being observed?			
Are lights on occupancy sensors?			

Table 5: Sample of School Observation Template

4.5 Content of Observation Templates

The section details the differences between our observation templates for churches and schools and the ENVIBE business template. Upon completion of each audit we continuously made changes to our templates, tailoring them to be more specific to churches and schools. Overall the three templates for businesses, churches and schools, had more similarities than differences. This section describes those similarities and differences as well as the considerations that must be made during observation.

Generally all facilities use some form of energy, from electricity to heating-fuel. When comparing the three templates on the category of energy, many listed items are identical, such as ensuring that windows remained closed when the HVAC system is running, that meters are regularly checked and boilers regularly serviced. However there are differences: churches do not use as many computers as businesses and schools. Therefore the listed items have been independently prioritized for each energy section template.

Another significant difference is that businesses and schools are generally able to implement and repair weather strips and double-glazed windows. However many churches hold

historical value in stained glass windows and old doors that may have poor insulation. We took this into consideration when we prepared the audit reports.

In terms of water usage most facilities provide restrooms. However, the difference between these facilities is that there are more restrooms in businesses and schools and they are used more frequently. Churches tend to only have a few of restrooms that are used primarily on the weekend and other worship hours. Additionally churches and schools generally have a dishwasher whereas most businesses unless in the food industry do not possess one.

All facilities will produce general waste such as paper and blown light bulbs. We found many of the waste management items to be similar for all three facilities, such as using misprinted papers for scratch paper and proper use of recycling bins. Some of the more specific items for schools and churches were having donation drives for old mobile phones, spectacles and books. Schools in particular also practice reusing old school uniforms and book buy-back programs.

Whether it is by business, church, or school, purchases will be made to restock and maintain the function of an organization. Common to all three observation templates is the purchasing section. We looked for promotion of eco-friendly and fair-trade products in all institutions. The additional items for the school and church templates pertain to improving biodiversity. This differs from business templates because in general schools and churches have space that can be dedicated to a garden while businesses might operate on just one floor of an office building.

Though the templates are similar, it is the method of observation that significantly differs. Many of the observation findings are time dependent therefore it is important to observe businesses and schools during open hour sessions, since many of the environmental issues are due to behavioral practices as opposed to maintenance items such as inefficient boilers. These behavioral practices that should be observed include windows being open while running the HVAC systems and whether recyclable materials are placed in incorrect bins.

4.6 Methods for Conducting an Environmental Audit

This section provides our account on how we conducted an environmental audit based on the training we received from EaST and the experiences we acquired throughout the project. We have organized our audit conducting methods into three main steps background research, interview, and observation.

4.6.1 Background Research

Prior to conducting an audit we determined if previous audits had been conducted on the facility. If one had been conducted it was useful to research what recommendations had been presented to the institution. During the audit we checked if previous recommendations had been implemented.

In order to prepare for the interview portion of the audit we read about the institution. By visiting the institution website we gained an understanding of how the facility was used, when it was used, and what areas and rooms encompassed the facility. We also gained information on the leadership and types of activities that the institution participates in. For example, we learned about student gardening clubs, problems with the facility, and PTA involvement in the school.

4.6.2 Interview

An interview should be scheduled with the leader of the organization and a financial officer if available. For schools we often met with the head teacher and financial officer prior to observation. For most churches we met with the reverend, secretary, and site manager. During the interview portion of the audit we used previous knowledge from background research to formulate questions relevant to the institution. For example, we knew that Parish Church Nursery and Infant School added a new wing to the facility prior to the audit and we were able to ask if the new wing was heated separately or off the main facility's systems.

At the start of the interview, we presented an agenda to the person we were meeting. Our agenda is shown in Appendix B. The agenda established the reason for our audit, the areas we wanted to learn about and most importantly it made the interview seem more professional. We made a more annotated version for our own use which included more areas to ask about. The more detailed agenda is shown in Appendix C.

4.6.3 Observation

For the observation part of the audit we arranged for the site manager to provide us a tour through the facility. It was during this time that questions not asked during the interview were addressed. The most important element of observation was that it allowed us to examine the behavior of students and staff while using the facilities. This was not as important in churches unless the church included a social hall. In schools we were able to check inefficient use of lighting, if recyclable material were in general waste bins, and how computers were managed during lunch and recess periods. For both churches and schools we also noticed if windows were left open while the heating was on.

Besides noting general use of the facilities we also observed any items that required maintenance. We checked for energy and water saving devices, recycle bins, and any faulty electronics. We used the respective observation templates to make notes on common problems we identified during training.

4.7 Format of Audit Report and Action Plan

Upon completion of each audit and analysis we created and sent an audit report and action plan to each church and school. The report encouraged good practice and highlighted their specific environmental issues along with viable solutions to each problem. We used the same format for both schools and churches.

The format begins with a cover page that includes the institution's name, the auditors' name and the conducted audit date. The following pages include an introduction on Croydon Council Environmental and Sustainability Team and their goals to improve environmental performance in churches and schools. Along with the introduction, we added a brief background on the institution highlighting any information needed to understand the remainder of the report. We also recognized and encouraged any good practices and awards the churches and school have achieved.

The next item in the report is the key environmental issues that needed to be addressed by the institution. Most often, the priority issue causes other problems in the institution. For example, if thermostats are not available or accessible in the room then occupants will be forced to open windows or use extra radiators to control the heating. We have provided specific contacts and phone numbers along with a description of their services.

Also included in the audit report were the overall findings in the categories of energy, waste, water, management and purchasing. In each of these categories there were sub-categories for example, in energy there is lighting and heating. In each category a summary is provided discussing the relevant findings and possible solutions. Following each main category are charts with specific actions that can be taken. One type of chart was "Behaviour Change" which displayed the actions that people could do differently to make positive improvements. We also stated the person(s) to carry out the solution. If possible we noted any relevant resources that EaST had to support the institution. The other type of chart that we included was "Maintenance" which states the facility changes that can be made, the people that are capable of implementing these changes, as well as the possible resources EaST can provide.

We concluded the audit report with a section acknowledging any of their current environmental accomplishments and practices. Following the audit report was the action plan. The action plan was a chart that combined all of the charts in the previous sections of the audit report. We added other columns in the action plan for estimated cost, deadline and status. We filled in the estimated cost section following the scale shown in Table 6. We created the action plan at the end of the report so the people in charge of carrying out the tasks could easily reference the possible solutions without reading through the entire audit report. The action plan that was developed for St. Joseph's Junior is shown in Table 7.

Scale	**Cost**
FREE	£0
£	Less than 50£
££	From 50£ to 300£
£££	Over 300£

Table 6: Estimated Cost Legend

			Actions	*Who?*	*Deadline*	*Status*
Energy	Behaviour	FREE	Turn off lights when day light is sufficient	Teachers, Staff		
			Turn off computers when unoccupied longer than 30 minutes	Students, Teachers, Staff		
			Turn off computer monitors even when unoccupied for less than 30 minutes	Students, Teachers, Staff		
	Maintenance	FREE	Turn off all computers and monitors at end of the day	Facility Manager		
		FREE	Contact Will Walker in regards to occupancy light sensors	Facility Manager		
		FREE	Regularly record meter readings	Facility Manager		
		£	High Priority: Look into having door fixed that is left open during break periods	Facility Manager		
Water	Maintenance	££	Look into replacing the water jug in the staff room to a filtration system	Facility Manager		

Table 7: St. Joseph's Junior Action Plan

4.8 Green Resource Guide for Schools and Churches

Along with the school audit report and action plan, we created a resource guide called the Green Resource Guide. The resource guide was created with information available through the EaST archives. Before this project, EaST did not have a resource guide summarizing all the available information on funding and offers for schools and churches.

The Green Resource Guide is shown in Appendix H. Relevant information in this guide for schools includes information on various funding programs such as the Local Authority Energy Finance (LAEF) scheme that provides loans for schools to make energy-efficient purchases. Churches and schools are able to repay the loan with the savings they incur from their purchases. There is also a list of recycling information such as services, cash schemes, and

helpful guides. Also included are ideas on getting the students more involved with the environment.

The information in the guide for churches includes volunteer schemes, collection and donation programs, and other community action plans. Also provided in the package is information about how to obtain funds for creating an environmentally friendly community centre.

Some of the information in guide can be utilized by both churches and schools. Both institutions can reference the list of companies that support fair-trade and series of initiative action programs that strive to better the environment.

The overall goal for creating the Green Resource Guide was to improve contact between EaST and churches and schools in the Borough. By improving relations, EaST is able to relay more opportunities and extend their support to which can help improve the environment through schools and churches.

5. British Gas Insulation Offer Findings

We originally called 124 residents from our filtered list of those who had insulation installed in March of 2007. Of those 124 residents, 48 were not available or did not answer even after calling 3 consecutive days. There were 22 residents who demonstrated signs of frustration and hostility, because they misunderstood us as telemarketers. Another 5 resident phone numbers were either wrong numbers or the line was disconnected. The remaining 26 residents agreed to receive our mail survey questionnaire.

The rate of residents agreeing to receive our mail survey questionnaire is 20.9%. Among those 26 residents, only 14 responded by the latest due date. This translates to only 14 of the original 124 contacted responded, a success rate of 11.3 %.

From those residents who replied to our survey questionnaire, 6 out of 14 were fully completed and capable of being used to support the insulation offer. The remaining seven did not answer question number four, which dealt with the quantitative kilowatt-hours and fuel bill charges.

5.1 Customer Awareness of Savings

One of the main objectives was to determine if customers noticed from their experience a decrease in their fuel bills. Question three from our survey asked residents if they know their fuel bills have reduced. Table 8 lists the responses from the fourteen received surveys.

Question 3 Responses
Difficult to assess due to large increases in fuel bills
Yes
It's difficult to tell as I have only had the cavity wall insulation since April 2007. I pay a set sum monthly by direct debit so many of my bills are estimated. The winter was mild so the heating was not on for such a long period.
Hard to say.
No – as price of fuel has greatly increased.
Suspect they have done so. Not easy to analyse the gas bills.
No
Not apparent at the moment
I believe so. The house is much warmer.
Slightly – but gas price lowered so true picture difficult
Not sufficient time elapsed as yet to make a judgment
Yes

Table 8: Fuel Bill Reduction Responses

Of the fourteen responses, two residents do not provide an answer, and another three stated no with one of the two stating their awareness of fuel prices increasing. Three residents stated yes, and one resident stated they did see the actual bill, while the remaining five described difficulties in seeing any savings due to fuel prices increasing. It is difficult to categorize qualitative data due to the variations of the respondents' testimonies. However from the responses, it is evident that at least five of fourteen residents are aware of the fuel prices increasing.

5.2 Case Studies

This section provides both the useful anecdotes and fuel bill data we have received from phone calls as well as our mail questionnaire. Based on our conversations with homeowners over the phone and the quantitative responses of our mail questionnaire we have developed case studies measuring different views of satisfaction these residents experienced. These different views are from asking directly if residents are satisfied with insulation, if they feel warmer because of insulation, and displaying their savings after insulation. Unlike question three, because the provided data can be categorized, we were able to draw a clearer conclusion.

5.2.1 Customer Satisfaction

Based on the fourteen received questionnaires, we had thirteen responses to question two regarding residents level of satisfaction. The responses are shown in Table 9.

Question 2 Responses
3
N/A
4
5
5
4
5
5
4
4
5
4
5
4

Table 9: Insulation Purchase Satisfaction

From observing Table 9, most homeowners answered ranging from 4 to 5; number 4 equates to pleased and 5 associates to very pleased. Six of fourteen answered they were pleased, and six answered they were very pleased with their insulation. One of fourteen provided no answer, which was marked with N/A and the remaining one stated a 3 meaning they were neutral on their satisfaction. We can conclude from the thirteen responses on average their customer satisfaction was 4.4, which falls between pleased and very pleased; majority of people expressed a pleased or above satisfaction.

One homeowner made additional comments to question two, expressing anecdotally his satisfaction about the insulation he had installed despite damages made to his walls. Optimistically he stated that his home was in need of renovation anyway. No other residents expressed qualitative descriptions of their satisfaction with their insulation.

In response to the first question on our survey, "Have you noticed that your home is warmer?", most homeowners were confident that their home retained more heat. The responses are provided in Table 10. One homeowner had to switch off his heating at times, and one homeowner had to set the thermostat lower as well as extend the morning start.

Question 1 Responses
Water – Yes, House – Neutral
N/A
Upstairs yes
Yes
Yes, the house retains its heat overnight.
It seems to be warmer upstairs.
Yes
Yes. We believe it is – seem to be setting the room thermostat down more frequently than up. Have extended morning start from 6:30 to 7:00 am – probably to 7:30 am next winter.
Yes
Yes retains heat
N/A
Slightly
N/A
Yes
The house is warmer during the winter. We have actually, at times, switched the heating off during winter months.

Table 10: House Temperature Improvement Responses

When observing the responses of residents' accounts of whether they have noticed their homes being warmer, we received twelve of fifteen responses. The final comment in **Table 10** is a quote from the trial runs, and was not part of the fourteen received surveys. All twelve stated in some manner that their house felt warmer; none of the responses stated otherwise. We can summarize from this table that all responding residents who have purchased insulation do feel warmer after insulation.

5.2.2 Fuel Bill Data

This section includes quantitative data from select responses to our mail questionnaire. We have selected these six cases since they demonstrate either a reduction in fuel consumed (kWh) or financial savings. The remaining seven surveys either did not provide an answer or provided wrong months; comparing June 2007 to January 2008.

Case A	Feb-04	Feb-06	Feb-07	Mar-07	Feb-08
Charge £	768	759	762	Loft insulation	717

Average charge before insulation: £763

Charge after insulation: £717

Financial Savings: £46 (6.2%)

Case B (Mrs. Clark)	Feb-07	Mar-07	Jan-08
Charge £	113.12	Cavity wall and loft insulation	102

Financial Savings: £11.12 (9.83%)

Case C	Aug-Nov 06	Mar-07	Aug-Nov 07
Gas used (kWh)	3750.98	Loft insulation	2108.98
Charge £	55.67		54.19

Gas reduction: 1642 kWh (43.77%)

Financial Savings: £1.48 (2.65%)

Case D	Nov-06 to Feb-07	Mar-07	Nov-07 to Feb-08
Charge £	275	Loft insulation	245

Financial Savings: £30 (10.9%)

Case E	Jun-06	Mar-07	Jun-07
Gas used (kWh)	3645.81	Loft insulation	2956
Charge £	118.62		92.55

Gas reduction: 689.81 kWh (18.92%)

Financial Savings: £26.07 (21.98%)

Case F	Mar-07	Mar-07	Jun-07
Gas used (kWh)	4978	Cavity wall and loft insulation	3525
Charge £	140.85		96.31

Gas reduction: 1453 kWh (29.19%)

Financial Savings: £44.54 (31.62%)

Although we only received six residents' fuel bill data, four of which only installed loft insulation, these still demonstrated the financial and fuel savings from installing insulation. Of the six case studies, only a few provided both financial and fuel bill data. Cases A, B, and D only represent financial savings. However, we can see a decrease in charges after insulation. These savings do not take into account the inflation of fuel prices. Therefore, their savings are greater than stated. In Cases C, E, and F along with the financial savings, the residents reported their fuel savings. In Case C there is a 1642 kWh reduction, Case E a 689.81 kWh decrease, and Case F saved 1453 kWh; after insulation. We are not concerned with the type of insulation installed but only the savings following installment. We can conclude from these six residents' fuel bill data that there are financial and fuel savings with either or both cavity wall and loft insulation.

5.2.3 Publication Material

Based on the cases presented above we have compiled useful statistics and anecdotes. We have created phrases, shown below, that can be included on a future publication of the British Gas insulation offer through Croydon Council.

Based on the reports of homeowners who have participated in the offer, there has been a **fuel bill savings of 14%**.

"The house is **warmer during the winter**. We have actually, at times, **switched the heating off** during winter months." - Ian S. of Salistead

One homeowner reported a **fuel reduction of 43%** one year after installation.

One year after installing **loft insulation** one homeowner saw his **fuel bill charge drop 22%**.

One year after installing both **cavity wall and loft insulation** one homeowner saw his **fuel bill charge drop 32%**.

Ultimately these publication materials are to be used for advertisements. By applying these exampled statements to an aesthetically pleasing leaflet, poster, or brochure, the reader can become more engaged. When possible, attaching a resident's name with their quote creates a strong influence. Also by highlighting the key words in each phrase such as "fuel bill savings" we draw the readers focus even more on the benefits. Though these statements may be short and simple, it creates a convincing claim on the savings from insulation.

5.2.4 Data Complications

In our methodology we addressed certain data complications. We anticipated that weather patterns and inflation were variables that could compromise the validity of our data when designing the study. However, while carrying out the study we encountered variables that we did not originally consider.

Some residents not only installed insulation but also other products to increase heating efficiency. Some residents had installed products such as new boilers, weather strips and double-glazed windows. Changing gas provider companies might have also been a big influencing factor that we should have accounted for. Since gas rates are very competitive between different providers the residents might be inclined to switch providers within the year they obtained the insulation. This can lead to situations where the residents are using more kilowatt-hours than before the insulation but still pay less money in their monthly bills.

Additionally residents may have a child away at school or some other reason for fewer members of the household. We did not ask the residents about any possible data complications on our mail questionnaire; however some residents brought up possible complications for our study in response to the question "Do you know if your fuel bills have been reduced?" Their responses are shown in Table 8. Most residents commented on changing weather patterns and the changing price of gas. To counteract the changing fuel bill prices in our study we collected the amount of fuel consumed in addition to the price of the fuel bill.

When we investigated each of the resident's responses, we found there to be issues that rendered their survey obsolete to our project. Some of these issues were from residents not providing the same months of two different years, for example providing their June of 2007 to be compared with January of 2008. Other issues found when organizing the data were the residents who correctly filled out the month/year were experiencing large reduction in their utility bill yet they were using more kilowatt-hours. These residents were stating they were paying less on their utility bill but they were using much more kilowatt-hours. Due to time constraints these issues have been left for recommendations to consider in future case studies.

6. Recommendations

While implementing our methodology we realized that due to certain constraints such as time and resources, we were not able to fully address all areas of our project. In the event of someone pursuing the British Gas insulation offer or environmental audit project further we have included recommendations that can possibly increase the success rate of collecting data and further improve the accuracy of our findings.

6.1 Environmental Audit Recommendations

The future recommendations to improve the environmental audit portion pertain to increasing the amount of information provided to churches and schools. We were unable to calculate the financial expenses and payback periods. If these sorts of estimations are provided along with the audit report and action plan, the churches and schools will be able to better determine what solutions are feasible with their budget and time allotment. It would not only provide information for future renovations to be planned accordingly but also be more convincing to implement the recommended changes. By providing the payback estimate, the facility members would see how fast they will get their money back and how much money they will save in the long run.

In the future we recommend auditing schools that have not participated in the London School Environmental Awards (LSEA) program. Since the LSEA schools have already established an environmental policy within their school we feel that audits would be particularly useful for non-LSEA schools because it would help engage them in protecting the environment as well as develop a relationship with the Council.

Another recommendation for EaST would be to come up with a scheme to increase schools' motivation to participate in the LSEA program. We found that schools stop participating in LSEA if they do not win or receive any award. One of the schools we interviewed did not see the point in participating and putting in all of the hard work without reward. Although it is difficult to motivate schools to participate when not receiving recognition, some other form of reward system might raise the general level of interest.

In order to evaluate the auditors' performance and the value of the information the auditor is providing, we developed a Staff Evaluation Form. Although we were not able to

personally distribute this form for our evaluation, we still recommend the use of this evaluation form to assess the effectiveness of the audit. This evaluation form will be able to provide the auditors with information where improvements can be made. At the end, this will not only help improve the auditors' audit methods but at the same time it will help future client.

Since methods and technology are continuously changing, the world defines newer and more efficient practices and products supporting environmental performance. The Green Resource Guide contains many references regarding environmental practices and opportunities. In the future, this guide must be kept up-to-date to assure that the recipients are provided the most appropriate information. Also since the guide contains funding and award opportunities, these must be updated to ensure churches and schools do not attempt to become eligible for expired offers. As opposed to regularly updating and sending out the Green Resource Guide a website could be created and updated. With this, the churches and schools could always access the latest information available.

When being audited, schools and churches should be asked if they considered renewable energy sources to provide for their institutions. Although it may be challenging this might be another area that the council could be interested in evaluating to further promote environmental sustainability.

Lastly, we recommend sending a reminder email about the date and time of the audit for those institutions scheduled two or more weeks in advance. Although there was only one occasion in which the institution forgot about the audit, we believe that an email would serve as a friendly reminder for the places that are going to be visited.

6.2 British Gas Insulation Offer Recommendations

The recommendations developed for the part of our project that deals with the British Gas insulation case studies were developed based on the difficulties we encountered when calling the participants of the offer and when analyzing the data that we collected.

If further data to demonstrate the financial savings from the home insulation offer is required, we recommend that homeowners agree to supply their home fuel bill data when the agreement contract for the insulation is signed. Upon signing the contract they will agree to participate in a follow-up study a year after the installment of insulation. They will, however, have the option to opt-out of the study. When the follow-up study is conducted a year later the

Council will already have the homeowners' fuel bill from the previous year. The success rate should increase since the follow-up study only requires their most recent fuel bill.

The second recommendation we have is when gathering the data, the researchers should account for external factors like weather patterns, changing gas company providers, inflation and other variables. Although it is easy to overlook some of these factors because they might not be instantly evident, it is important for the integrity of the data that they are taken into account. By acknowledging these factors the researchers will be able to obtain more accurate results.

We also recommend making the survey questions more specific. Due to the short amount of time we had to test our ideas and find the best way to obtain the required data, we were not able to completely optimize the mail survey. We first asked simple, broad questions measuring their anecdotal responses and then asked specific, quantitative questions such as fuel bill data. However, due to the nature of our questions, people were providing vague one-word responses for the anecdotal questions. If the questions were made more specific, then future researches may be able to obtain a more descriptive anecdotal response from people.

Lastly, we recommend that while interviewing the people who participated in the insulation offer, either by phone or the mail survey. The interviewer should ask why they participated in the offer. We know the Council's motives are to improve the environment. However, at the moment the Council is promoting the offer solely from an economic point of view. It would be useful to know what people where thinking when considering the offer in order to investigate what is the most appropriate way of advertising it. By doing this, the Council will gain information on the study. This will not only allow the Council to make the offer more appealing to the residents of Croydon, but will allow the Council to evaluate if they can also advertise the offer from an alternative standpoint.

7. Conclusion

Croydon Council is dedicated to improving the environmental performance of the Borough. In order to foster change throughout the London Borough of Croydon, the Environment and Sustainability Team has been raising environmental awareness through services provided to both individuals and organizations. They have evaluated the environmental impact of businesses through audits. However, there has been no audit framework established for churches and schools within the Borough. At the individual level, homeowners have been offered discounted insulation that has the potential to reduce fuel bills and carbon emissions. Yet, the savings have not been researched and relayed to the public. These constraints have limited the amount of communication between the community and Croydon Council, which in turn reduces the overall environmental performance of the Borough.

The purpose of our project was to improve the communication between Croydon Council and houses of worship, schools, and homeowners. Through background research and revision of existing audits we created and tested an environmental audit framework. This framework can be used by the Council for future external audits and by each institution for regular internal audits. By testing our audit framework in churches and schools we were able to determine good practice and potential areas for improvement in individual sites. We provided our recommended actions in the form of an audit report along with an action plan that can be used by the organization to keep track of the changes they have made.

We then presented the Council with the areas in which these organizations in general need continued and focused support. We found that the majority of observed churches and schools recycled paper, but only a few recycled other materials. These organizations did not recycle other materials either because they were unaware that the material could be recycled or they did not produce enough to be recycled. The Council can improve advertisement to these organizations on the different types of recyclables as well as the different types of recycled products that can be purchased. We found that all of the observed churches support fair-trade while few of the schools did due to the higher cost. The schools need help in seeing the ethical benefit of supporting fair-trade. While all of the churches supported fair-trade, none of the observed churches composted uncooked food on their premises. The churches need to be made aware of the composting schemes available through the Council. To further improve

communication between Croydon Council and the community, we created a Green Resource Guide that contains information regarding available project funding and sustainability programs.

At the individual level, we contacted homeowners that participated in the British Gas insulation offer to determine customer satisfaction and fuel bill savings. After collecting the data we compiled quotes from satisfied customers and financial statistics into publication materials for future promotion. Based on our perception of customer satisfaction, we conveyed the most appropriate ways to advertise by highlighting areas of satisfaction from previous customers in this publication material. We also provided recommendations on how to improve the offer by collecting fuel bill data when the insulation offer contract is signed, in effect initiating fuel bill studies at the time of installation.

Our project has the potential to influence individuals and communities within the Borough to make changes within the institution or household that can positively impact the environment. The Council can extend their efforts by providing our audit framework to other Councils within London and the United Kingdom to target more community organizations that can in turn improve the overall environmental quality of society.

Our project has addressed Croydon Council's goal of reducing carbon emissions in the Borough. We have delivered recommendations to churches and schools in the London Borough of Croydon on how to improve their environmental performance. From this we also provided the Council with an assessment of focus areas with a supporting audit framework and an improved level of communication to churches and schools. We have also developed publication material and an overview of customer satisfaction to further develop the insulation offer through British Gas. Our project delivered the resources to promote environmental sustainability and reduce carbon emissions both at the community and individual levels.

References

Alred, G. J., Brusaw, T. C., & Oliu, W. E. (2006). *Handbook of Technical Writing* (8th ed.). Macmillan.

Borough Team. (2007, August 9). *London Fire Birgade.* Retrieved February 3, 2008, from Croydon Borough Profile: http://www.london-fire.gov.uk/about_us/media/Croydon.pdf

British Gas. (2000, September 20). British Gas announces new fuel poverty initiatives. *British Gas News* .

British Gas. (2007, March 28). Mayor and British Gas offer £100 and cut-price insulation to cut CO2 in the home . *e Gov Monitor* .

British Safety Council. (n.d.). *Five Star Environmental Audit.* Retrieved January 29, 2008, from British Safety Council: http://www.britishsafetycouncil.co.uk/download/audits-advisories/5-star-environmental-brochure.pdf

Cora, M. G. (2007). Environmental Management as a Tool for Value Creation. *Environmental Quality Management* , 59-70.

Croydon Council Environmental Division. (2007). *Sustainable Community Strategy 2007 - 2010.* Croydon.

Croydon Council. (2003, January). Case Study Environmental Partnership. Croydon, London, UK.

Croydon Council. (1999, June). *Croydon Council.* Retrieved February 4, 2008, from Environmental Policy Green Commitment: http://www.croydon.gov.uk/content/departments/570803/570946/Green_Committment.pdf

Croydon Council. (n.d.). Pollution in Croydon Annual Report 2005/2006. Retrieved January 2008

Croydon Council. (2007). Pollution in Croydon Annual Report 2005/2006. Croydon, United Kingdom.

Croydon School Improvement Board. (2007/2008). *Children, Young People and Learners - Service Plan.*

Eden National Church Database. (n.d.). Croydon Churches. Chester, London, UK.

ENVIBE. (2006, April). *ENVIBE Case Study*. (Environmental and Sustainability Team) Retrieved March 23, 2008, from http://www.envibe.co.uk/casestudies.html

ENVIBE. (2006, March). *ENVIBE Challenge*. (D. Clement, Producer, & Environmental and Sustainability Team) Retrieved March 23, 2008, from http://www.envibe.co.uk/challenge.html

Environmental and Sustainability. (2003, January). *Improvement and Development Agency.* Retrieved February 1, 2008, from Strategic Partnership: http://www.idea.gov.uk/idk/aio/69018

Envirowise. (2004, April). *Envirowise - Practical Environmental Advice for Business.* Retrieved January 28, 2008, from Envirowise - Sustainable Practices, Sustainable Profits: http://www.envirowise.gov.uk/page.aspx?o=119479

European Commission. (2007). The European Eco-Management and Audit Scheme. *EMAS - Newsletter* .

Government Statistics. (2003). London Boroughs. London, United Kingdom.

Hillary, R. (1998). Environmental Auditing: Concepts, Methods and Developments. *International Journal of Auditing* , 71-85.

International Energy Agency. (2006). *World Energy Outlook.* Paris.

Johnson, G. P. (1997). *The Iso 14000 Ems Audit Handbook.* CRC Press.

KAIROS. (2003). *Moving Faithfully Towards Energy Efficiency.* Retrieved from http://www.kairoscanada.org/e/ecology/energyEfficiency/movingFaithfully.pdf

Kats, G. (2006, October). Greening America's Schools Cost and Benefits. *Capital E Report* , pp. 4-7.

King, K., Sturman, J., & Passant, N. (2007). *UK Local and Regional estimates of energy consumption other than gas, electricity and roat transport for 2004.*

London Council. (2006, February 20). Recycling in London. London, UK.

Maes, C. e. (2004). *A Comprehensive Environmental Audit of the University of Central Arkansas Campus.*

McCartney, D. M. (2003). Auditing non-hazardous wastes from golf course operations: moving from a waste to a sustainability framework. *Resources, Conservation and Recycling* , 283-300.

Merritt, Q. J. (1998). EM into SME won't go? Attitudes, Awareness and Practices in the London Borough of Croydon. *Business, Strategy, and Environment* , 90-100.

Mount Allison University. (1998). *Mount Allison University Environmental Audit.* New Brunswick.

National Energy Foundation. (2007). *Energy Myths*. Retrieved March 20, 2008, from National Energy Foundation. http://www.nef.org.uk/actonCO2/energymyths.htm

Ofwat. (2008). *Water and Seqerage bills 2007-08.*

Pimentel et al. (2004). US Energy Conservation and Efficiency: Benefits and Costs. *Environment, Development, and Sustainability, 6*, 279-305.

Shewan, D. (2004, September). A targeting strategy for domestic energy efficiency in Croydon. Croydon, United Kingdom.

Strachan, P., Haque, M., McCulloch, A., & Moxen, J. (1997). The Eco-Management and Audit Scheme: Recent Experiences of UK Participating Organizations. In *European Environment Volume 7* (pp. 25-33). Aberdeen.

Strategic Partnership Croydon. (2007). Croydon's Sustainable Community Strategy For Improving Quality of Life 2007 - 2010. Croydon.

The Southwark Bridge. (1998, April). The Church in Croydon's Community. *Newspaper of the Anglican dioceses of Southwark* .

Think Leadership. *Energy Efficiency and Environmental Issues.* Retrieved April 17, 2008, from Think Leadership: http://www.thinkleadership.org.uk/energy.cfm

Tinsley, S. (2001). *Environmental Management Plans Demystified.* New York: Spon Press.

Weller & Michal Architects. (2004, June). *Cathedral High School.* Retrieved January 27, 2008, from Design Lights: http://www.designlights.org/downloads/Cathedral%20High.pdf

Weller & Michal Architects. (2004, June). *Saint Catherine of Genoa School, Somerville, MA.* Retrieved January 27, 2008, from Design Lights: http://www.designlights.org/downloads/St.%20Catherine%20Tech%20Sheet.pdf

Appendix A: Project Timeline

This section provides a basic timeline for our seven week project. Most of the tasks in the environmental audit objective lasted the majority of the seven weeks because we were constantly auditing churches and schools. In the remaining time we carried out the case study objective of our project. Our project Gantt chart is provided below in Figure 7.

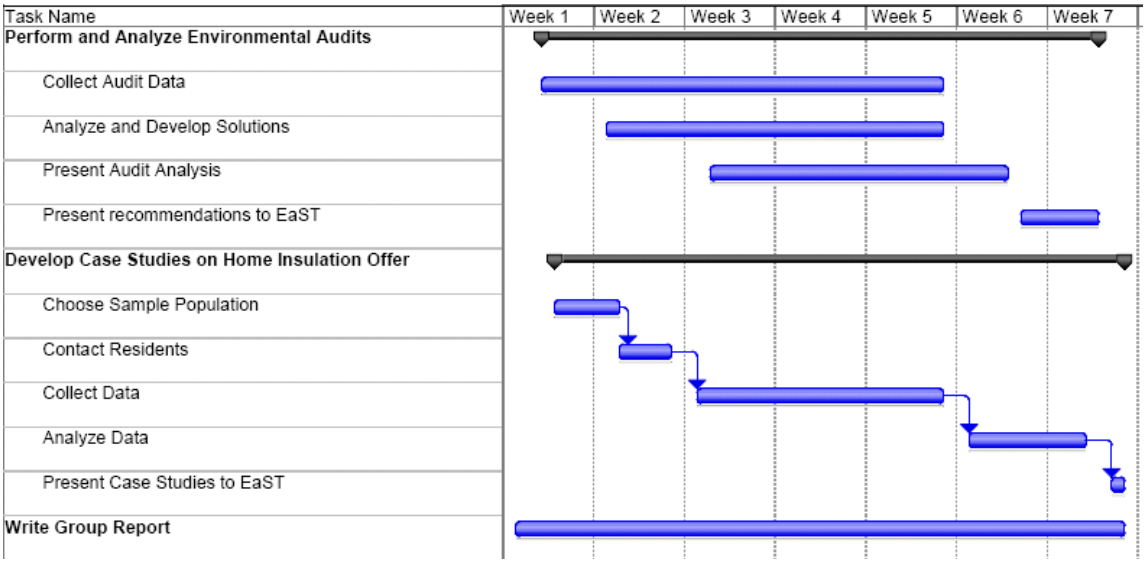


Figure 7: Project Gantt chart

Appendix B: Audit Meeting Agenda

Gresham Primary School
Tuesday, 25 March 2008 – 10:00 am
Environmental and Sustainability Team
Croydon Council

Overview

1. Brief Discussion
    a. Area and Usages
    b. Utilities and Records
    c. Maintenance and Management
    d. Environmental Policies and Awareness
    e. Temperature Management
2. Observations
    a. Energy
        i. Lighting
        ii. Heating
        iii. Room Management
        iv. IT
    b. Water
        i. Bathroom
        ii. Cafeteria
        iii. Irrigation
        iv. Boiler Room
    c. Waste
        i. Reduce
        ii. Re-use
        iii. Recycle
    d. Purchase
        i. Products
        ii. Biodiversity
        iii. Consolidation
3. Future Follow-up
    a. Conclusions and Recommendations
    b. Feedback Survey

Appendix C: Environmental Audit Meeting Outline

1. **Floor Areas**
    a. Parts of the building and size
2. **Usage**
    a. Hours during week
    b. Weekend
    c. Rooms and Facilities To Let
3. **Utilities**
    a. Appliances on timers?
    b. Where does water line come from?
    c. Is there water filtration?
4. **Metering records**
    a. New legislation to record meters
    b. Building certificates
    c. Who sees the bills?
    d. What do they record?
5. **Management**
    a. Who is in charge? (Managers, Cleaners)
    b. What duties?
    c. Building Management System/Trend
    d. What is tied or not tied into the BMS? Why?
    e. System turned off after hours/weekend?
    f. Maintenance in future/past?
    g. Who is in charge of recycling?
    h. Thermostats accessible by staff?
    i. Budget
6. **Environmental policy and awareness**
    a. Introduce new building certificate policy
    b. What policies exist?
    c. Who monitors environmental performance?
    d. Lighting policies?
7. **Heating**
    a. Old/New Construction
    b. Age of boilers
    c. Filter cleaned?
    d. Zones
    e. Separate and turn off zones not being used
    f. Insulation
8. **Cooling**
    a. AC or Fans?
    b. Zones
9. **Ventilation**
    a. Proper circulation for students and staff
    b. Vents not blocked
    c. Vents cleaned
    d. Filters cleaned

Appendix D: Audit Self-Evaluation

Tuesday, 18 March 2008 – 10:00 am
Parish Church CE Nursery and Infant School

	Achievements	Potential Improvements
Meeting	• Comfortable open and accepting atmosphere • Acquired necessary all information • Met with faculty during lunch	• Find ways to make agenda more concise
Observation Checklist	• Enough information and categories on the checklist	• Yes/No columns are confusing • Need more notes space • Print double sided

Thursday, 20 March 2008 – 10:00 am
Heavers Farm Primary School

	Achievements	Potential Improvements
Observation Checklist	• Less confusing, easier to manage double-sided	

Tuesday, 25 March 2008 – 10:00 am
Gresham Primary School

	Achievements	Potential Improvements
Meeting		• Create handout that details our purpose in conducting audit
Observation Checklist		• Need to write on clipboards • Need lines in notes section that correlate to each item

Thursday, 27 March 2008 – 10:00 am
St. Joseph's Junior School

	Achievements	Potential Improvements
Meeting	• Cut down meeting time to accommodate busy teacher but still acquired necessary information	
Observation Checklist	• The notes section was much easier to use with lines	• Some areas need to be removed • Move boiler to energy

Tuesday, 1 April 2008 – 10:30 am
St. John the Evangelist Church

	Achievements	Potential Improvements
Meeting	• Reduced amount of questions needed during meeting	

Wednesday, 2 April 2008 – 12:00 pm
St. Mildred's Church

	Achievements	Potential Improvements
Meeting	• Met with director of church hall and church • Casual and short meeting	
Observation Checklist	• Easier to use	

Tuesday, 8 April 2008 – 10:00 am
Parish Church

	Achievements	Potential Improvements
Meeting		• Meeting was too rushed because appointment was not remembered • Send reminder email of appointment

Thursday, 10 April 2008 – 10:00 am
St. Mary the Blessed Virgin Addington

	Achievements	Potential Improvements
Meeting	• More effective	
Observation	• Works well/thorough	

Appendix E: ENVIBE Business Observation Template

Review Current Performance

Prompt Sheet

ENERGY:

Are timers used for electrical equipment such a air conditioning units, boilers, coolers, vending machines, coffee machines etc?
Are lights switched off when lighting not required?
Are computers, monitors, photocopiers switched off at the end of the day and at weekends?
Are energy efficient light bulbs used to replace a blown bulb?
Where is the electric and gas meters?
Are meter readings taken regularly and recorded?
Are readings taken at times when a site is unoccupied?
Check for complaints about comfort conditions and report any under/over heating issues.
Check that boilers are regularly serviced
Check that heaters and air conditioning units are not operating in the same space at the same time.
Check that heating controls and thermostats are operating correctly and are properly set.
Check that there are no obstructions in front/on top of radiators/ air vents.
Are windows closed if in an area with heating or air conditioning?
Check for drafts and damage to windows and window frames
Check that light switches are labelled and conveniently placed
Is all the lighting in the building needed or can natural daylight be used?
Is the office arranged to make the most of natural daylight?
Are window blinds used for solar gain?

Notes…

Review Current Performance

Prompt Sheet

WATER:

Are “switch off” reminder sticker’s visual at all manually operated taps?
Is the drinking water provided from the mains, cooler or bottled supply?
Check whether cisterns have “hippos” installed into toiler cisterns.
What is the process for reporting leaks?
Are notices issued to inform staff of how to report leaks?
Are taps dripping?
Are dual flush toilets installed?
Is the washing up done in one hit rather than on an individual basis?
Is a dishwasher installed? Yes / No
If a dishwasher is installed, is if fully loaded before operation?
Is there a water butt? Yes / No
If no, is there the need for one and where could it be placed?
Are the urinals on a sensor?
Are meter readings taken regularly and recorded?
Are meter readings taken when the site is unoccupied?
Do water pipes have maintained lagging?
Are kettles used? Yes / No
If yes, are they filled only to the amount of water needed?
Can the water heater be turned down?

Notes …

Review Current Performance

Prompt Sheet

GENERAL WASTE:

Is re-usable cutlery and crockery used by staff?
What recycling facilities are provided to staff?
Are recycle bins clearly labelled as to what can be placed inside them?
Are unwanted email print outs re-used for scrap paper?
Are documents send electronically or are paper copies used and filed?
Check whether faxes are sent electronically
Are staff trained and able to print double sided?
Are staff encouraged to print 2 pages per sheet of paper?
Are ink jet printer cartridges recycled?
How many general waste bins are available per floor and bank of desks?
Are ring binders and other stationary items re-used?
Are old envelopes re-used?
Is there documentation in place and filed for 2 years to adhere with Duty of Care Requirements?
What procedures are in place for disposal of hazardous waste, such as sanitary ware, paint, cooking oil, oil and fluorescent tubes?
Is the process for disposal of hazardous waste communicated to staff?
Are bulky items for recycling flat packed before being disposed off?
Is unwanted office furniture recycled?
Are paper towels used in the washrooms?
Is unwanted office furniture and equipment recycled?
What rubbish is placed in the waste skips?
Could more of the waste skip content be recycled? Yes / No
By increasing recycling, could the general waste collection be reduced?
By increasing recycling, could the number of general waste skips be reduced?
Are skips clearly labelled as to what can be placed inside?
Are cardboard boxes flattened before being recycled to ensure bins are used to maximum capacity?

Notes …

Review Current Performance

Prompt Sheet

PURCHASING:

Is the amount of paper purchased recorded on a regular basis?
Is there a target to reduce the amount of paper consumed?
Is the target publicised to staff?
Is the paper purchased of a recycled content?
Are stationary suppliers checked for their environmental credibility?
Is the stationary environmentally friendly?
Are environmentally friendly cleaning products used?
Are suppliers informed about the organisations environmental objectives and policy?
Are cleaners and security guards educated on environmental objectives and policy?
Are refreshments fair trade?
Are food items organic and/or locally sourced?
Are stationary supplied over ordered resulting in more waste being produced?
When purchasing new office furniture, is it made from a recycled content?
Check that new electrical equipment purchased of the highest energy efficient grade, e.g printers, photocopiers?
Are suppliers being asked to use minimal packaging when delivering goods?
Are promotional materials, reports and informative literature printed on recycled material?
Are environmental objectives mentioned in annual reports?
When arranging conferences, are staff informed on how to get their using public transport?
When booking venues, are venue staff informed of organisations environmental objectives to encourage re-usable material e.g crockery, cutlery, fair trade refreshments etc?
Are annual events encouraged to be sustainable e.g Christmas – making sure Christmas lights are turned off, reminders sent to shut down over bank holiday weekends etc.

Notes …

Review Current Performance

Prompt Sheet

TRAVEL:

Are cycle stands available to staff and visitors to the site?
Are showers provided and easily accessible?
Is there a policy to promote car sharing?
Is car sharing recognised and rewarded?
Are directions available to visitors on how the site can be accessed by public transport?
If yes, are these available on the website?
Is a Travel Policy in place?
If yes, is this communicated to contractors and delivery drivers?
Are staff advised on how they can get to work using public transport?
Are deliveries to the workplace considered by routing and tracking of deliveries to avoid unnecessary journeys?
Is teleconferencing available at the centre?
Is car sharing promoted for business journeys to/from meetings?
Are company vehicles regularly serviced and maintained?
When purchasing new vehicles is consideration given to purchasing lower emission vehicles?
Are driving staff encouraged to attend courses to promote safer driving?
Are delivery vehicles fitted with tracking devices to avoid unnecessary mileage?
Are oyster cards and/or incentives in place encouraging staff to use public transport when on business journeys?
Are suppliers based locally?
Are stationary supplies under ordered, resulting in more deliveries than needed?

Notes …

Appendix F: School Observation Template

Energy	YES	NO	Notes
Lighting			
Is day lighting being observed?			
Are lights on occupancy sensors?			
Are efficient light bulbs being used?			
Are the light switches labeled?			
Are blinds used to reduce glare and heat?			
Are the walls bright and reflective of light?			
Are there notices to switch off the lights?			
Are all of the lights necessary in a fitting?			
Do all lights need to be on in the room?			
Heating			
Are the thermostats used?			
Are hot air filters cleaned?			
Are the windows closed while heat is on?			
Is the room temperature comfortable?			
Is the room well insulated?			
Do the windows fit well?			
Is the boiler efficient?			Age:
Is it regularly maintained?			
Are the pipes insulated?			
Are events held in appropriately sized rooms?			
Room management			
Is furniture placed to maximize sunlight?			
Are filters cleaned for appliances?			
Are meter readings taken regularly?			
IT			
Are computers off when not in use?			
Do electronics go in power save mode?			
Are the devices have good energy ratings?			
Are timers used to turn off devices after hours?			

Water	YES	NO	Notes
Bathroom			
Do the taps have a low flow rate?			
Do they automatically turn off?			
If not, are there reminder signs?			
Are there any leaks or drips?			
Is there a reporting process in place?			
Are the urinals and toilets on flush sensors?			
Cafeteria			
Is there a dishwasher?			
Is it fully loaded before use?			
Are there any leaks or drips?			
Is it using too much water?			
What are the cleaning procedures?			
Irrigation			
Is rainwater captured for gardening?			
Is there proper drainage outside?			

Waste	YES	NO	Notes
Reduce			
Are documents printed double-sided?			
Is email preferred over post?			
Is a hand dryer used in the bathroom?			
Re-use			
Do they reuse scrap paper?			
Are reusable dishware used?			
Are ring binders and stationary reused?			
Envelopes reused?			
Are rechargeable batteries used for microphones?			
Are there give and take days?			
Recycle			
What types of recycling facilities are provided?			
Are there bins in most rooms?			
What is being recycled?			
Are the bins clearly labeled?			
Are there composting facilities?			
Is there recyclables in the general waste?			
How often is waste collected?			
Are these items recycled?			
Batteries?			
Mobile phones?			
Furniture?			
Hazardous waste?			
Computers?			
School uniforms?			
Light bulbs?			
Printer cartridges?			
School texts books?			

Purchasing	YES	NO	Notes
Energy efficient products			
Do the appliances have good energy ratings?			
Fair-trade			
Is fair-trade supported?			
Organic and local?			
Is there a garden to grow foods?			
Is it incorporated into the community learning?			
Eco-friendly products			
Are there eco-friendly products?			
Are these products promoted in the community?			
Biodiversity			
Is there proper use of shading?			
Are there native species?			
Are the plants perennial?			
Are there drought resistant vegetation?			
Consolidation			
Do they minimize the amount of suppliers?			
Is there proper communication between depts?			
Is there over ordering of foods?			
Recycled products			
Paper?			
Stationary?			

Appendix G: Church Observation Template

Energy	YES	NO	Notes
Lighting			
Is day lighting being observed?			
Are lights on occupancy sensors?			
Are efficient light bulbs being used?			
Are the light switches labeled?			
Are blinds used to reduce glare and heat?			
Are the walls bright and reflective of light?			
Are there notices to switch off the lights?			
Are all of the lights necessary in a fitting?			
Do all lights need to be on in the room?			
Heating			
Are the thermostats used?			
Are hot air filters cleaned?			
Are the windows closed while heat is on?			
Is the room temperature comfortable?			
Is the room well insulated?			
Do the windows fit well?			
Is the boiler efficient?			Age:
Is it regularly maintained?			
Are the pipes insulated?			
Are events held in appropriately sized rooms?			
Room management			
Is furniture placed to maximize sunlight?			
Are filters cleaned for appliances?			
Are meter readings taken regularly?			
IT			
Are computers off when not in use?			
Do electronics go in power save mode?			
Are the devices have good energy ratings?			
Are timers used to turn off devices after hours?			

Water		YES	NO	Notes
Bathroom				
	Do the taps have a low flow rate?			
	Do they automatically turn off?			
	If not, are there reminder signs?			
	Are there any leaks or drips?			
	Is there a reporting process in place?			
	Are the urinals and toilets on flush sensors?			
Cafeteria				
	Is there a dishwasher?			
	Is it fully loaded before use?			
	Are there any leaks or drips?			
	Is it using too much water?			
	What are the cleaning procedures?			
Irrigation				
	Is rainwater captured for gardening?			
	Is there proper drainage outside?			

Waste	YES	NO	Notes
Reduce			
Are documents printed double-sided?			
Is email preferred over post?			
Is a hand dryer used in the bathroom?			
Re-use			
Do they reuse scrap paper?			
Are reusable dishware used?			
Are ring binders and stationary reused?			
Envelopes reused?			
Are rechargeable batteries used for microphones?			
Are there give and take days?			
Recycle			
What types of recycling facilities are provided?			
Are there bins in most rooms?			
What is being recycled?			
Are the bins clearly labeled?			
Are there composting facilities?			
Is there recyclables in the general waste?			
How often is waste collected?			
Are these items recycled?			
Batteries?			
Mobile phones?			
Furniture?			
Hazardous waste?			
Computers?			
Light bulbs?			
Printer cartridges?			
Stamps?			

Purchasing	YES	NO	Notes
Energy efficient products			
Do the appliances have good energy ratings?			
Fair-trade			
Is fair-trade supported?			
Organic and local?			
Is there a garden to grow foods?			
Is it incorporated into the community learning?			
Eco-friendly products			
Are there eco-friendly products?			
Are these products promoted in the community?			
Biodiversity			
Is there proper use of shading?			
Are there native species?			
Are the plants perennial?			
Are there drought resistant vegetation?			
Consolidation			
Do they minimize the amount of suppliers?			
Is there proper communication between depts?			
Is there over ordering of foods?			
Recycled products			
Paper?			
Stationary?			

Appendix H: Green Resource Guide

Croydon Council

Environment and Sustainability Team

Green Resource Guide

Last Updated: 17 April 2008

Diana Battaglia
Community Initiatives Officer
Environment & Sustainability Team, Croydon Council,
18th Floor North East, Taberner House,
Park Lane, Croydon CR9 3BT
Tel: 020 8760 5640
Fax: 020 8760 5791
Email: diana.battaglia@croydon.gov.uk

Resources for Schools

Local Authority Energy Finance scheme

Is your school interested in saving on energy bills and reducing its impact on the environment?

Croydon Council is now in its third year of Carbon Trust and internal match funding for an innovative and successful programme to support Council buildings in implementing energy saving measures – The Local Authority Energy Finance (LAEF) scheme. At present £70,000 has been saved from Council energy bills and the first year of the scheme alone yielded annual carbon dioxide emission savings of 400 tonnes/annum. It is now tried and trusted within the Borough as a powerful financial incentive in assisting the urgently needed shift to increased energy efficiency across all of the Council's buildings.

Croydon's schools have been the main beneficiaries of the LAEF scheme with 44 projects completed to date and with projects at the pipeline stage in excess of £100,000. As interest has grown in the scheme, more and more schools have begun to realise the potential advantages, both financial and environmental, in making full use of the fund. This has been well demonstrated by a growing number of schools in the Borough signing up for their second or third LAEF project.

The LAEF scheme works by funding the upfront costs of energy saving technology, for example cavity wall and loft insulation, draught proofing, lighting controls and pool covers. The loan is then paid back interest free as annual savings are realised on subsequent energy bills. Repayments are no more than the value of the energy saved and once the loan is repaid all savings are kept by the school. With energy prices almost guaranteed to rise for the foreseeable future, the financial benefits of energy saving technologies will only increase. Furthermore, environmental legislation such as the Energy Performance in Buildings Directive (EPBD) and the Carbon Reduction Commitment (CRC) will soon necessitate these types of energy efficiency measures in all buildings – why not take advantage of the money available now and start saving straight away?

Croydon Council is committed to improving and encouraging energy efficiency in schools and in the community. If your school would like to take advantage of this opportunity please contact me to discuss the financial details and current technology in further detail. Free, no obligation quotes are available at your request.

Will Walker
Energy Efficiency & Environmental Officer
will.walker@croydon.gov.uk
Tel: 020 8760 5768 ext.62450

Cash for Textile Recycling

BCR Global Textiles works with schools in promoting the concept of textile recycling amongst pupils but also aims to drive the message home to parents who are not currently using textile recycling facilities.

You can raise funds for your school through the BCR textile recycling scheme. To do this, enter your details on the Education section of the BCR website: www.bcrglobaltextiles.com. You will then be assigned your own Textile Contracts Manager who will visit the school and provide free demonstrations, talks and education packs. School collections are provided free of charge and the revenue generated from the textile and shoes is paid directly back to the school. The weights collected are then reported to your local authority and are contributed towards their recycling targets.

For more information on the BCR textile recycling scheme or to order a primary school Education Pack on textile recycling visit the website or call 0121 520 7586.

Resources for Faith Groups

Faithworks

Faithworks has developed a series of practical guides and audits to equip churches and organisations to serve their local communities professionally, in a way that is consistent with their Christian ethos. As part of our commitment to help local churches and Christian organisations engage with their community, Faithworks has produced a 7-step Community Project Guide and also offers funding advice for projects. The also website hosts a Directory of Christian Community Projects.
Web: http://www.faithworks.info/ E-mail: info@faithworks.info

Eco-Congregation

Eco-Congregation is an ecumenical programme helping churches make the link between environmental issues and Christian faith, and respond in practical action in the church, in the lives of individuals, and in the local and global community.
The website provides a creation care toolkit for churches with:

- A simple environmental audit (church check-up)
- Free Resources to encourage action
- An Award scheme

Web: http://www.ecocongregation.org.uk/englandwales/index.html

Alliance of Religions and Conservation (arc)

Arc is a secular body that helps the major religions of the world to develop their own environmental programmes, based on their own core teachings, beliefs and practices. Contains a range of information on energy audits.
Web: http://www.arcworld.org/ Tel: 01225 758 004 E-mail: info@arcworld.org

Resources for both Churches and Schools

Paper and Card Recycling Service

Croydon Council offers an excellent value, easy to use, paper and card recycling service to organisations in Croydon. (This is part of a wider paper and card recycling programme for businesses and blocks of flats.)

The basic elements of the scheme are:

- *no minimum collection amount*
- *at least once a week pick up*
- *all colours and types of paper and card collected (apart from confidential waste)*
- *paper collected in refuse sacks and card in bundles, labelled with a Croydon Council recycling sticker*
- *larger volumes of paper and card collected from 1100l bins*

The price for the service is very competitive:

- *£1.05p per sticker for use on each refuse sack or bundle of paper/card (this is substantially cheaper than the non-recycling equivalent)*
- *£2.65 per week to include hire of 360l bin*
- *£5.00 per week to include hire of 660l bin*
- *£5.50 per week for collection from 1100l bins* (if bin owned by school))*
- *OR £7.70 per week to include hire of 1100l bin*

If you do not currently recycle, signing up to this service will almost certainly save your organisation money provided you make the necessary changes to your existing waste collection contract. For example, if you currently use two 1100l bins for your ordinary mixed waste, but about half of your waste is recyclable paper and card, you will need to switch one bin over to recycling and make changes to your existing contract. In this way you will pay the recycling price above for that bin, instead of your current ordinary waste charge. The standard waste charge for collection from a 1100l bin is £25.20.

To find out more please contact the Council's commercial waste team 020 8255 2792 (Sue Chappell) or 8255 2704 (Mark Di Giorgio).

**1100 litre bins are the standard bin size which most organisations and large council premises have for general waste at the moment.*

Prices effective from 25.12.06

Glass Recycling Service

Croydon Council also run a glass recycling service. To qualify for the scheme an organisation needs to dispose of at least 100 glass bottles a week:

- All types of glass bottles are accepted for the recycling service (excluding ash trays, ceramics, glasses or any of the lower grade glass from windows/door frames etc).
- Initially, one 240 litre euro container is provided for the use of the customer.
- However, further containers can be requested once it is clear that additional capacity is required

The price is substantially cheaper than the non-recycled equivalent:

- The weekly cost for using this service is £3.00
- Should a customer require an extra container/collection the cost will increase to £3.50, for between two and five bins. Above five bins the additional cost is negotiable.

If you start recycling, you should significantly reduce the amount of ordinary waste you dispose, and the associated collection costs. If you adjust your current ordinary waste contract, (assuming it is calculated on volume) you should save money overall.

To find out more, please call either 020 8255 2792 (Sue Chappell) or 020 8255 2704 (Mark DiGiorgio)

Cash for Cans Centres

The following centres are in or near Croydon. They pay cash for aluminium cans. Please telephone them for current price information and opening times. Some will also accept clean aluminium foil but will often pay a lower price for foil than cans. Please check before you start collecting. For more information about setting up an aluminium recycling project contact *Alupro* on 0845 7227722 or visit their website: www.alupro.org.uk. You can also download Key Stage 2 educational materials and start your own Green Club from here.

D Sullivan (Metals)
Unit 3, 76C Farnley Road, Selhurst, South Norwood, London SE25 6NX
Telephone/Fax: 020 8771 9292

Sydenham Scrap Metals
Kangley Bridge Road, Sydenham, London SE26 5BA
Telephone: 020 8778 9775

SimsMetal UK Ltd
Vigo Lane, Yateley, Camberley, Surrey, GU17 7ED
Telephone: 01252 873 222

T Baker (JNR) Ltd (Non Ferrous Metal Merchants)
Copper Beeches, School Hill, Wrecclesham, Farnham, Surrey, GU10 4PU
Telephone: 01252 714 039

C F Sparrowhawk Ltd
24 Epsom Lane, North Tadworth, Surrey, KT20 5EH
Telephone: 01737 352 889

Recycled Products Guide

One way that churches and schools can close the loop is by buying recycled products for use by staff and children. There are many firms selling recycled goods suitable for schools and churches, and so we have compiled a list of some of them and the products they sell. This list is not comprehensive but rather a snap shot of the more popular brands that people use. Schools should first check their educational resources supplier, as they might have a green procurement guide or catalogue where schools can order recycled goods. There are several websites that have links to other sites with recycled products available for sale; theses include our www.recyclezone.org.uk and www.wastewatch.org.uk and also www.recycledproducts.co.uk.

Letter	Name & address of supplier	Tel/fax number	Web/email	Products
A	Remarkable Pencils 56 Glentham Road London SW13 9JJ	020 8741 1234 f020 8741 7615	www.remarkable.co.uk info@remarkable.co.uk	Pencils, rulers made from vending cups; rulers made from computer printers; mousemats, pencil cases form recycled car tyres, plus much more.
B	Yo Promotions	01252 620593 f01252 620597	www.Yo-Promotions.co.uk www.recycled-products.co.uk www.greenpens.co.uk	Sweetcorn recycled green pens,, rulers and pens (cups), pens (PET bottles, notepads, mousemats, pencil cases (car tyres) etc plus more.
C	Green Stationery Co. Studio One 114 Walcot Street Bath BA1 5BG	01225 480556 f01225 481211	www.greenstat.co.uk	Wide range of recycled paper and envelopes including Ellie Poo paper, banana & coffee paper, pens, pencils, markers, flipcharts, notepads post-its (all recycled material, eg recycled CD- R's and CD-W's.
D	RecycledPaper Supplies Gate Farm Fen End Kenilworth CV8 1NW	01676 533832 (tel and fax)	www.recycled-paper.co.uk	Small business; pens (cardboard, plastic), string, paper, envelopes, notebooks, folders, card, various kinds of labels, CD sleeves etc.
E	Cutouts Ltd Unit 12c Heath House Mill Heath House Lane Huddersfield HD7 4JW	01484 645281 f01484 645282	www.cutouts.net cutouts.london@virgin.net	Many things made out of recycled circuit boards, eg clip boards, rulers, notebooks, coasters, organisers, mouse mats; also recycled juice cartons – clipboards, mouse mats rulers; coasters (many different materials including Wellingtons).
F	Save a Cup Suite 2, Bridge House Bridge Street High Wycombe HP11 2EL	01494 510167 f01494 510168		Recycled vending cups
G	Eagle Envelopes Ltd Whitegate Ind Estate Bathgate West Lothian EH48 2RX	01506 634463		Treesaver envelopes

H	Natural Collection PO Box 135 Southampton SO14 0FQ	0870 331 3333 f0870 331 3334	www.naturalcollection.com info@naturalcollection.com	ecomarkers
I	Kimberley-Clark Ltd Cobdown House Station Road Ditton Aylesford ME20 7PS	0800 269470 01622 615001		Toilet paper etc
J	Fort James UK Ltd Mansell Way Horwich Bolton BL6 6JL	01204 673300 f01204 673301		Lotus toilet paper; Lotus hand towels; plus Bonus, Nouvelle makes
K	Wiggly Wigglers Lower Blakemere Farm Herefordshire HE2 pPX	0800 216990	www.wigglywigglers.co.uk	Wormeries made from recycled plastic
L	Cutting Edge Cards Unit 17a C.E.C. Mill Lane Coppull Lancs PR7 5BW	01257 792025	www.eco-craft.co.uk	Recycled card/paper

Community Scrap Scheme

Squirrels is a charity that has collected surplus materials from factories, offices, shops and the public for many years. It was formed in 1987 to act as a resource centre for voluntary and statutory groups. These groups can collect various items of importance to help them with their respective activities such as educational, ecological or creative arts.

Squirrels is a registered charity: Charity Number 1091877 and Company Reg. Number 4365191

It sorts and displays all sorts of materials at its warehouse. This includes for example:

- paper
- cds (audio, CD-Roms or from junk mail)
- wood
- wool
- ribbons
- paint
- boxes
- plastic
- cardboard
- fabric
- sequin waste
- DIY materials

Squirrels also organises workshops and fact sheets.

Location: 234 Ridge Road,
Sutton, Surrey, SM3 9LY
Telephone: Tel/Fax No: 020 8641 1881
Email: commuscrapscheme@aol.com

Community Repaint Scheme

Lambeth (London) This scheme is situated at a household waste recycling centre (see address opposite). Paint can be donated during opening hours; 7.30am-4.30pm weekdays and 8.00am-5.00pm at weekends. Please ring the number opposite to collect paint for your project. It is best to call either early morning or late afternoon.	Alan Holder Lambeth Community Recycling Rommany Depot 1 Vale Street West Norwood London SE27 9PA Tel: 0207 926 8021 Fax: 0207 926 8024

Community Action for Energy Resources

ENERGY EFFICIENCY IN COMMUNITY BUILDINGS (September 2006) -
The information on the following pages has been based on knowledge gained over 15 years of NEA's experience of conducting energy audits and installing measures in community centres and village halls. It is designed to assist you in making decisions to reduce fuel costs and improve the environmental performance of your building. The text contains technical guides and flow charts based on our experiences. You may find the checklist and flow chart a useful start in your planning process. From the information gained from study of the flow chart and from knowledge gained from the walk round survey you can identify your priority problem and pick the technical guide that can help you.
Download (31 pages / 725kb)

POSSIBLE FUNDING

There are numerous funds available for schools and places of worship all which can be found on the CAfE Funding database. This is an extensive database of UK funders http://www.est.org.uk/cafe/funding/

O2 COMMUNITY FUND – This fund can award up to £1,000 to make a positive impact to your local community. The fund is open to a wide range of groups including village halls, parish councils, schools and other community projects such as youth / environmental and heritage groups. It can fund anything from renovating a building for community use to updating a heating system or even to install a renewable energy. Web: http://www.o2.com/cr/community_fund.asp Tel: 020 7591 3111 E-mail: LibbySymon@ConservationFoundation.co.uk

FURTHER CAFE SERVICES:

All of the services offered through CAfE are **FREE** to members. Membership is **FREE** and you can join via the CAfE website at http://www.est.org.uk/cafe/members/join/

CAfE Resources:
These include access to Community Projects database and Case Studies for examples of projects that have already taken place, some with the added help of CAfE.
http://www.est.org.uk/cafe/example/projects/ - CAfE Projects Database
http://portal.est.org.uk/cafe/casestudies/ - CAfE Case Studies

CAfE Support Panel
The community support panel offers up to a day and a half, on site, free expertise and advice to CAfE members. Successful applications will depend on your exact situation. We assess each application on a case by case basis from successfully completed application forms. If you would like further information about this please contact us (details below).

CAfE FREE Training
If you would like to book a place on one of the CAfE training courses then please phone the CAfE Team on 08701 261 444 or e-mail CAfE@est.org.uk with the course title, location and date, your full name, job title & organisation, full address, phone number and please state if you have any special dietary requirements and whether you are a CAfE member. You do have to be a CAfE member to attend any courses, subscribe for **FREE** at www.est.org.uk/cafe. A description of each training course including dates and locations is available at: www.est.org.uk/cafe/events/ .

CAfE Travel Bursaries
The new CAfE travel bursaries are now available. These enable CAfE community members to visit each other and are designed to help you make the most of the wealth of expertise, experience and enthusiasm within the CAfE network. By visiting other groups you can get first-hand experience of the steps you may need to go through to set up a similar initiative of your own.
http://www.lowcarbonbuildings.net/cafe/funding/bursaries/

Useful Websites & Resources

Education for Sustainable Development / Environmental Education

ARKive project (managed by: www.wildscreen.org)
www.arkive.org <http://www.arkive.org/ free multimedia resources for science teachers and environmental educators. ARKive is the world's centralised library of scientifically authenticated films and photographs of the world's endangered species and habitats - freely accessible to all online for private research and internal educational purposes. The main ARKive website is designed for a variety of users (11 years old and upwards). Its content consists of one of the largest collection of wildlife and environmental films and images that can be viewed for free, and is relevant to a wide range of science and geography subjects in primary or secondary schools and up to university standard (all can be downloaded free of charge). Information on linking to ARKive is available at http://www.arkive.org/links.html and individual pages, film clips or images can easily be linked to.
Planet ARKive www.planetarkive.org is for children aged 7-11, and designed to make life science learning and environmental education a widely enjoyable experience. It fits in especially well with learning about living things in their environment, the habitats and ecosystems of the world. Again it is free and fun to use.
ARKive Education (www.arkiveeducation.org is for teachers and other educators and offers downloadable briefings, lesson plans and project ideas to support curriculum learning targets. It too is free to use.

www.bigpicture.tv *Big Picture TV* - an on-line media channel that streams video clips of global leaders in sustainability. You can browse a growing archive of internationally renowned scientists, environmentalists, politicians, journalists, academics and activists.

http://www.bbc.co.uk/cbeebies/tommyzoom/ site for younger children / infants including activities and programme clips.

DEFRA (Department for Environment, Food and Rural Affairs):
<http://www.defra.gov.uk/schools/default.htm

DfES Action Plan:
<http://www.dfes.gov.uk/sd/docs/SDactionplan.pdf

DfES resources:
<http://www.teachernet.gov.uk/teachingandlearning/sd/resources/locallinks/london/
See also: http://www.teachernet.gov.uk/sustainableschools/

Ecological Footprint Quiz:
www.myfootprint.org/

Eco Schools:

<http://www.eco-schools.org.uk/

www.ecodriver.co.uk
ECOpal is a new package designed to support Education for Sustainable Development (ESD) in schools by linking energy, water, travel, litter, waste and recycling, healthy living and school grounds. The content is based on ECOdriver an adult education package which has been redesigned and packaged for 7 to 11 year olds. WASTEmate uses waste as a cross-curricular theme to teach children about the impact we have on the environment though National Curriculum subjects at KS2 level. Both packs include activities with assessment and built-in flexibility through extension activities. They contain both class and individual activities, and feature lesson plans and teaching resources. They encourage children to take an interest in our local and global environment and promote individual responsibility. Visit the website or call 020 7242 0780 for further information.

Ideas for art activities
www.enchantedlearning.com

Energy Saving Trust (EST):
<http://www.est.org.uk/schools/

Environment Agency:
<http://www.environment-agency.gov.uk/fun/?lang=_e

Giving Nation – this charity resource for secondary schools encourages young people to create a fair and more inclusive society through giving their time, money and skills to help others. It gets them thinking about why charities exist and what they can do to influence the world they live in. There are four strands: ***1. Class resources – the FREE Giving Nation Schools pack*** includes lesson plans, activity cards and CD-ROM, ***2. Website***: www.g-nation.co.uk/teachers, ***3. G-Nation Awards:*** 12 schools each win £1,000 and one school will visit charity projects abroad, ***4. G-week*** – celebration of pupils' charitable activities through the year.
http://www.greenchoices.org/index.html go to the schools' section - The GreenChoices schools section offers links to learning about "green" perspectives, teaching resources about environment and sustainable development and resources to help manage schools in a more environmentally friendly way. Individual sections aimed at students, teachers and site managers.

Henry Doubleday Research Association (HDRA):
<http://www.hdra.org.uk/schools_organic_network/index.htm

London Outdoor Science website at: www.field-studies-council.org/outdoorscience is funded by the Field Studies Council and supported by the Science Learning Centre London. It aims to develop the use of **fieldwork in KS4 science teaching in London schools** by providing practical guidance, training and resources to support teaching in local green spaces, such as parks and commons.

London Remade:
<http://www.capitalwastelearning.com/

London Schools Environment Award (LSEA):
<http://www.london.gov.uk/mayor/education/lsea/

Learning through Landscapes (Schools Grounds Award Scheme): <http://www.ltl.org.uk/

London Wildlife Trust
<http://www.wildlondon.org.uk/educ/educ.htm

National Society for Clean Air
http://www.nsca.org.uk

Ofsted recommendations on ESD:
<http://www.ofsted.gov.uk/publications/docs/3389.pdf

The Real World Learning partnership have produced an Out-of-Classroom Learning guide which "offers advice on a wide range of educational experiences away from the classroom and provides useful tips to teachers and others on educational visits." It is available as a pdf from
http://www.rspb.org.uk/policy/education/index.asp

http://www.peterrussell.com/Odds/WorldClock.php website with lots of real time clocks calculating a range of social and environmental indicators including CO2 emissions.

www.rtpi.org.uk *Royal Town Planning Institute (RTPI) Education for Sustainable Development – A manual for schools:* aimed at teachers delivering the 11-19 curriculum, this manual spans: sustainable development education, citizenship, local studies, the planning system and planning as a career. Part one sets out the demands for development e.g. the need for housing, economic development, transport, waste management etc., how planning can influence or manage these demands and how they relate to sustainability. Part two contains a guide to some planning orientated resource packs using local case studies. To request a copy call: 020 7929 9481 / 9482 or Fax: 020 7929 8199 or download from website.
http://www.rtpi.org.uk/cgi-bin/item.cgi?id=293 additional resources for schools from KS2 through to AS level.

http://www.storyofstuff.com/ Thought provoking educational tool with simple but wonderful animation. KS2,3,4

Taking It Global - Young Persons' Forum:
www.takingitglobal.org

http://www.thecarbontrust.co.uk/energy/pages/page_88.asp
Website showing the calculations which sit behind the facts on wasting energy e.g. leaving a photocopier on overnight wastes enough energy to do X copies…

Wastewatch
<http://www.wastewatch.org.uk/education/

http://www.wearewhatwedo.org/index.php go to 'join in' and 'downloads' pages for lots of green ideas, actions and resources aimed at schools and teachers – including, songs, images, assembly template, lesson plans and PowerPoint presentation.

World Aware:
<http://worldaware.org.uk/education/index.html

World Wildlife Fund (WWF):
<http://www.wwflearning.co.uk/action/
Pathways: Learning for Sustainability – a development framework for school sustainability, produced by WWF. To find out more or to order a copy contact Anna Birney on: 01483 426444 or visit: www.wwf.org.uk

YouthXchange
http://www.youthxchange.net./ is a training kit on responsible consumption. It seeks to address the need for clear, reliable and youth oriented information on sustainable lifestyles. It includes a training guide, web-site, on-line discussions and related workshops. These tools provide youth with key concepts and empowering strategies for more sustainable consumption patterns and lifestyles. An additional goal of the kit is to make youth in affluent societies aware of the global imbalances in access to the basic needs and the impact of unsustainable lifestyles on economy, society and the environment. YouthXchange incorporates the relationship between economics, environmental fairness, and social justice so as to encourage youth to take shared responsibility for their society and participate in the creation of a better future. UNEP/UNESCO youthxchange is chosen as an educational tool on sustainable consumption for the UN Decade of Education for Sustainable Development
<http://www.unesco.org/education/desd>

Climate Change Information & Campaigning

Global Commons Institute :- http://www.gci.org.uk

Stop Climate Chaos :-http://www.stopclimatechaos.org/66.asp

I-Count :- http://www.icount.org.uk

Workface :- http://www.workface.org

Climate Camp :- http://www.climatecamp.org.uk

Come Off It ! :- http://www.comeoffit.org.uk

Campaign against Climate Change forum :- http://portal.campaigncc.org

Campaign against Climate Change :- http://www.campaigncc.org

Global Climate Campaign :- http://www.globalclimatecampaign.org

Christian Ecology Link :- http://www.christian-ecology.org.uk

Operation Noah :- http://www.christian-ecology.org.uk/noah/index.htm

Big Ask :-
http://www.foe.org.uk/campaigns/climate/press_for_change/big_month/index.html

Climate Outreach Information Network :- http://www.coinet.org.uk

Quaker Green Action :- http://www.livingwitness.org.uk

People & Planet :- http://peopleandplanet.org

Speak :- http://www.speak.org.uk

http://www.wmnet.org.uk/22.cfm with separate resources & activities sections aimed at teachers and students.

www.everyactioncounts.org.uk <www.everyactioncounts.org.uk> for a host of easy actions, ideas, support and activities.
http://www.thenag.net/ 'this is a place for anyone who'd like to do something about climate change, or sweatshops, or eating better food, but, well, you know... busy, things come up... here's the deal. One thing a month, sign up to get nagged each month about one easy thing you can do to be greener, cleaner and, if you're not careful, a tiny bit smug.'

Energy & Climate Change

ENERGY MATTERS – Educational resources produced by The Centre for Sustainable Energy (CSE). These resources have been used in schools across England and Wales and have been proven to help pupils understand issues around sustainable energy and to take an active role in addressing energy use in their schools and homes. They are ideal for use if you are teaching Education for Sustainable Development (ESD) and meet a range of National Curriculum requirements. They can be downloaded for free from the CSE website.
Web: http://www.cse.org.uk/cgi-bin/page.cgi?103 Tel: 01179 299 950

ENERGY SAVINGS TRUST
http://www.est.org.uk/schools/

http://www.est.org.uk/index.cfm

http://www.est.org.uk/myhome/

http://www.est.org.uk/mycar/

http://www.est.org.uk/myfleet/

http://www.est.org.uk/myhousing/ - Housing Stock

http://www.est.org.uk/road/ - Transport - trade

http://www.est.org.uk/suppliers - Housing - Trade

www.defra.gov.uk/environment/climatechange/schools/12-16/index.htm . Includes lesson plans for KS1, KS2, KS3 and A-level students.

The Natural History Museum site; Exploring Biodiversity for GCSE and A-Level students: http://internt.nhm.ac.uk/eb/index.shtml is also a good option.

Good basic training session on climate change – KS3/4. The '**Basics of Climate Prediction**' is an interactive tool which aims to help users to understand how the Earth's climate is changing and to give an insight into the science of climate prediction. It is aimed at a wide audience, including those without a technical background. It has been produced by the University of Oxford Begbroke Science Park in conjunction with www.climateprediction.net (this site has a schools' section with curriculum resources) and is available free of charge. It can be used online at www.begbroke.ox.ac.uk/climatebasics or a CD version can be ordered from enquiries@begbroke.ox.ac.uk

http://managenergy.net/kidscorner/ lots of activities and information aimed at KS1-2

http://www.sciencemuseum.org.uk/exhibitions/energy/index.asp The Science museum has great explanations about energy and good ideas for activities: http://www.sciencemuseum.org.uk/exhibitions/energy/site/EIZgames.asp

http://www.nef.org.uk/powered/kits.htm The National Energy Foundation, Davy Avenue, Knowlhill, Milton Keynes, MK5 8NG Tel: 01908 665555 Fax: 01908 665577 E-mail: info@nef.org.uk . Renewable energy education kits for schools including lesson plans can be ordered on-line with downloadable activity sheets.

http://www.london.gov.uk/mayor/education/lsea/themes/themes4.jsp energy pages from the London Schools Environment Award resource site.

http://www.think-energy.com/ThinkEnergy/Default.aspx sections aimed at 7-11, 11-14,14-16,16-18, parents and teachers.

http://www.npower.com/Education/resources/index.htm includes a teaching pack for energy from N Power available for different Key Stage curricula.

www.footprintfriends.com - a website dedicated to young people across the world who are interested in the environment and climate change.

Case- Studies:

- *Bright Sparks Turn Off the Lights:* http://www.teachernet.gov.uk/casestudies/casestudy.cfm?id=508&subcatid=122&catid=105

- *Energy Conservation fuels Classwork:* http://www.teachernet.gov.uk/casestudies/casestudy.cfm?id=509&subcatid=122&catid=105

- *Tackling global warming locally:* http://www.teachernet.gov.uk/casestudies/casestudy.cfm?id=507&subcatid=122&catid=105

Water Conservation

1. The Environment Agency:

www.environment-agency.gov.uk/savewater/

2. Water in the School:

http://www.waterintheschool.co.uk/

3. BBC News Article- A-Z of Water Saving Tips:

http://news.bbc.co.uk/1/hi/in_depth/2945018.stm

4. WaterAid:

http://www.wateraid.org.uk

5. The Water Family: Design your own family to live in the virtual home

http://www.thewaterfamily.co.uk

6. Thames Water: Water-wise Kids:

http://waterwise.fortune-cookie.com/water-wise-kids/

Waste Minimisation, Re-use and Recycling

http://www.alupro.org.uk/index.htm Aluminium can and foil recycling – there is an education section with downloadable resources and materials for KS2. The site contains information suitable for KS3 – college level projects. Also covers top tips for introducing an alu can recycling scheme in school – a way to earn money for the school or support local charitable enterprises.

www.capitalwastelearning.com – online waste and recycling learning resource developed by London Remade. It includes lots of facts and information on the issues surrounding waste, sustainable waste management and recycling, together with, teaching resources aimed at KS3-4. See also: www.capitalwastefacts.com lots of facts, figures and statistics on waste and recycling, including borough by borough information and http://www.londonremade.com/links.asp plus http://www.londonremade.com – encouraging the development of markets in recycled products. http://www.capitalwastefacts.com/links/links.php4 very comprehensive set of links to other related websites.

http://www.croydon.gov.uk/environment for a look into the local picture on waste services and recycling.

www.croydononline.org/giveaway - ***The Great Give-away*** allows residents and organisations in Croydon (including schools) to swap, give or take items that would otherwise end up in landfill. No money can change hands but you can swap one item for another or for a service.

www.fones4schools.co.uk Mobile phone recycling scheme with prizes, competitions and £300 paid for every 200 phones collected. Free downloadable resources and lesson plans – Teacher, primary and secondary pupil pages.

http://www.glassforever.co.uk/index.htm The GLASSFOREVER web site will give you information about glass packaging and how to recycle glass. There is a teacher zone with work sheets and other resources, education visits, games, links and case studies.

www.greenwooduk.co.uk – This site includes the ***Green Swap Shop*** which allows schools to swap, buy, sell or give away unwanted items, equipment and furniture. For bulky items a **FREE** collection and delivery service is available within the Croydon area. For further information and to find out about other services for schools, contact Gareth May at *Greenwood UK* on: 020 8656 6440 or email: info@greenwooduk.co.uk

http://www.make-stuff.com/recycling/index.html
Ideas for re-using everyday household items creatively e.g. things you can do with: old film canisters, Breyer's ice cream containers., berry baskets, CD's, old CD jewel cases, plastic pop bottles, cardboard tubes (Toilet paper rolls, wrapping paper tubes, paper towel tubes...), tin foil, cardboard milk cartons, egg cartons, wire hangers, garden hoses, old newspaper, baby food jars, tuna cans, wallpaper etc. Also how to make your own

recycled paper and how to make lamps & vases from glass bottles with lots MORE Recycling Ideas... (Miscellaneous stuff - Light bulbs, brown paper bags, bleach bottles ...) etc.

www.recycle.mcmail.com/content.htm – useful site with lots of information about what can and cannot be recycled and why with details of companies that can provide collection/recycling services for different materials.

http://www.recyclezone.org.uk/

http://www.recyclezone.org.uk/tz_wasteweb.aspx a Waste Watch site – Teacher zone - with lots of links to specialist sites for particular materials e.g. glass, cans, composting etc.

http://www.recyclenow.com/
http://www.recyclenowpartners.org.uk/index.html
http://www.recyclenow.com/what_more_can_i_do/index.html part of the national campaign to increase recycling across the UK. Consumer website with general information and news about recycling and listing what can be recycled and how.
http://www.recyclenowpartners.org.uk/local_authorities/news/recycle_now_schools.html The Recycle Now Schools' Action Pack is an on-line resource for primary and secondary school staff and others interested in making recycling happen in their school. The pack provides information and advice for schools to guide them through the process of setting up and maintaining effective recycling schemes. It also includes activities to engage pupils, case studies to share schools' experiences of recycling and links to teaching resources which schools can access. To support all of this, a range of marketing materials and signage have also been designed.

www.recycool.org - recycling mobile phones and empty printer cartridges to raise money for schools and nurseries. Enterprise, citizenship and teaching resources, tied in with the curriculum can help your school or nursery to fund any number of projects – we give you cash for your used cellphones, toner, laser and inkjet cartridges. Recycool helps children understand the environment, and is based around Young Enterprise and EcoSchools.

www.remarkable.co.uk

Range of environmentally friendly products including stationery.

www.reuze.co.uk

www.save-a-cup.co.uk/howto-cups.html
a site through which you can make arrangements to recycle your plastic cups.

http://www.scrib.org/ The steel can recycling information bureau. Includes facts about steel and recycling, a kids' zone and Education section.

www.wastewatch.org.uk

School Grounds, Biodiversity, Gardening

www.kew.org *Kew Gardens* offer a wealth of opportunities through their school visits programme – you can explore rainforests, deserts, woodland and open spaces. Activities are offered from year 1 to A-level. You can organise your own activities or book sessions with the Kew Teachers' Team. There is also a dedicated website: www.plantcultures.org.uk containing information, images and stories exploring the different uses of plants which have been part of the exchange of people and cultures between Britain and South Asia over the past 400 years – from Banyan and black pepper to tea and tumeric. For more information about education opportunities at Kew, contact: Louise Cross (Assistant Education Officer) on: 020 8332 5612 or email: L.Cross@rbgkew.org.uk

London Outdoor Science website at: www.field-studies-council.org/outdoorscience is funded by the Field Studies Council and supported by the Science Learning Centre London. It aims to develop the use of **fieldwork in KS4 science teaching in London schools** by providing practical guidance, training and resources to support teaching in local green spaces, such as parks and commons.

www.ltl.org.uk *Learning through Landscapes* is the National School Grounds Charity and includes a Schools' Grounds Grant Scheme. *Early Years Outdoors* is a comprehensive membership service from LTL aimed at all early years practitioners working in managed day-care or education. It will help you make the most of your outside spaces, maximising the opportunities for learning and play. Join on-line or email: eyo@ltl.org.uk or call: 01962 845811

http://www.livingroofs.org/ Green Roofs.

School Orchard Project Toolkit – based on the experience of Walworth Farm Garden's work with schools in Southwark, this CD-ROM will help schools and other groups, to set up orchards in their grounds. Cost £9.99 inc. p&p For more information contact the Education Worker on: 020 7582 2652 / Fax: 020 7735 3047.

http://www.risc.org.uk/garden/ edible roof garden / green roof

http://www.wildlondon.org.uk/resources2.php?MemberID=&SelSubjectID=7 Excellent downloadable information resources on Wildlife Gardening

http://www.wildlondon.org.uk/reserve.php?reserve_id=73 London Wildlife Trust - Centre for Wildlife Gardening

http://www.wildlondon.org.uk/stag_beetle.php Stag beetle conservation information, including how to encourage them into a garden

http://www.bats.org.uk/kids/index.asp the Bat Conservation Trusts children's pages.
http://www.londonbats.org.uk/ the London Bat Group's website.

http://www.bumblebeeconservationtrust.co.uk/ The Bumblebee Conservation Trust was founded with the aim of protecting bumblebees (*Bombus*) and their associated habitats through conservation and education.

http://www.ptes.org.uk/index.html Peoples' Trust for Endangered Species incorporating The Mammal Trust UK. Events and practical nature conservation activities, opportunities to get involved with important national surveys of endangered indigenous species from stag beetles to hedgehogs.

www.naturedetectives.org.uk **The *Nature Detectives* project Environmental Science for the 21st Century**. *Nature Detectives* is an online environmental science project designed for teachers and pupils to explore the timing of natural seasonal events, such as budburst, flowering and fruiting of trees or plants.

http://www.pondstrust.org.uk/The Ponds Conservation Trust has now been renamed Pond Conservation: The Water Habitats Trust. The objectives of the Ponds Conservation Trust:

- To safeguard pond biodiversity, archaeology and heritage for the future.
- To create and restore ponds through practical on-the-ground projects.
- To raise awareness and provide educational and training support.
- To provide technical know-how and support to those involved in practical work on ponds.

http://web.ukonline.co.uk/conker/pond-dip/ Pond dip is for children who have a wildlife pond in their garden or would like a pond – equally useful for school ponds. The site has been created by children for children. Has lots of information about pond dipping and pond animals.

http://www.yptenc.org.uk/docs/factsheets/env_facts/ponds.html information supplied by the Young Peoples' Trust for the Environment.

www.froglife.org.uk
Advice on developing and maintaining ponds

www.consortium.co.uk or www.glsed.co.uk Consortium or GLS supply fairly inexpensive bug pots and magnifiers for children. www.insectlore.co.uk based in Milton Keynes but have a catalogue and do mail order as well as online shopping.

www.compost.org.uk/ all you ever needed to know about composting.

www.groundwork.org.uk work with children and schools to make better use of their playgrounds.

www.HDRA.org.uk Henry Doubleday Research Association - FREE membership to schools undertaking organic garden projects; lots of information and resources.
http://www.hdra.org.uk/schools_organic_network/index.htm

www.teachernet.gov.uk/growingschools
Three areas: Funding Sources, Growing Schools Garden, Learning Materials, plus events and news sections and lots of links to other helpful sites.

www.pan-uk.org/lap/scholeaf.htm Pesticide Action Network has made a video for secondary schools designed to fit the citizenship and science curricula.

www.permaculture.co.uk lots of resources on a wide range of growing topics.

www.rhs.org.uk The Royal Horticultural Society website with FREE schools' membership scheme.

www.soilassociation.org.uk organisation supporting and promoting organic agriculture and community supported agriculture. 'Food for Life – School Meals Campaign'. Curriculum pack available to download FREE.

Food and Healthy Eating

www.sustainweb.org Sustainable Food campaigning and policy organisation. Grab 5 project encourages primary school pupils to eat more fruit and veg through a variety of activities. www.sustainweb.org/grab5_index.asp or Grab5.com contains all you need to know about running activities designed to increase children's consumption of fruit and vegetables. The Grab5! Resources are all downloadable plus links to many other sites.

www.thinkvegetables.co.uk
All sorts of useful information about vegetables including: their nutritional content, recipes, and downloadable pictures. Links to other vegetable and food specific sites (sponsored by a commercial company, 'Mack Vegetables').

www.nutrition.org.uk
Information about the work of the British Nutrition Foundation: BNF Education, Curriculum, Teachers' Centre, Healthy Schools, Cook Club, Links.

www.eatwell.gov.uk
Government site from the Food Standards Agency. Lots of information on all aspects of food including: diet, nutrition, healthy diet, ages and stages, health issues, keeping food safe, food labels, computer games.

www.healthedtrust.com
Health Education Trust is a UK registered charity, formed to promote the development of health education for young people. Information on vending machines, School Nutrition Action Groups and more.

www.foodinschools.org.uk

Fair Trade and International Development Education

Fair Trade: General information and Curriculum Resources

- www.co-op.co.uk – The Co-op have produced a comprehensive guide for Primary schools: 'Make your school Fairtrade friendly' including a range of curriculum related activities.

- www.fairtrade.org.uk – website of the Fair trade Foundation. The Foundation was established in 1992 by CAFOD, Christian Aid, New Consumer, Oxfam, Traidcraft and the World Development Movement later joined by the Women's Institute. The Foundation licenses the FAIRTRADE Mark, to products which meet internationally recognised standards. Their primary communication aims are to raise awareness of the FAIRTRADE Mark, to deepen understanding of the Mark and to increase sales of Fairtrade certified products.
  http://www.fairtradeschools.net The Fairtrade Foundation's Schools scheme gives schools some easy-to-follow, practical steps to support Fairtrade. It enables pupils and teachers to make the links between our lives in the UK and the lives of people in the poorest countries in the world who produce many of the things we buy.

- www.dubble.co.uk – fun information for teachers and young children, including how to be a *'dubble agent'* and spread the word on fair trade.

- www.papapaa.org - website for teaching about Fair trade and Cocoa production. Comic relief's PaPaPaa teaching pack is available on-line and supported by a DVD and photo pack which costs £8.00 (inc. p&p). The DVD is most suitable for KS3 but many sections are great for KS 2 and 4 as well. To order DVD & photos phone: 01795 427614 (credit card payment required) or send a cheque/purchase order to: Comic Relief Education Distribution Service, Education House, Castle Road, Sittingbourne, Kent ME10 3RL.

- www.tradingvisions.org – aims to alleviate the poverty of small-scale cocoa farmers and other producers in the south, by amplifying their voices in the supply chain to challenge and change industry practice.

- www.maketradefair.com – a website that pupils can look at to see more about the issues regarding fair trade.

- www.youngcooperatives.com – shows young people how they can act to promote fair trade by setting up their own co-operative business selling fairly traded products. Running in over 250 schools across the UK.

- www.bananalink.org.uk – campaigns for small banana producers

- www.bafts.org.uk – British Association for Fair trade shops – a network seeking to raise the profile of fair trade.

Fair Trade Products

- www.divine.chocolate.com – chocolate products.
- www.dubble.co.uk – the popular chocolate bars, in conjunction with Comic Relief
- www.cafedirect.com – Fair trade tea, coffee and drinking chocolate.
- www.traidcraft.co.uk – fair trade food and crafts

'Fair Enough' Croydon's very own fairtrade shop can supply a wide range of food, drinks, gifts and crafts for events, fetes, tuck shops and staff rooms. Call: 020 8760 5536 or email: anna.eltringham@croydon.gov.uk. Website: www.fair-enough.co.uk. Shop address: 136 Church Street, Croydon CR0 1RF

Fair Trade Vending machines

1. Supply Masters
   Sell vending machines and the healthy / fair trade products to go in them
   www.fair-traders.co.uk E-mail: sales@fair-trade.org.uk
   Tel: 01204 559 047 and 0845 257 6381

2. Organic and Natural
   Mitcham based company who supply 'The Green Machine' vending machine with healthy, organic and / or fair trade products.
   Tel: 020 8648 6111

3. Spring Fine Foods
   Innovative and alternative soft drinks and snacks.
   www.springfinefoods.com
   Tel: 020 8813 0044

4. Café - Vending
   Vending in schools
   Tel 01267 281 089

5. Coffee Point - Vending
   Border vending
   Tel: 020 7519 2600

General information and Curriculum Resources: International Development, Labour issues and Trade

- http://www.cafod.org.uk/ CAFOD - Catholic Agency for Overseas Development
- http://www.christian-aid.org.uk/
- http://www.oxfam.org.uk/index.htm
- www.risc.org.uk – Reading International Solidarity Centre – the largest development education centre in the UK with teaching resources on global issues and fair trade products.

- www.cleanclothes.org – reports on companies, e.g. Nike, and raises unsafe working conditions, e.g. in Bangladesh garment factories.

- www.ethicaltrade.org – coalition of trade unions, business and NGOs working together to identify and promote good practice in codes of labour practice

- http://www.globaleye.org.uk/ - site for primary and secondary schools to promote understanding of development issues.

- www.labourbehindthelabel.org – campaigns and resources on sweatshop labour

- www.poptel.org.uk/women-ww - women working worldwide – an organisation supporting the struggle of women workers in the global economy through information and international networking.

- www.wdm.org.uk – World Development Movement – development agency campaigning for political changes which directly benefit the poor.

Appendix I: Overall School Findings

Parish Church Primary and Infant School

Accomplishments

- Students environmentally aware
- Composting
- Washable hand towels
- School uniforms recycled
- Student gardening program
- Recycling program established
- Double glazed windows

Areas for Improvement

- TREND system turned to manual
- Urinals flush every 20 minutes
- Lights kept on all day
- Daylighting is not used effectively
- Heating system cannot heat new construction
- Computers remain on all day and night
- Low water pressure
- Thermostats not used
- Cleaners do not empty recycle bins
- Recyclable paper is placed in general waste
- Building management policy not handed down
- Meter readings are not recorded
- Previous energy audit recommendations were not implemented
- Doesn't support fair-trade

Heavers Farm Primary School

Accomplishments

- Light switches labels
- Hand dryers
- Composting uncooked foods
- Student run garden
- Open and willing for suggestions
- Eco-friendly products purchased
- All appliances turned off at the end of the day
- TREND system controlled by Council
- Thermostats accessible
- Double glazed windows

Areas for Improvement

- Light sensors broken
- No percussion taps to reduce water flow
- Poor ventilation
- Windows open, heat on
- Heat exchange units malfunctioning
- No recycling facilities
- No student environmental organizations
- Meters are not regularly recorded

Gresham Primary School

Accomplishments

- Strong recycling program
- Hand dryers
- Student Environment and Garden clubs
- Percussion taps and occupancy sensing urinals
- Composting bins in every classroom
- Experienced caretaker
- TREND system controlled by Council
- Minimal lights used, daylighting observed
- New boilers installed
- Meters are regularly recorded
- Taking steps to remove bottled water and install filtration systems

Areas for Improvement

- Computers are left on during entire school day
- Windows left open, heat on

St. Joseph's Junior

Accomplishments

- Percussion taps in the bathroom
- Hand dryers
- Good daylight
- Notices to switch lights off
- Recycling and composting bins are present
- Vegetable garden
- Rain water collection tubs
- Use of plastic trays and metal silverware
- Travel plans--- most kids walk to school
- Support fair-trade
- Prints double-sided and send emails
- Books are reused
- Collection of shoes and textiles to give away
- Buy recycled paper
- Furniture placement takes advantage of sunlight
- Double glazed windows
- Donated old computers

Areas for Improvement

- Windows left open, heat on in all classrooms
- Doors wide open, heat on
- Boiler not TREND system
- Boiler is inefficient, not well insulated and in a bad location
- School temperature too high
- Lights kept on
- Sterilisers in the kitchen are on from 8:30-1:30 with boiling hot water
- Not recycling light bulbs

Appendix J: Overall Church Findings

St. John the Evangelist

Accomplishments

- Instant hot water heater
- Strong fair-trade support
- Heating kept low or off when not needed
- Space heater in sacristy used instead of heating entire church
- Lighting bulb reduction in nursery hall
- Rechargeable batteries for Reverend's microphone
- Collect stamps for charity
- Collect boots for St. Patrick's Hospital in Zimbabwe
- Cutlery and crockery
- Ring binders and stationary reused
- Recycled toilet paper
- Recycled paper
- Efficient light bulbs used upon replacement
- Support fair trade

Areas of Improvement

- Gap between door frame and fire exit door in nursery hall
- Light bulbs are not recycled
- Percussion taps
- Meters not recorded regularly
- Eco-friendly cleaning products

St. Mildred's Church

Accomplishments

- Hand dryers
- Church garden
- Use of natural light
- Furniture placement takes advantage of sunlight
- Efficient boilers
- Energy saving light bulbs
- Temperature comfortable, no need for windows open
- Use of crockery and silverware
- Support fair-trade
- Prints double-sided and send emails
- Recycling paper
- Most lights were turned off
- Although they don't recycle cans and glass the parishioners take them home to their own recycling bins
- Double glazed windows
- Boiler programming not user friendly but they are using it
- Green waste is composted by contractor
- Radiant heating

Areas of Improvement

- Meters not recorded
- Urinals are on timers

- No percussion taps in bathrooms
- No signs to turn off lights
- Lights are not on sensors
- Heating controls are not user-friendly
- No labels on switches
- Do not purchase recycled paper

Parish Church

Accomplishments

- Church garden
- Use of natural light
- Furniture placement takes advantage of sunlight
- Energy saving light bulbs
- Temperature comfortable, no need for windows open
- Use of crockery and silverware
- Support fair-trade
- Prints double-sided and send emails
- Recycling paper
- Most lights were turned off
- Timed boiler system
- Radiant heating

Areas of Improvement

- Meters not recorded
- Urinals are on timers
- No percussion taps in bathrooms
- No signs to turn off lights
- Lights are not on sensors
- Heating controls are not user-friendly
- No labels on switches
- Do not purchase recycled paper
- Don't recycle cans and glass
- No double glazed windows

St. Mary the Blessed Virgin Addington

Accomplishments

- Meters recorded
- Timed boiler system
- Boiler maintained regularly
- Energy saving light bulbs in some places
- Support fair-trade
- Collecting green waste from the garden
- Recycling paper, candles and glass
- Recycling printer cartridges, stamps and spectacles
- Most lights were turned off
- Developing Church garden
- Signs to turn off lights in the parish centre
- Signs to turn off water in the bathrooms
- Reuse scrap paper and fruit cups
- Reuse of envelopes and stationary
- Outside lights on timers

- Heating only turned on during weekends
- Looking into green energy company
- Print double sided when possible

Areas of Improvement

- Urinals are on timers
- No composting
- No double-glazed windows
- No percussion taps in bathrooms
- No purchasing of recycled products

Appendix K: Parish Church Nursery and Infant School Audit Report

CROYDON COUNCIL ENVIRONMENT AND SUSTAINABILITY TEAM

Environmental Audit Report and Action Plan

Parish Church Nursery and Infant School

Prepared by:
Jonathan Ahn
Helena Alfonzo
Bradley Scoville

26 April 2008

Date of Audit: 18 March 2008

Introduction

The Environment and Sustainability Team (EaST) at Croydon Council is dedicated to aiding and supporting schools in making improvements in their environmental performance.

This report provides potential solutions to environmental problems in the areas of waste, energy use, purchasing, biodiversity, and water consumption within the school facilities and grounds.

Summary

Parish Church Nursery and Infant School share the same facility. In 2000 they added a new area to the building. They are also in the process of creating a new addition in the location of the front car park. The new addition will be environmentally sustainable.

The school has won numerous environmental awards including the Smarter Croydon Award, the Green Guardian Best Primary Award and has taken part of the LSEA. The school has already taken several steps to improve it's environmental performance and has done an excellent job involving the students in their mission. We were very impressed to learn how environmental awareness is integrated into the students' education especially with programmes like the reusable totes created to minimise the need for plastic bags. These programmes are evidence of the dedication of your teachers and parents, as well as the ability to motivate students at an early age.

Priority Issue: Evaluate Boiler and Heating System

Since the extension was built in 2000 the boilers have not been able to properly heat the entire facility. We found the nursery to be 14°C even though there were 7 radiators and 2 electric fan heaters. After talking with the facility manager we determined that the building management system (TREND) must be turned to manual in the early hours of the day in order to provide heating. To first address these heating problems Interserve (Croydon Council's Facilities Management contractor) can be contacted on *020 8726 6000 ext.61858* to adjust the TREND system. If the heating issues persist then Will Walker can be contacted to discuss boiler replacement (see details below).

Local Authority Energy Finance (LAEF)

Funds are available now for Council buildings (including schools) to help fight climate change and reduce energy bills. With energy prices rising significant savings are possible by increasing the energy efficiency of our buildings. LAEF can cover anything from cavity wall insulation or high efficiency lighting to swimming pool covers. Take advantage of the LAEF scheme before the end of the financial year and help reduce carbon emissions in the Borough.

For further information please contact Will Walker, Energy & Environment Officer, Tel.: 0208 760 5768 ext.62450 or Email: will.walker@croydon.gov.uk

Other findings:

Energy

Lighting

The first concern we have is that lights are left on when rooms are unoccupied. Contrary to the belief that fluorescent lights are more efficient if left on, by turning off the lights when the room is not in use for longer than 5 minutes, the energy savings will be greater.[1]

Additionally we noticed that during school hours, rather than taking advantage of day light, there were many lights turned on (especially in the hallways). Making good use of daylight in a classroom can reduce lighting costs by 19%. (Carbon Trust School Sectors Overview Publication) If glare is an issue installing blinds can control the angle of sunlight. We understand that the students need the best possible reading light; however the amount of light necessary can be judged by the teachers or staff members.

The facility lacks labels on all lighting toggle switches. By prompting students to design switch labels this can minimise having to guess which switch controls which light. Students can also design reminder signs prompting the last person leaving the room to turn off the lights.

To additionally reduce the amount of unnecessary lights, one strip of lights can be separated into multiple switches. A simpler solution might be to remove half of the light bulbs or tubes from the light fixtures.

Computers

School computers are left on during unoccupied class periods. If the unoccupied period is less than 30 minutes, the monitor at minimum should be switched off. Monitors can account for a third of a room's energy consumption. Students and staff should shut down computers if they are not being followed by another class and at end of the school day. There is also the option to invest in programmes for automatic computer shut down or just setting the computers to go to stand-by mode. Implementing these practices reduces dependency on air conditioning to maintain a lower temperature, and delivers further energy savings.

Heating

Although it has been noted that the heating system is not sufficient to heat the school, there are minor repairs that can be made in an attempt to keep the temperature of the school comfortable and constant.

From what we gathered, no school personnel are familiar with using the thermostats to manage temperature. Contacting an external specialist and controlling the thermostat properly avoids installing extra radiators for warmth or opening windows to release excess heating.

[1] http://www.nef.org.uk/actonCO2/energymyths.htm

Revising the heating system may be a lengthy process; however there are smaller-scale repairs that can contribute to keeping the temperature constant. All entrance/exit doors have draft strips, however many have become worn or partly torn away. The damage is enough to detect a breeze. Updating draft strips is an effective step to maintain infrastructure temperature.

A good way that the school is conserving energy is by using double-glazed windows. These are designed to keep extreme temperatures at each side of the glass making the temperature inside the building easier to control. Curtains can also contribute to managing temperature. Lining the hallway with curtains will create a barrier between temperatures, reducing incoming heat during the warmer seasons and preventing loss of heat in colder seasons.

To ensure that the energy bill estimates are accurate, it is recommended that the school frequently check the gas and electricity meters. This will not only help when comparing the estimates from the bills but it will also give the school an idea of how much energy it is using over a certain period of time.

Behaviour Change

Actions	*Who?*	*Resources from EaST*
Turn off lights when the room will be unoccupied for more than 5 minutes.	Students, Teachers, Staff	
Turn off lights when day light is sufficient.	Teachers, Staff	
Label light switches and post "switch-off" reminder signs.	Students, Teachers, Staff	FREE posters and stickers
Turn off computers when unoccupied for longer than 30 minutes.	Students, Teachers, Staff	
Turn off computer monitors even when unoccupied for less than 30 minutes.	Students, Teachers, Staff	

Maintenance

Actions	*Who?*	*Resources from EaST*
Contact electrician to separate rows of lights.	Facility Manager, Financial Officer	
Reduce the amount of fluorescent tubes in a fixture.	Facility Manager	
Install sensors that detect day lighting and occupancy.	Facility Manager, Financial Officer	Contact Will Walker
Test out thermostats to see what they control.	Facility Manager	
Install curtains to reduce heat during summer and retain heat in the winter.	Facility Manager	
Install blinds to reduce glare when using sunlight.	Facility Manager	
Repair/replace weather strips on entrance/exit doors.	Facility Manager	
Regularly record meter readings.	Facility Manager	
Turn off all computers and monitors at end of the day.	Facility Manager	
Invest in programmes for automatic computer shut down or switching to stand-by mode.	Financial Officer	Contact Will Walker

Waste

It is evident the school has already established a positive recycling programme involving and training the students. However the majority of paper and card recycle bins were overflowing. The presence of recyclable materials in general waste bins was greater in rooms with the most overflowing recycling bins. Extending the facility manager's contract to regularly empty recycle bins are possible solutions to this problem.

Since student involvement is important there is the possibly of introducing a regular rota for pupils to empty the recycling bins. However the health and safety of the students must not be jeopardised and the bins' weight and/or content should be monitored by staff.

We were impressed to see that the school's recycling programme extends beyond just recycling paper and card. The recycling of school uniforms, printer cartridges, batteries and mobile phones as well as the composting programme, not only benefit the students of Parish Church School, but also the environment. We understand that the school is also trying to engage parents in these programmes. Since the school does not have the facilities to recycle tins and jars these are collected and given to parents who take them home for recycling purposes.

The school is also implementing good practice in reducing the amount of waste. By printing double sided as much as possible and using electronic means of communication rather than paper, the school is preserving the environment. The use of washable hand towels in the toilets is another good way the school is reducing the amount of waste produced.

Maintenance

Actions	*Who?*
Empty recycling bins more regularly.	Facility Manager, Student club

Water Use

The school informed us that the washroom facilities optimised the use of percussion taps. This installation conserves water by minimising the chance of taps being left on and also by limiting the quantity of water.

We were also told the students use cold water due to the absence of thermostats to control water temperature. We support the future school project of installing thermostats on water tanks. Doing so will prevent Legionella through boiling and address the students' comfort.

Another alternative would be to install an instant hot water heater. This eliminates Legionella because there is no water holding tank. To additionally reduce the water pressure problem a pump could be installed with the instant hot water heater.

It was stated that due to low water pressure the school cannot currently support the use of hippos (a toilet cistern water conserving device). However, since the school's previous use of hippos, there have been various sizes manufactured allowing more water for flushing while still conserving water. The school savings would outweigh the initial investment at a faster rate than resolving the water pressure complications.

The urinals function on timers flushing every 20 minutes. There was no knowledge if these continue to function after school hours, weekends, and holidays. To maximize water conservation, occupancy sensors are ideal with the capability of only flushing when detecting a user.

Maintenance

Actions	*Who?*
Obtain necessary sized hippos. (Free from Thames Water)	Financial Officer
Install thermostats on hot water tanks.	Financial Officer, Site Manager

Management

Considering the facilities manager is new to the school he demonstrated extensive knowledge of the site. However there were gaps in the information obtained due to no information or template being transferred between managers. The facilities manager was unaware of the school's previous audit in 2003 and it's recommendations, along with when boilers were last serviced. To minimise this problem reoccurring, facilities managers should be encouraged to design an information template to pass on to their successor. Doing so will inform the new post holder of the school's strengths and weaknesses and how to efficiently run the facility.

Purchasing

We were told that the school purchases stationery from recycled sources and reuses paper when no confidential information might be compromised. This is an excellent way of aiding the environment because 70% less energy is required to recycle paper compared with making it from raw materials[2].

Another great way that the school can get involved is by researching and considering the use of eco-friendly products to be implemented for school cleaning and gardening. These products tend to be slightly more pricy but can reduce the environmental impact of harsh chemicals.

The Environment and Sustainability Team also encourages the support of fair-trade products. The school could start by purchasing fair-trade tea and coffee for the teachers and staff. Fair-trade products aid farmers in third world countries to sell their products for a fair price and help them earn a living.

Behaviour Change

Actions	*Who?*
Support fair-trade products.	Financial Officer
Consider eco-friendly products for cleaning and gardening.	Facility Manager, Financial Officer

[2] http://www.recycling-guide.org.uk/facts.html

Conclusion

The overall environmental profile of this institution is clearly well established. The proposed solutions are generated with the intent of helping to maintain Parish Church Nursery and Infant School's high environmental performance. The results from the audit are to provide awareness in the areas where the school can continue to improve. The recommendations serve as a reference with various solutions, each solution taking into consideration the constraints and situation of the institution.

Attached to the end of this report is an action plan. This is a table of all the recommendations provided within the body of this report. Since we want you to make this action plan your own, we purposely left some blanks in the table for you to fill out.

The action plan allows you to keep track of:

- What needs to be done;
- Who is responsible for the task;
- When the action needs to be completed;
- The status of the activity;
- A general idea of how much each action will cost to implement.

The key below sets out the indicative costs associated with our recommendations:

Scale	**Cost**
FREE	£0
£	Less than £50
££	From £ 50to £300
£££	Over £300

Action Plan

		Cost	*Actions*	*Who?*	*Follow-up*	*Deadline*	*Status*
Energy	Behaviour Change	FREE	Turn off lights when out of the room for more than 5 minutes.	Teachers, Staff			
			Turn off lights when day light is sufficient.	Teachers, Staff			
			Label light switches and post "switch-off" reminder signs.	Students, Teachers			
			Turn off computers when unoccupied for longer than 30 minutes.	Students, Teachers, Staff			
			Turn off computer monitors even when unoccupied for less than 30 minutes.	Students, Teachers, Staff			
	Maintenance and energy saving repairs	£	Contact electrician to separate rows of lights.	Facility Manager			
		FREE	Reduce the amount of light tubes in a fixture.	Facility Manager			
		££	Install sensors that detect day lighting and occupancy.	Facility Manager	**Will Walker** 0208 760 5768 ext.62450		
		FREE	Test out thermostats to see what they control.	Facility Manager			
		££	Install curtains to keep temperature constant.	Facility Manager			
		££	Install blinds to reduce glare when using sunlight.	Facility Manager			
		FREE	Regularly record meter readings.	Facility Manager			
		FREE	Turn off all computers and monitors at end of the day.	Facility Manager			
		£££	Invest in programmes for automatic computer shut down /stand-by mode	Facility Manager	**Will Walker** 0208 760 5768 ext.62450		
		££	Repair/replace weather strips	Facility			

			on entrance/exit doors.	Manager			
		Cost	***Actions***	***Who?***	***Follow-up***	***Deadline***	***Status***
Waste	Maintenance	FREE	Empty recycling bins regularly.	Facility Manager			
Water	Maintenance	FREE	Obtain free appropriate size hippos from Thames water.	Financial Officer			
		££	Install thermostats on hot water tanks.	Financial Officer, Site Manager			
Purchasi	Behaviour	FREE	Support fair-trade products.	Financial Officer			
		FREE	Consider eco-friendly products for cleaning and gardening.	Financial Officer, Facility Manager			

Appendix L: Heavers Farm Primary School Audit Report

CROYDON COUNCIL ENVIRONMENT AND SUSTAINABILITY TEAM

Environmental Audit Report and Action Plan

Heavers Farm Primary School

Prepared by:
Jonathan Ahn
Helena Alfonzo
Bradley Scoville

26 April 2008

Date of Audit: 20 March 2008

Introduction

The Environment and Sustainability Team (EaST) at Croydon Council is dedicated to aiding and supporting schools in making improvements in their environmental performance.

This report provides potential solutions to environmental problems in the areas of waste, energy use, purchasing, biodiversity, and water consumption within the school facilities and grounds.

Background

Heavers Farm Primary School is a fairly new school. It was built around 13 years ago and for the most part the facility is in good condition. Although the school's efforts to be more environmentally sustainable are new; the school is already taking a few steps towards bettering the environment.

However, there are a few areas where improvements can be made.

Priority Issue(s):

1. **Develop a recycling plan**
    a. The implementation of a waste reduction and recycling plan will not only help the environment but it will also save the school money in the long run. This will also be a good way to involve the children in a school activity.

2. **Maintain heat exchanger that feeds hot water to the school**
    a. The temperature of the water was set for 50° Celsius but it was coming back at a temperature of 35°Celsius. It appears that the heat exchange unit cannot handle supplying the entire school while the other exchange unit supplies only the kitchen. To address this problem, the school can contact Will Walker to discuss the possibility of refurbishing or replacing the heat exchanger (see details below).

Local Authority Energy Finance (LAEF)

Funds are available now for Council buildings (including schools) to help fight climate change and reduce energy bills. With energy prices rising significant savings are possible by increasing the energy efficiency of our buildings. LAEF can cover anything from cavity wall insulation or high efficiency lighting to swimming pool covers. Take advantage of the LAEF scheme before the end of the financial year and help reduce carbon emissions in the Borough.

For further information please contact Will Walker, Energy & Environment Officer, Tel.: 0208 760 5768 ext.62450 or Email: will.walker@croydon.gov.uk

3. **Maintain school's ventilation system**
    a. At the time of the audit the ventilation system was not working in certain rooms in the facility. This mostly affected the computer server room where excessive heat caused computers to fail at an early age. To first address these ventilation problems Interserve can be contacted at *0208 726 6000 ext.61858,* they might be able to propose viable solutions to this problem.

Other Findings:

Energy

Lighting

For the most part we noticed that the school is doing really well in turning off lights when not needed and the teachers take advantage of the daylight that the ceilings allow to pass through. As we observed in the school, the switches are labelled. Labelling the switches is also a good way of conserving energy by avoiding turning lights on that are not needed.

The school even placed occupancy sensors to avoid lights being left on in an empty room. The problem with these sensors was that they were broken and not replaced. Instead, the sensors were disconnected and the lights had to be controlled manually. This has led to lights being turned on when not needed. To solve this problem, reminders such as “switch me off” stickers can be placed by the switches to encourage energy preservation. If the school is looking to install new light sensors and replace the broken ones, Will Walker can be contacted regarding funding for the school.

Computers

We also noticed that the computers were turned off for the most part and the site manager told us that he routinely turns all the computers off at the end of the school day. To encourage students to turn the computers off, the same stickers used for the lights can also be placed near the school computers; this will minimize the number of computers needing to be turned off at the end of the day. We were really pleased to know that all other electrical appliances including printers and copiers are also turned off at the end of the day.

Heating

A problem that the school staff recognized was the amount of energy required to heat the school due to the building’s high ceilings. One good thing that the school is doing is controlling the heat through the TREND system. The school’s use of double-glazed windows also helps to preserve a constant temperature.

We have a couple of suggestions in addition to the problems highlighted in the priority issues section. We noticed that there were many thermostats located around the building. We were told that the thermostats located in the classroom areas control the temperature of two classrooms at the same time. It was here where we observed that some teachers had windows open while the heat was running. To try and correct this behaviour the school staff can be trained to use the thermostats to regulate the classroom temperature; this will help the school conserve energy in the long run.

To ensure that the energy bill estimates are accurate, it is recommended to frequently check the gas and electricity meters. This will not only help when comparing the estimates from the bills but it will also give the school an idea of how much energy it is using over a certain period of time.

RECOMMENDED ACTIONS

We have divided actions into 2 sections: a) behaviour change b) maintenance and device installation

Behaviour Change

Actions	*Who?*	*Resources from EaST*
Turn off lights when out of the room for more than 5 minutes.	Students, Teachers, Staff	
Turn off lights when day light is sufficient.	Teachers, Staff	
Post "switch-off" reminder signs and stickers on individual computers.	Students, Teachers, Staff	FREE posters and stickers

Maintenance and energy saving installations

Actions	*Who?*	*Resources from EaST*
Install new sensors that detect day lighting and occupancy.	Facility Manager, Financial Officer	Contact Will Walker
Train staff to use thermostats.	Facility Manager	
Control heating through TREND system if building is too warm.	Facility Manager	
Fix ventilation problem by contacting Interserve.	Facility Manager	
To control temperature levels in the server room install grill on the door.	Facility Manager	
Regularly record meter readings.	Facility Manager	

Water

During the audit it was noted that most of the school's taps were lever taps. These taps can be inefficient in situations where the children leave the water running. We recommend installing percussion taps instead of the lever taps to prevent excess water wastage. Also keep in mind that dripping taps can waste up to 4 litres of water a day[3]. The school can replace worn tap washers for a quick and cheap way of saving water. The use of reminder signs to turn the water off is also an effective way of encouraging children to turn off the water.

We asked if there were any water saving devices (a hippo) to reduce the amount of water in each flush. The facility manager told us that he was investigating such devices. We recommend that the school installs new hippos that hold back less water than the old ones, allowing more water for flushing the toilets while still conserving water, so in the case of any pressure problems, they should still work. These issues can be further addressed during the in-depth water audit that you will be receiving from Thames Water.

Behaviour Change

Actions	*Who?*
Turn off the water signs to remind children not to leave the taps running.	Students, Teachers, Staff

Maintenance and water saving installations

Actions	*Who?*
Install percussion taps.	Facility Manager
Install "hippos" in toilets to conserve water.	Facility Manager

Waste

Although we were very pleased to see that the school is composting uncooked foods we believe that there is possibility for improvement in the waste management area.

As previously discussed one big thing that the school can do for the environment is to establish a recycling programme. Establishing programmes like these are important because up to 60% of the rubbish that ends up in the dustbin could be recycled[4].

There might be an upfront cost associated with the recycling programme because the school will need to have a contract with a waste management company to pick up recyclables. But it will save the school money in the long run. If your school has an existing contract with the

[3] http://www.environment-agency.gov.uk/subjects/waterres/287169/287245/?version=1&lang=_e
[4] http://www.recycling-guide.org.uk/facts.html

council you can sign up to our paper & card recycling service and should start saving money immediately. Please see the attached Green Resource Guide for relevant information. If your school wants a more comprehensive collection including cans and plastics then you would need to arrange this with another contractor and there would be additional costs. We would therefore generally recommend you start with paper & card and then the additional activities which can be done through charitable organizations, see in the Green Resource Guide. Establishing this programme might also be hard because it requires a change in behaviour not only from the staff but from the children as well. They will need to be trained on what items can go into the recycling bin and what items need to be placed in the general waste. The school will also need to implement a system of emptying out the recycling bins. In this case the school can develop a club that can advertise and run the recycling programme at the school.

The recycling programme should not be limited to paper and card but it can be expanded to batteries, printer cartridges, books and school uniforms. This might also be a good way to involve the PTA in the school's environmental activities. Please refer to the **Paper and Card Recycling Service, Glass Recycling Service, Cash for Cans Centres, and Community Schemes** within the Green Resource Guide. In addition please contact Diana Battaglia at the Environment and Sustainability Team as she can facilitate a recycling action plan for the school.

Diana Battaglia
Community Initiatives Officer
Environment & Sustainability Team, Croydon Council,
18th Floor North East, Taberner House,
Park Lane, Croydon CR9 3BT
Tel: 020 8760 5640
Fax: 020 8760 5791
Email: diana.battaglia@croydon.gov.uk

Although the school does not have an established recycling programme, it is already taking steps to reduce the amount of waste released into the environment. By using electric hand dryers, the amount of non-recyclable waste is reduced. This reduction of waste is also achieved by the use of silverware and washable plastic plates and cups.

Behaviour Change

Actions	*Who?*
Develop a waste reduction and recycling programme and encourage the school to participate in the scheme.	Developer: Facility Manager Students, Teachers, Staff
Recycle not only paper & card board but books and textiles as well.	Students, Teachers, Staff, PTA
Encourage double-sided printing & photocopying and electronic ways of communication to conserve paper.	Students, Teachers, Staff

Maintenance & equipment

Actions	*Who?*
Include recycling in the waste management contract.	Administrator
Place recycling bins in every room.	Facility Manager

Purchasing

We were impressed to learn that the school purchases eco-friendly products for cleaning purposes. In this way the school is reducing the environmental impact caused by harsh chemicals.

We did not have the chance to discuss this topic while we audited Heavers Farm Primary School, but we strongly encourage the purchasing of recycled products like notebooks, envelopes and other stationary. A good reason for buying recycled products is that recycled paper produces 73% less air pollution than if it was made from raw materials[5]. Please refer to the ***Recycled Products Guide*** within the Green Resource Guide.

Behaviour Change

Actions	*Who?*
Buy recycled products like notebooks, envelopes and paper.	Financial Officer
Support fair-trade products.	Financial Officer
Consider energy ratings of devices when purchasing.	Financial Officer

[5] http://www.recycling-guide.org.uk/facts.html

Conclusion

Overall we perceived that the school is taking the right steps to become environmentally sustainable. The proposed solutions were developed from our observations made during the audits. The results from these audits are for you to be aware of the areas which your school can improve on.

Attached to the end of this report is an action plan. This is a table of all the recommendations given to the institution. Since we want you to make this action plan your own, we purposely left some blanks in the table for you to fill out.

The action plan allows you to keep track of:

- What needs to be done;
- Who is responsible for the task;
- When this action needs to be completed;
- The status of the activity;
- A general idea of how much each action will cost to implement.

The key below sets out the indicative costs associated with our recommendations:

Scale	**Cost**
FREE	£0
£	Less than £50
££	From £50 to £300
£££	Over £300

Action Plan

		Cost	*Actions*	*Who?*	*Follow-up*	*Deadline*	*Status*
Energy	Behaviour Change	FREE	Turn off lights when out of the room for more than 5 minutes.	Teachers, Staff			
			Turn off lights when day light is sufficient.	Teachers, Staff			
			Label light switches and post "switch-off" reminder signs.	Students, Teachers, Staff			
			Post "switch-off" reminder signs and stickers on each computer.	Students, Teachers, Staff			
	Maintenance and energy saving repairs	££	Install new sensors that detect day lighting and occupancy.	Facility Manager	**Will Walker** 0208 760 5768 ext.62450		
		FREE	Train staff in using the thermostats.	Facility Manager			
		FREE	Control heating through TREND system if building is too warm.	Facility Manager	**Will Walker** 0208 760 5768 ext.62450		
		££	Fix ventilation problems	Facility Manager	**Interserve** 0208 726 6000 ext.61858		
		££	To control temperature levels in the server room install grill on the door.	Facility Manager			
		FREE	Regularly record meter readings.	Facility Manager			

Water	Behaviour	FREE	"Turn off the water" signs to remind children not to leave taps running.	Students, Teachers, Staff			
	Maintenance	££	Install percussion taps.	Facility Manager			
		FREE	Install "hippos" in toilets to conserve water in conjunction with future Thames Water audit.	Facility Manager			
Waste	Behaviour Change		Develop a waste reduction and recycling programme and Encourage the school to participate in recycling the scheme.	Students, Teachers, Staff	**Diana Battaglia** 020 8760 5640		
			Recycle not only paper & cardboard but books and textiles as well.	Students, Teachers, Staff, PTA			
			Encourage double-sided printing, photocopying and electronic ways of communication to conserve paper.	Students, Teachers, Staff			
	Maintenance		Include recycling into the waste management contract.	Financial Officer			
			Place recycling bins in every room.	Facility Manager			
Purchasing	Behaviour Change		Buy recycled products like notebooks, envelopes and paper.	Financial Officer			
			Support fair-trade products.	Financial Officer			
			Consider energy ratings of devices when purchasing.	Financial Officer			

Appendix M: Gresham Primary School Audit Report

CROYDON COUNCIL ENVIRONMENT AND SUSTAINABILITY TEAM

Environmental Audit Report and Action Plan

Gresham Primary School

Prepared by:
Jonathan Ahn
Helena Alfonzo
Bradley Scoville

26 April 2008

Date of Audit: 25 March 2008

Introduction

The Environment and Sustainability Team (EaST) at Croydon Council is dedicated to aiding and supporting schools in making improvements in their environmental performance.

This report provides potential solutions to environmental problems in the areas of waste, energy use, purchasing, biodiversity, and water consumption within the school facilities and grounds.

Summary

Gresham Primary School is one of the oldest schools in the Borough however they have been updating the school in several areas to be environmentally sustainable. For example, new boilers have been installed through the Local Authority Energy Finance scheme. We were very impressed to learn how environmental awareness is integrated into the students' education especially with programmes such as the gardening club and use of classroom compost bins. Programmes like these are evidence to the dedication of teachers and parents, as well as their ability to motivate students at an early age.

However, there are a few areas where improvements can be made.

Priority Issue(s):

- Computers are left on during the school day when not in use;
    - **EASY**: Create a policy where the students make sure they turn them off during lunch and at the end of the day;

    OR

    - **MEDIUM:** Contact Will Walker in regards to software that will automatically turn the computers off when not in use;

      Will Walker, Energy & Environment Officer, Tel: 0208 760 5768 ext.62450 or Email: will.walker@croydon.gov.uk

Other Findings:

Energy

Lighting

We noticed during school hours that, rather than taking advantage of day light, there were many lights turned on. We understand that the students need the best possible reading light however the amount of light necessary can be judged by the teachers or staff members.

To additionally reduce the amount of unnecessary lights left on, strips of lights can be separated into multiple switches. A simpler solution might be just to remove half of the light tubes from the light fixtures. Most occupants have not generally noticed any difference in light levels from removing half of the light tubes.

Heating

We have noticed multiple efforts the school is taking to improve environmental performance. Many schools face a strict budget for purchasing larger investment products, and are intimidated in taking up funding loans. However Gresham has made an effective change to the building's overall quality by investing in the new boilers. Also programming the boilers to only become active during school hours diminishes the need for manual care.

One issue we found was that a couple of the classroom windows were open because the classroom was too warm. Rather than opening the windows check if the thermostat can be regulated so energy is not wasted to heat the room.

RECOMMENDED ACTIONS

We have divided actions into 2 sections: a) behaviour change b) maintenance and device / equipment installation

Behaviour Change

Actions	*Who?*
Turn off lights when day light is sufficient.	Teachers, Staff
Turn off computers when not in use.	Teachers, Students
Test out thermostats in the classrooms.	Teachers, Facility Manager

Maintenance and energy saving installations

Actions	*Who?*	*Resources from EaST*
Contact electrician to separate rows of lights.	Facility Manager, Financial Officer	
Reduce the amount of light bulbs in a fixture.	Facility Manager	
Look into purchasing software to turn off computers.	Facility Manager	Contact Will Walker

Waste

The involvement of the institution is one to be exemplified. We noticed the green paper and card bins were kept empty, promoting and providing space for classroom recycling. We were additionally impressed by the compost caddies in every classroom. It is wonderful to see strong parental involvement, with book donations, second hand uniform programmes, and collaborative recycling of mobile phones. We also noted the environmental club and the awards received in the past. To take waste minimization, re-use and recycling activities further see the accompanying resource guide and in particular information on can / textile recycling, recycled products guide and website list.

Water Use

We were impressed with the washroom being equipped with some of the most efficient systems available on the market. The sinks were installed with low flow rate percussion taps, along with an accessible control box in the event the percussion taps malfunction. Most other schools implemented the time flushing system; however the use of a motion sensor flush system minimizes water usage. The presence of hand dryers as opposed to disposable towels reduces the amount of unrecoverable waste produced.

To additionally take advantage of available water we recommend using a water butt to collect rainwater for gardening projects. This type of system could be integrated in to your building drainage system.

We have researched ways to further reduce water flow in the toilets. Thames Water offers free water hippos to their customers (see below).

> "We can provide fifty of each of our resources free of charge to Thames Water customers. Thereafter each resource will cost 30p. If you require more than fifty please contact our Customer Centre on 0845 9200 800, calls are charged at local rates."
> http://www.thameswater.co.uk/UK/region/en_gb/content/FreeStuff?SECT=Right_Image_000045

Maintenance / equipment

Actions	*Who?*
Inquire about water hippos for toilets.	Facility Manager, Financial Officer

Purchasing

When purchasing electrical equipment for the office we recommend that the school opts for appliances that are 'A' or 'B' rated. The Energy Saving Trust (EST) (see below) has a list of suppliers selling energy efficiency recommended products.

http://www.est.org.uk/myhome/efficientproducts/recommended

Similarly, office equipment that meets 'Energy star' standards is also energy efficient. Purchasing energy efficient equipment will help keep electricity costs down.

Conclusion

We would like to commend the school in all of their efforts to improve the environment and for your past participation in the LSEA (London School Environment Award) programme. The overall environmental image of this institution is clearly well established. The proposed solutions in this report are generated with the intent of helping to maintain Gresham Primary School's high environmental performance. The results from the audit are to provide awareness in the areas where the school can continue to improve. The recommendations serve as a reference with various solutions, each solution taking into consideration the constraints and situation of the institution.

Attached to the end of this report is an action plan. This is a table of all the recommendations given to the institution. Since we want you to make this action plan your own, we purposely left some blanks in the table for you to fill out.

The action plan allows you to keep track of:

- What needs to be done;
- Who is responsible for the task;
- When this action needs to be completed;
- The status of the activity;
- A general idea of how much each action will cost to implement.

The key below sets out the indicative costs associated with our recommendations:

Scale	**Cost**
FREE	£0
£	Less than £50
££	From £50 to £300
£££	Over £300

Action Plan

		Cost	*Actions*	*Who?*	*Follow-up*	*Deadline*	*Status*
Energy	Behaviour Change		Turn off lights when day light is sufficient.	Teachers, Staff			
			Turn off computers when not in use.	Teachers, Students			
			Test out thermostats in the classrooms.	Teachers, Facility Manager			
	Maintenance	£	Contact electrician to separate rows of lights.	Facility Manager, Financial Officer			
		FREE	Reduce the amount of light bulbs in a fixture.	Facility Manager			
		££	Look into purchasing software to turn off computers.	Financial Officer	**Will Walker** 0208 760 5768		
Water	Maintenance	£	Inquire about water hippos for toilets.	Facility Manager, Financial Officer			

Appendix N: St. Joseph's Junior Primary School Audit Report

CROYDON COUNCIL ENVIRONMENT AND SUSTAINABILITY TEAM

Environmental Audit Report and Action Plan

St. Joseph's R C Junior School

Prepared by:
Jonathan Ahn
Helena Alfonzo
Bradley Scoville

26 April 2008

Date of Audit: 27 March 2008

Introduction

The Environment and Sustainability Team (EaST) at Croydon Council is dedicated to aiding and supporting schools in making improvements in their environmental performance.

This report provides potential solutions to environmental problems in the areas of waste, energy use, purchasing, biodiversity, and water consumption within the school facilities and grounds.

Summary

The school has already taken many steps to reduce its environmental impact and has done an excellent job involving the students in its mission. St. Joseph's Junior has won many environmental awards which include two LSEA awards. We were very impressed to learn how environmental awareness is integrated into the students' education. Programmes like these are evidence of the dedication of teachers and parents, as well as the school's ability to motivate students at an early age.

However, there are a few areas where improvements can be made.

Priority Issue(s):

1. Update Building Management System and Insulate Pipes

The school wastes an excessive amount of energy to heat the building for 2 main reasons:

a) The heating system remains on during holidays heating the school when not in use.

b) The heat temperature is not controlled and the building is allowed to get uncomfortably warm when the boiler is running. On the day of the audit most of the classrooms had windows open due to the excessively high room temperature whilst the heating was still on.

To solve these problems a TREND building management system can be integrated into the existing heating system. Interserve at the Council can remotely control the heating system and turn it off during holidays. Once the system is installed a member of staff can call Interserve (Croydon Council's Facilities Management contractor) to adjust room temperature. Public sector funding is available for this type of energy saving installation and Will Walker – the Energy Officer in EaST, can be contacted to discuss the details of this system (see contact details below). He will also provide details on how to improve insulation around the pipes in the boiler room.

Local Authority Energy Finance Scheme (LAEF)

Funds are available now for Council buildings (including schools) to help fight climate change and reduce energy bills. With energy prices rising significant savings are possible by increasing the energy efficiency of our buildings. LAEF can cover anything from cavity wall insulation or high efficiency lighting to swimming pool covers. Take advantage of the LAEF scheme before the end of the financial year and help reduce carbon emissions in the Borough.

For further information please contact Will Walker, Energy & Environment Officer, Tel: 020 8760 5768 ext.62450 or Email: will.walker@croydon.gov.uk

Other findings:

Energy

Lighting

We noticed during school hours that, rather than taking advantage of the day light, there were many lights turned on. Making good use of daylight in a classroom can reduce lighting costs by 19%. If glare is an issue, installing blinds can control the angle of sunlight. We understand that the students need the best possible reading light however the amount of light necessary can be judged by the teachers or staff members.

Additionally light sensors can be purchased through the LAEF scheme. These sensors can detect when daylighting is sufficient as well as whether the room is occupied or not.

Computers

School computers are left on during unoccupied class periods. If the unoccupied period is less than 30 minutes, the monitor at minimum should be switched off. Monitors can account for a third of a room's energy consumption.[1] At the end of the day and when computers are unlikely to be used within 30 minutes, students and staff should fully shut these down. Printers should also be fully shut off at the end of the day. Switching off computers overnight and at weekends, results in electricity and cost savings of 70 – 80%. Equally, switching off screens when at lunch, or during periods of absence, can halve the energy consumption.

There is also the option to invest in programmes for automatic computer shut down or standby mode. Implementing these practices reduces dependency on air conditioning to maintain a lower temperature and thereby provides further energy savings.

Heating

To ensure that the energy bill estimates are accurate, it is recommended that the gas and electricity meters are frequently checked. This will not only help when comparing the estimates from the bills but it will also give the school an idea of how much energy it is using over a certain period of time. Also, if a meter reading is unusually high, the facilities manager will be alerted to the fact that energy may be being wasted and seek to locate the source of the problem.

Due to recent legislation there is even more incentive to regularly monitor meter readings. Display Energy Certificates (DECs) are required from 1 October 2008 in public buildings, including schools, with a gross internal area of over 1000 m^2. The certificate must contain information about the energy efficiency of a building. This includes an operational rating of how energy efficient it is on an A-G scale. It must be accompanied by a report recommending improvements to the energy performance of the building, with indicative paybacks.

The certificates have to be issued annually. The public authority (or institution providing public services) must display them in a prominent position.

Further information obtained from the link below.

http://www.communities.gov.uk/publications/planningandbuilding/energyassessoraccreditation

We also noted that one of the external doors was left open because students could not enter the building from outside with it closed. This issue should be addressed with high priority since it allows a lot of warm air to leave the building causing higher heating costs.

Recommended Actions

We have divided actions into 2 sections: a) behaviour change b) maintenance and device installation

Behaviour Change

Actions	*Who?*	*Resources from EaST*
Turn off lights when day light is sufficient.	Teachers, Staff, Student Energy Monitors	
Turn off computers when unoccupied for longer than 30 minutes.	Students, Teachers, Staff	FREE reminder stickers
Turn off computer monitors when unoccupied for less than 30 minutes.	Students, Teachers, Staff	
Familiarise staff with thermostats in classrooms to avoid using heating with open windows.	Teachers, Staff	

Maintenance and energy saving device installation

Actions	*Who?*
Turn off all computers, monitors printers and photocopier at end of the day.	Facility Manager
Contact Will Walker regarding occupancy light sensors.	Facility Manager
Regularly record meter readings.	Facility Manager
High Priority: Look into having the external door fixed which is currently left open during break periods.	Facility Manager
High Priority: Contact Will Walker regarding updating the TREND building management system.	Facility Manager

Water

The only issue we noted was the use of a water cooler in the staff room. It's estimated that each year Britain spends £2 billion on bottled water. In addition to these avoidable costs the environment is deeply affected by the production and transport of these bottles. Included in the process is the energy to source the water, as well as the energy and material to create the bottles, the energy required to transport the bottles, and finally the amount of waste created by the empty bottles.[6] If water quality is an issue and the staff do not wish to drink tap water, we suggest purchasing a water filtration system; in fact most schools use these nowadays. Assuming there is one cooler in the school using 4 bottles of water per month, by installing a filtration system, the school could annually save around £126.[7] Despite the initial cost of the system it should pay for itself protect the environment at the same time. Various systems can be viewed at the link below.

http://www.water-smart.co.uk/user/schools_coolers.htm

We were very impressed that the school collects rainwater for plants in the student garden.

The school also has percussion taps in the bathrooms. This reduces the chance of water taps being left on which reduces the amount of water flow and wastage in the building.

[6] http://www.biggreenswitch.co.uk/waste_reduction/avoid-bottled-water

[7] http://www.water-smart.co.uk/scripts/business_calculator.htm

Maintenance

Actions	*Who?*
Look into replacing the water cooler in the staff room to a filtration system.	Facility Manager

Waste

St. Joseph's Junior has a very strong waste minimisation and recycling programme. Achievements of the school include:

- Reduce
    - Hand dryers (no paper towels)
    - Prints (and photocopy?) double-sided and send emails
    - Purchase recycled paper
    - Compost
- Re-use
    - Use of plastic trays and metal silverware
    - Books are reused
- Recycling
    - Shoes
    - Textiles
    - Paper
    - Card
    - Donated old computers

Conclusion

We believe St. Joseph's Junior is working hard to make a positive impact on the environment. The recycling, composting and gardening programmes are very strong. The school travel plans are very thorough and we were impressed to see that most students walk to school. We were also impressed that the teachers support fair-trade coffee and tea. The most important recommendation is to contact Will Walker in regards to the school's heating system. By improving this system we can help the UK to fulfill its commitment to reduce greenhouse gas emissions by at least 60% by 2050 to avoid runaway climate change.

Attached to the end of this report is an action plan. This is a table of all the recommendations given to the institution. Since we want you to make this action plan your own, we purposely left some blanks in the table for you to fill out.

The action plan allows you to keep track of:

- What needs to be done.
- Who is responsible for the task.
- When the action needs to be completed.
- The status of the activity.
- A general idea of how much each action will cost to implement.

The key below sets out the indicative costs associated with our recommendations:

Scale	**Cost**
FREE	£0
£	Less than £50
££	From £50 to £300
£££	Over £300

Action Plan

		Cost	*Actions*	*Who?*	*Deadline*	*Status*
Energy	Behaviour Change	FREE	Turn off lights when day light is sufficient.	Teachers, Staff		
			Turn off computers when unoccupied for longer than 30 minutes.	Students, Teachers, Staff		
			Turn off computer monitors when unoccupied for less than 30 minutes.	Students, Teachers, Staff		
	Maintenance	FREE	Turn off all computers and monitors at end of the day.	Facility Manager		
		FREE	Contact Will Walker regarding occupancy light sensors	Facility Manager		
		FREE	Regularly record meter readings.	Facility Manager		
		£	High Priority: Look into having the external door fixed that is currently left open during break periods.	Facility Manager		
Water	Maintenance	££	Look into replacing the water cooler in the staff room with a filtration system	Facility Manager		

Appendix O: St. John the Evangelist Church Audit Report

CROYDON COUNCIL ENVIRONMENT AND SUSTAINABILITY TEAM

Environmental Audit Report and Action Plan

St. John the Evangelist

Prepared by:
Jonathan Ahn
Helena Alfonzo
Bradley Scoville

26 April 2008

Date of Audit: 01 April 2008

Introduction

The Environment and Sustainability Team (EaST) at Croydon Council is dedicated to aiding and supporting churches in making improvements in their environmental performance.

This report provides potential solutions to environmental problems in the areas of waste, energy use, purchasing, biodiversity, and water consumption within the church facilities and grounds.

Summary

St. John the Evangelist Church is taking many steps to reduce its environmental impact despite restrictions to change due to historical preservation. The leaders of the church are dedicated to improving their facility and protecting the environment. We were impressed by their excitement and openness to new suggestions.

During the course of our audit we surveyed both the church and the nursery hall as well as took a look at the boilers for the nursery.

Priority Issue:

1. Install Draft Excluders for ill-fitting doors

On the day of our audit we found an ill-fitting door in the nursery hall of the church. The gap between the door frame and the door was quite large. This issue should be addressed with high priority since it allows a lot of warm air to leave the building causing higher heating costs. By installing draft excluders in this gap the amount of fuel required to heat the hall will reduce.

Other findings:

Energy

Lighting

We noted that the church installs energy efficient light bulbs or tubes when existing lighting needs replacement. We also noticed that in some light strips excess bulbs / tubes were removed to reduce the amount of energy used. We were pleased to see that lights are turned off when not needed.

Heating

Due to the inefficiency of the stained-glass windows and the size of the church the cost of heating is extremely high. The heating system is well managed. The system is turned off when not used and kept at a low temperature when heating is required. Additionally, when the sacristy is being used for meetings the church heating is turned off and a small heater in the room is used.

To further reduce heating costs we suggest that you frequently check the gas and electricity meters. This will help to ensure that the energy bill estimates are accurate. This will not only help when comparing the estimates from the bills but it will also give the church an idea of how much energy is being used over a certain period of time. Also, if a meter reading is unusually high, the facilities manager will be alerted to the fact that energy may be being wasted and seek to locate the source of the problem.

We were also impressed by the instant hot water heater in the church. This system, as opposed to a conventional hot water heater, does not need to constantly reheat water in a holding tank. This system is much more energy efficient.

Recommended Actions

We have divided actions into 2 sections: a) behaviour change b) maintenance and device / equipment installation

Maintenance and energy saving device installation

Actions	*Who?*
Regularly record meter readings	Facility Manager
High Priority: Look into having draft excluders installed for door in nursery hall	Facility Manager

Water

We did not notice any problems with water taps in the church. The one bathroom that we inspected had lever taps without any leaking problems. If in the future the taps are found left on frequently then percussion taps can be installed to counteract this problem.

To additionally reduce the amount of water used in the bathrooms we recommend placing hippos in the toilets in order to reduce the amount of water per flush. These hippos can be obtained for free from Thames Water.

Maintenance

Actions	*Who?*
If problems arise with leaky taps or taps that are left on look into percussion taps	Facility Manager
Place hippos in toilets	Facility Manager

Waste

St. John the Evangelist Church is very successful in minimizing the amount of waste generated. It is effectively re-using and recycling. In particular we found that the batteries used for the Reverend's microphone are rechargeable. This reduces the amount of waste caused by constantly buying new batteries. For the church café on Wednesday and other social events cutlery and crockery is reused. Additionally ring binders and stationary are continuously reused.

In terms of recycling St. John collects stamps for charity and collects boots for St. Patrick's Hospital in Zimbabwe. They also purchase recycled products such as toilet paper and printer paper. In the future the church can additionally recycle used light bulbs.

Maintenance

Actions	*Who?*
Recycle used light bulbs	Facility Manager, Church members

Purchasing

St. John's has strongly supported fair-trade products. These items include coffee, tea, and baked goods. We have seen other churches supporting fair-trade but not to the level of commitment of St. John's.

We quickly looked at the cleaning products used in the church and found that some were eco-friendly products however not all were. To additionally help protect the environment we recommend that as far as possible all products used should be eco-friendly. Although these

products are generally higher in price they do not harm the environment. London Remade provides a Sustainable Product Directory which helps organizations find suppliers of recycled products, sustainable products and sustainable services.

http://www.greenprocurementcodedirectory.co.uk/product/product_directory.asp

Actions	*Who?*
Purchase eco-friendly products	Facility Manager, Church members

Conclusion

We believe that St. John the Evangelist Church is making many positive improvements to their environmental performance. Although this document provides some suggestions for improvement we encourage you to contact Diana Battaglia (see below) at the Environment and Sustainability Team for continued support in your efforts. We also suggest that you examine Eco-Congregation, a website that is dedicated to environmental sustainability through Christian faith.

Attached to the end of this report is an action plan. This is a table of all the recommendations given to the institution. Since we want you to make this action plan your own, we purposely left some blanks in the table for you to fill out.

The action plan allows you to keep track of:

- What needs to be done;
- Who is responsible for the task;
- When the action needs to be completed;
- The status of the activity;
- A general idea of how much each action will cost to implement.

The key below sets out the indicative costs associated with our recommendations:

Scale	**Cost**
FREE	£0
£	Less than £50
££	From £50 to £300
£££	Over £300

Additional Resources

Diana Battaglia
Community Initiatives Officer
Environment & Sustainability Team, Croydon Council,
18th Floor North East, Taberner House,
Park Lane, Croydon CR9 3BT
Tel: 020 8760 5640
Fax: 020 8760 5791
Email: diana.battaglia@croydon.gov.uk

FAITHWORKS - has developed a series of practical guides and audits to equip churches and organisations to serve their local communities professionally, in a way that is consistent with their Christian ethos. As part of it's commitment to help local churches and Christian organisations engage with their community, Faithworks has produced a 7-step Community Project Guide and also offers funding advice for projects. The also website hosts a Directory of Christian Community Projects.

Web: http://www.faithworks.info/ E-mail: info@faithworks.info

ALLIANCE OF RELIGIONS AND CONSERVATION (arc) - is a secular body that helps the major religions of the world to develop their own environmental programmes, based on their own core teachings, beliefs and practices. Contains a range of information on energy audits. Web: http://www.arcworld.org/ Tel: 01225 758 004 E-mail: info@arcworld.org

POSSIBLE FUNDING

There are numerous funds available for places of worship all which can be found on the CAfE Funding database.

This is an extensive database of UK funders http://www.est.org.uk/cafe/funding/

O2 COMMUNITY FUND – This fund can award up to £1,000 to make a positive impact to your local community. The fund is open to a wide range of groups including village halls, parish councils, and other community projects such as youth / environmental and heritage groups. It can fund anything from renovating a building for community use to updating a heating system or even to install renewable energy.

Web: http://www.o2.com/cr/community_fund.asp Tel: 020 7591 3111 E-mail: LibbySymon@ConservationFoundation.co.uk

Eco-Congregation

Eco-Congregation is an ecumenical programme helping churches make the link between environmental issues and Christian faith, and respond with practical action in the church, in the lives of individuals, and in the local and global community.

http://www.ecocongregation.org.uk/

Action Plan

	Cost	*Actions*	*Who?*	*Deadline*	*Status*
Energy	Free	Regularly record meter readings.	Facility Manager		
	££	High Priority: Look into having draft excluders installed for door in nursery hall.	Facility Manager		
Water	££	If problems arise with leaky taps or taps that are left on look into percussion taps.	Facility Manager		
	Free	Place hippos in toilet	Facility Manager		
Waste	£	Recycle used light bulbs.	Facility Manager, Church members		
Purchasing	££	Purchase eco-friendly products.	Facility Manager, Church members		

Appendix P: St. Mildred's Church Audit Report

CROYDON COUNCIL ENVIRONMENT AND SUSTAINABILITY TEAM

Environmental Audit Report and Action Plan

St. Mildred's Church Addiscombe

Prepared by:
Jonathan Ahn
Helena Alfonzo
Bradley Scoville

26 April 2008

Date of Audit: 02 April 2008

Introduction

The Environment and Sustainability Team (EaST) at Croydon Council is dedicated to aiding and supporting churches in making improvements in their environmental performance.

This report provides potential solutions to environmental problems in the areas of waste, energy use, purchasing, biodiversity, and water consumption within the churches facilities and grounds.

Summary

St. Mildred's Church is taking many steps to reduce its environmental impact. The leaders of the church are dedicated to improving their facility and protecting the environment. This became evident when we visited the adjacent centre and observed that it was designed to take advantage of day light and how well the facilities were being managed.

During our audit we surveyed the church and the community centre.

Findings:

Energy

Lighting

We are very pleased that both St. Mildred's Church and the community centre adjacent to the church were very efficient in capturing and taking advantage of day light. This allowed for most of the lights around the facilities to be completely turned off. We were also pleased to hear that in the church, the old light bulbs or tubes were recently replaced with energy efficient bulbs /tubes. Keep up the good work!

If lights left on when not needed begin to become a problem, we would suggest putting up reminder "switch off" signs to encourage people to turn off the lights.

Computers

Since the facilities only have two computers the energy efficiency of the computers is not really an area of concern. However, we recommend that the computers are turned off at the end of the day and programmed to go on stand by after a long period of not being used (e.g. for 15 minutes or more).

Heating

Due to the age of the building (less than 2 years old), the heating installations are in perfect condition. The buildings have efficient boilers that control the temperature of the building. There are a few places in the community centre where radiators are used to heat the rooms, but for the most part the rooms are heated by an under floor heating system. The heating system keeps the buildings at a constant comfortable temperature. Due to the comfortable temperature there is no need to open windows making the building even more energy efficient. It appeared some of the doors leading outside did not have weather strips installed, which would reduce the

loss of heat and incoming cold drafts. The doubled-glazed windows installed also help regulate the temperature of the building.

To ensure that the energy bill estimates are accurate, it is recommended to frequently check the gas and electricity meters. This will not only help when comparing the estimates from the bills but it will also give the church an idea of how much energy it is using over a certain period of time.

RECOMMENDED ACTIONS

We have divided actions into 2 sections: a) behaviour change b) maintenance and device / equipment installation

Behaviour Change

Actions	*Who?*
Turn off lights when day light is sufficient.	Facility Manager, Church Member
Label light switches and post "switch-off" reminder signs.	Youth group
Remember to switch off computers or set them to stand by.	Computer users
Regularly check gas and electric meters.	Facility Manager

Maintenance and energy saving installations

Actions	*Who?*
Install weather strips on entrance/exit doors	Facility Manager

Water

During the audit we noticed that all of the centre's taps were lever taps. Depending on the frequency of usage of the facilities, this kind of tap might be inefficient. If the facility manager notices that too much water is being used, then the possibility of replacing the lever taps with percussion taps should be considered. The posting of signs to remind people to turn off taps all the way is also an effective way of addressing this potential problem.

Another quick and easy way of saving water is to install hippos in the toilet tanks. These devices are designed to take up space that water would usually occupy. As a result the toilet is flushed with less water.

We were concerned to hear that the urinals are flushed on a timer. If possible, they should be switched to an occupancy sensor, so they only flush when they are used.

Behaviour Change

Actions	*Who?*
Post reminder signs to turn off taps fully	Youth group

Maintenance and water saving installations

Actions	*Who?*
Consider Installing percussion taps	Facility Manager
Install “hippos” in toilets.	Facility Manager
Install occupancy sensors in urinals rather than timers.	Finance Officer, Facility Manager

Waste

We were very pleased to hear about the various ways St. Mildred’s Church is managing the amount of waste produced and the different recycling programmes that it is implementing.

St. Mildred’s Church has the facilities to recycle paper and card and although it cannot recycle cans and glass, the parishioners are very involved in taking these bottles and cans home in order to recycle them.

The church also has a contract with a waste management company to compost their green waste. The church is not only keen in tending its gardens but also recycles the waste that they produce.

To minimize the amount of waste produced by the facilities, the catered events use the church’s cutlery and crockery, which is washed and reused. The hand dryers in the bathroom also help cut down the amount of waste produced, this is especially important because paper towels cannot be recycled due to sanitary concerns. To further aid the environment and cut down on paper usage, the Church prints double-sided as often as possible and sends emails whenever it is appropriate.

Purchasing

Although we were pleased to learn that St. Mildred’s Church purchases fair-trade products, we feel like the Church could get more involved in helping the environment through it’s purchasing arrangements.

The facilities could purchase eco-friendly cleaning and gardening products with the aim of reducing the environmental impact caused by harsh chemicals.

We also strongly encourage the purchasing of recycled products like toilet paper, printer paper, notebooks, envelopes and other stationary. A good reason for buying recycled products is that recycled paper produces 73% less air pollution than if it was made from raw materials[8].

Behaviour Change

Actions	*Who?*
Buy recycled products like toilet paper, printer paper, notebooks, envelopes and paper.	Financial Officer
Buy eco-friendly cleaning and gardening products	Financial Officer

Conclusion

The overall environmental image of this institution is clearly well established. The proposed solutions are generated with the intention of helping to maintain St. Mildred's Church's high environmental performance. The results from the audit are to provide awareness in the areas where the church and the centre can continue to improve. The recommendations serve as a reference with various solutions, each solution taking into consideration the constraints and situation of the institution. Keep up the good work!

Attached to the end of this report is an action plan. This is a table of all the recommendations given to the institution. Since we want you to make this action plan your own, we purposely left some blanks in the table for you to fill out.

The action plan allows you to keep track of:

- What needs to be done;
- Who is responsible for the task;
- When the action needs to be completed;
- The status of the activity;

The key below sets out the indicative costs associated with our recommendations:

Scale	**Cost**
FREE	£0
£	Less than £50
££	From £50 to £300
£££	Over £300

[8] http://www.recycling-guide.org.uk/facts.html

Additional Resources

Diana Battaglia
Community Initiatives Officer
Environment & Sustainability Team, Croydon Council,
18th Floor North East, Taberner House,
Park Lane, Croydon CR9 3BT
Tel: 020 8760 5640
Fax: 020 8760 5791
Email: diana.battaglia@croydon.gov.uk

FAITHWORKS - has developed a series of practical guides and audits to equip churches and organisations to serve their local communities professionally, in a way that is consistent with their Christian ethos. As part of it's commitment to help local churches and Christian organisations engage with their community, Faithworks has produced a 7-step Community Project Guide and also offers funding advice for projects. The also website hosts a Directory of Christian Community Projects.

Web: http://www.faithworks.info/ E-mail: info@faithworks.info

ALLIANCE OF RELIGIONS AND CONSERVATION (arc) - is a secular body that helps the major religions of the world to develop their own environmental programmes, based on their own core teachings, beliefs and practices. Contains a range of information on energy audits. Web: http://www.arcworld.org/ Tel: 01225 758 004 E-mail: info@arcworld.org

POSSIBLE FUNDING

There are numerous funds available for places of worship all which can be found on the CAfE Funding database.

This is an extensive database of UK funders http://www.est.org.uk/cafe/funding/

O2 COMMUNITY FUND – This fund can award up to £1,000 to make a positive impact to your local community. The fund is open to a wide range of groups including village halls, parish councils, and other community projects such as youth / environmental and heritage groups. It can fund anything from renovating a building for community use to updating a heating system or even to install renewable energy.

Web: http://www.o2.com/cr/community_fund.asp Tel: 020 7591 3111 E-mail: LibbySymon@ConservationFoundation.co.uk

Eco-Congregation

Eco-Congregation is an ecumenical programme helping churches make the link between environmental issues and Christian faith, and respond with practical action in the church, in the lives of individuals, and in the local and global community.

http://www.ecocongregation.org.uk/

Action Plan

			Actions	*Who?*	*Deadline*	*Status*
Energy	Behaviour Change		Turn off lights when day light is sufficient.			
			Label light switches and post "switch-off" reminder signs.			
			Remember to switch off computers or set them to stand by.			
			Regularly check gas and electric meters.			
	Maintenance		Install weather strips on entrance/exit doors.	Facility Manager		
Water	Behaviour		Post reminder signs to turn off water.			
	Maintenance		Consider installing percussion taps.	Facility Manager		
			Install "hippos" in toilets to conserve water.	Facility Manager		
			Install occupancy sensors in urinals rather than timers.	Facility Manager		
Purchasin	Behaviour		Buy recycled products like toilet paper, printer paper, notebooks, envelopes and paper.	Financial Officer		
			Buy eco-friendly cleaning and gardening products	Financial Officer		

Appendix Q: Parish Church Audit Report

CROYDON COUNCIL ENVIRONMENT AND SUSTAINABILITY TEAM

Environmental Audit Report

Croydon Parish Church

Prepared by:
Jonathan Ahn
Helena Alfonzo
Bradley Scoville

26 April 2008

Date of Audit: 08 April 2008

Introduction
The Environment and Sustainability Team (EaST) at Croydon Council is dedicated to aiding and supporting churches in making improvements in their environmental performance.
This report provides potential solutions to environmental problems in the areas of waste, energy use, purchasing, biodiversity, and water consumption within the church facilities and grounds.

Summary
Parish Church is taking steps to reduce it's environmental impact despite restrictions to change due to historical preservation. The leaders of the church are dedicated to improving their facility and protecting the environment.
At the time of the audit we surveyed the church as well as parts of the parish hall, however we did not survey the nursery.

Priority Issue:
1. Funding programmes for energy-efficient products
On the day of our audit we were notified that the church will be replacing the boiler system. When purchasing the new boiler we recommend opting for the most energy efficient option that fits your budget. Based on our discussion about the boiler, we were told there is no government funding for non-government buildings. Unfortunately there are currently no funding programmes supporting churches to replace boilers.

A new National Lottery programme will provide funds for a number of energy-efficiency measures and renewable energy systems which could be considered in the future.
The Community Sustainable Energy Programme provides capital grants up to £50,000 or 50% of the project cost (whichever is lower). The grants programme is designed to help community groups (including parish councils, church-based and other faith organisations) purchase and install energy efficiency measures such as building insulation and controls for smarter heating and lighting as well as renewable energy technologies such as: *solar photovoltaic, solar thermal hot water, wind turbines, heat pumps, automated wood pellet stoves, wood fuelled boiler systems, and micro-hydro turbines.*
http://www.communitysustainable.org.uk/index.jsp

Other findings:

Energy

Lighting

We noted that the church installs energy efficient light bulbs existing lighting needs replacement. We also noticed in the parish community hall that excess bulbs / tubes within the light strips remained off to reduce the amount of energy used throughout opening hours. We were pleased to note that lighting was kept to a minimum whilst still providing the church with an inviting atmosphere.

Heating

Due to the inefficiency of the stained-glass windows and the size of the church the cost of heating is extremely high. We are pleased the heating system functions on a timer, only being on when the church, nursery and parish hall are open.

To maintain the church's effective management of its heating costs please continue the practice of frequently checking the gas and electricity meters. The church's practice ensures that the energy bill estimates are accurate and give the church an idea of how much energy it is using over a certain period of time. Also from this practice, the facilities manager can be alerted if a meter reading is unusually high and seek to locate the source of the problem.

Waste

Due to the limited recycling services in the area only paper and cardboard is collected. We are pleased Croydon Parish Church participates well in the current recycling service. If a significant volume of glass begins to appear in the church / church hall, a glass recycling service is offered via the council's trade waste team. A number of companies will pay for aluminum cans – this would involve a volunteer or group of volunteers periodically taking cans to a local *'cash for cans'* centre. For more information on glass / alu cans recycling schemes refer to pages 7-8 in the accompanying Green Resources Guide.

Along with recycling general papers, we were pleased to see misprint and scrap paper is being utilized then recycled. Also we noticed no disposable products such as coffee cups or plates and the cutlery and crockery were hand-washed.

We recommend considering the use of rechargeable batteries. Many other churches have invested in rechargeable batteries mainly in wireless microphones.

Purchasing

Parish Church is a dedicated fair-trade customer. Purchased items include coffee, tea and baked goods. We have seen other churches supporting fair-trade but not to the level of commitment that Parish Church has stated.

We were pleased to hear Parish Church is supplied by a single source for church products. This in turn reduces the carbon emissions produced from vehicles transporting deliveries. It was noted that Parish Church only uses eco-friendly cleaning products. Although the financial expenses are higher this reduces the detrimental effects on the environment.

Conclusion

We believe Croydon Parish Church is making many positive improvements to its environmental performance. Although this document provides some suggestions for

improvement we encourage you to contact Diana Battaglia (see below) at the Environment and Sustainability Team for continued support in your efforts. We also suggest that you examine Eco-Congregation (see below), a website that is dedicated to environmental sustainability through Christian faith.
Attached with this report is a Green Resource Guide containing information on community networks and resources to help you continue developing your environmental practices.

Additional Resources

Diana Battaglia
Community Initiatives Officer
Environment & Sustainability Team, Croydon Council,
18th Floor North East, Taberner House,
Park Lane, Croydon CR9 3BT
Tel: 020 8760 5640
Fax: 020 8760 5791
Email: diana.battaglia@croydon.gov.uk

FAITHWORKS - has developed a series of practical guides and audits to equip churches and organisations to serve their local communities professionally, in a way that is consistent with their Christian ethos. As part of it's commitment to help local churches and Christian organisations engage with their community, Faithworks has produced a 7-step Community Project Guide and also offers funding advice for projects. The also website hosts a Directory of Christian Community Projects.
Web: http://www.faithworks.info/ E-mail: info@faithworks.info

ALLIANCE OF RELIGIONS AND CONSERVATION (arc) - is a secular body that helps the major religions of the world to develop their own environmental programmes, based on their own core teachings, beliefs and practices. Contains a range of information on energy audits. Web: http://www.arcworld.org/ Tel: 01225 758 004 E-mail: info@arcworld.org

POSSIBLE FUNDING

There are numerous funds available for places of worship all which can be found on the CAfE Funding database.
This is an extensive database of UK funders http://www.est.org.uk/cafe/funding/

O2 COMMUNITY FUND – This fund can award up to £1,000 to make a positive impact to your local community. The fund is open to a wide range of groups including village halls, parish councils, and other community projects such as youth / environmental and heritage groups. It can fund anything from renovating a building for community use to updating a heating system or even to install renewable energy.
Web: http://www.o2.com/cr/community_fund.asp Tel: 020 7591 3111 E-mail: LibbySymon@ConservationFoundation.co.uk

Eco-Congregation

Eco-Congregation is an ecumenical programme helping churches make the link between environmental issues and Christian faith, and respond with practical action in the church, in the lives of individuals, and in the local and global community.
http://www.ecocongregation.org.uk/

Appendix R: St. Mary the Blessed Virgin Church Audit Report

CROYDON COUNCIL ENVIRONMENT AND SUSTAINABILITY TEAM

Environmental Audit Report and Action Plan

St. Mary the Blessed Virgin Addington

Prepared by:
Jonathan Ahn
Helena Alfonzo
Bradley Scoville

26 April 2008

Date of Audit: 10 April 2008

Introduction

The Environment and Sustainability Team (EaST) at Croydon Council is dedicated to aiding and supporting churches in making improvements in their environmental performance.

This report provides potential solutions to environmental problems in the areas of waste, energy use, purchasing, biodiversity, and water consumption within the church facilities and grounds.

Summary

St. Mary the Blessed Virgin, Addington is taking many steps to reduce its environmental impact despite restrictions to change due to historical preservation. The leaders of the church are dedicated to improving their facility and protecting the environment. We were impressed by their excitement and openness to new suggestions.

During our audit we surveyed the church and the community centre.

Other findings:

Energy

Lighting

We are very pleased that the church installs energy efficient light bulbs when lighting needs replacement. We noted that lights are turned off when not needed.

Heating

Due to the inefficiency of the stained-glass windows and the size of the church the cost of heating is extremely high. We are pleased to note that the heating system is well managed. The system is turned off when not used and kept at a low temperature when heating is required. Additionally, instead of holding a meeting consisting of a few people in the church, meetings have been held in the church hall. This reduces the amount of energy needed to heat the occupied room.

We were pleased to learn that the church is regularly taking meter readings and keeping track of how much energy is being used.

Water

There are reminder signs to turn off the water in the bathroom. This is important because lever taps can be left on, or not turned off all the way. Percussion (push) taps can be installed to minimize these types of problems however we learned that lever taps appear best suited to the church hall. One area that can be improved is the timed urinals. These frequently flush at all times of the day and night even when the bathrooms are not in use. This uses an excess of water that can be reduced with the installation of an occupancy sensor for the urinal.

To additionally reduce the amount of water used in the bathrooms we recommend placing hippos in the toilets in order to reduce the amount of water per flush. These hippos can be obtained for free from Thames Water.

Maintenance

Actions	*Who?*
If problems arise with leaky taps or taps that are left on look into percussion taps.	Facility Manager
Install occupancy sensor in bathroom urinals.	Facility Manager

Waste

St. Mary's is very successful in minimizing the amount of waste generated. It is effectively re-using and recycling. In particular we found that fruit cups are used as candle wax collectors. In the church hall cutlery and crockery is washed and reused. Additionally in the church office ring binders and stationary are continuously reused.

In terms of recycling St. Mary's collects stamps for charity as well as spectacles for Africa. It also collects printer cartridges and recycle candles, paper and glass. In the future the church can additionally compost uncooked foods in the grounds behind the church hall. After reviewing the recycling policy on light bulbs, we found out that only fluorescent light bulbs can be recycled, since the church doesn't have fluorescent lamps this means that the church's light bulbs cannot be recycled. This is unfortunate because we were very pleased to see the church's eagerness to participate in a programme like this.

Maintenance

Actions	*Who?*
Compost uncooked foods to minimize general waste.	Facility Manager, Church members, youth

Purchasing

St. Mary's has strongly supported fair-trade products. These items include coffee, tea and baked goods.

To additionally help protect the environment eco-friendly products can be purchased. Although these products are generally higher in price, they do not harm the environment. London Remade provides a Sustainable Product Directory which helps organizations find suppliers of recycled products, sustainable products and sustainable services.

http://www.greenprocurementcodedirectory.co.uk/product/product_directory.asp

Actions	*Who?*
Purchase eco-friendly products.	Facility Manager, Church members

Conclusion

We believe that St. Mary the Blessed Virgin, Addington is making many positive improvements to their environmental performance. Although this document provides some suggestions for improvement we encourage you to contact Diana Battaglia (see below) at the Environment and Sustainability Team for continued support in your efforts. We also suggest that you examine Eco-Congregation, a website that is dedicated environmental sustainability through Christian faith. See the Additional Resources Section for contact details.

Attached to the end of this report is an action plan. This is a table of all the recommendations given to the institution. Since we want you to make this action plan your own, we purposely left some blanks in the table for you to fill out.

The action plan allows you to keep track of:

- What needs to be done;
- Who is responsible for the task;
- When the action needs to be completed;
- The status of the activity;
- A general idea of how much each action will cost to implement.

The key below sets out the indicative costs associated with our recommendations:

Scale	**Cost**
FREE	£0
£	Less than £50
££	From £50 to £300
£££	Over £300

Additional Resources

Diana Battaglia
Community Initiatives Officer
Environment & Sustainability Team, Croydon Council,
18th Floor North East, Taberner House,
Park Lane, Croydon CR9 3BT
Tel: 020 8760 5640
Fax: 020 8760 5791
Email: diana.battaglia@croydon.gov.uk

FAITHWORKS - has developed a series of practical guides and audits to equip churches and organisations to serve their local communities professionally, in a way that is consistent with their Christian ethos. As part of it's commitment to help local churches and Christian organisations engage with their community, Faithworks has produced a 7-step Community Project Guide and also offers funding advice for projects. The also website hosts a Directory of Christian Community Projects.

Web: http://www.faithworks.info/ E-mail: info@faithworks.info

ALLIANCE OF RELIGIONS AND CONSERVATION (arc) - is a secular body that helps the major religions of the world to develop their own environmental programmes, based on their own core teachings, beliefs and practices. Contains a range of information on energy audits. Web: http://www.arcworld.org/ Tel: 01225 758 004 E-mail: info@arcworld.org

POSSIBLE FUNDING

There are numerous funds available for places of worship all which can be found on the CAfE Funding database.

This is an extensive database of UK funders http://www.est.org.uk/cafe/funding/

O2 COMMUNITY FUND – This fund can award up to £1,000 to make a positive impact to your local community. The fund is open to a wide range of groups including village halls, parish councils, and other community projects such as youth / environmental and heritage groups. It can fund anything from renovating a building for community use to updating a heating system or even to install renewable energy.

Web: http://www.o2.com/cr/community_fund.asp Tel: 020 7591 3111 E-mail: LibbySymon@ConservationFoundation.co.uk

Eco-Congregation

Eco-Congregation is an ecumenical programme helping churches make the link between environmental issues and Christian faith, and respond with practical action in the church, in the lives of individuals, and in the local and global community.

http://www.ecocongregation.org.uk/

Action Plan

	Cost	*Actions*	*Who?*	*Deadline*	*Status*
Water	£	If problems arise with leaky taps or taps that are left on look into percussion taps.	Facility Manager		
	££	Install occupancy sensor on bathroom urinals.	Facility Manager		
	FREE	Obtain hippos from Thames Water and place them in toilets			
Waste	£	Compost uncooked foods to minimize general waste.	Facility Manager, Church members		
Purchasing	££	Purchase eco-friendly products.	Facility Manager, Church members		

Appendix S: Phone Interview Template

Hello could I speak to _____. My name is _____ I am calling on behalf of Croydon Council's Environment and Sustainability Team.

We are carrying out a brief survey on those that have participated in our home insulation offer with British Gas. We are students researching the savings and benefits of the offer. We wondered if you have a few minutes now to answer a couple of questions?

No. Thank you for your time. Have a nice day.

Yes. Great.

We are eager to improve home energy-efficiency for people in Croydon – to help them save money by reducing their fuel bills and also to reduce global warming and climate change. As you probably know a major way of improving home energy-efficiency is through improving home insulation.

I gather you had _____(loft and/or cavity wall) insulation installed about a year ago.

1. We wondered if you could tell us whether you have noticed that your home is warmer and whether your fuel bills have reduced? Meter readings?

Response

That's really interesting OR that's good to hear that you've noticed an improvement…etc.

If given more time would you be willing to fill out a mail questionnaire for us?

Great.

Just to check.. your address is…..

Thank you very much, have a nice day

Appendix T: British Gas Mail Questionnaire

Mr. W Smith
135 Long and Winding Rd.
South Croydon
Surrey

26 March 2008

Dear Mr. W Smith,

Thank you for agreeing during our phone call to participate in our questionnaire. We are eager to improve home energy-efficiency for people in Croydon – to help them save money by reducing their fuel bills and also to reduce global warming and climate change.

As you probably know a major way of improving home energy-efficiency is through improving home insulation and analyzing Croydon residents' fuel bill savings and satisfaction levels. This questionnaire will not only help us in promoting the offer but it could also help you calculate your personal savings.

Since having home insulation installed:

1. Have you noticed that your home is warmer?

2. Are you pleased with your purchase? (Please rate on scale below)

1= Completely dissatisfied 2= Disappointed 3= Neutral 4 = Pleased 5 = Very pleased

3. Do you know if your fuel bills have reduced?

(Continued overleaf)

4. We are keen to work out precise savings from installing home insulation. Do you keep your past fuel bills? Ideally it would be great to compare bills from the same month of different years, but any past fuel bill information you can provide will be useful.

Before Insulation	**After Insulation**
Month/Year: _____ Gas used (kWh) = _____ Charge = £ _____	Month/Year: _____ Gas used (kWh) = _____ Charge = £ _____
Month/Year: _____ Gas used (kWh) = _____ Charge = £ _____	Month/Year: _____ Gas used (kWh) = _____ Charge = £ _____
Month/Year: _____ Gas used (kWh) = _____ Charge = £ _____	Month/Year: _____ Gas used (kWh) = _____ Charge = £ _____

5. If you are pleased with the insulation you have had installed with British Gas, would you be happy for us to quote you in our publicity materials – leaflets, posters and website?

Name (Printed) _____ Signature _____

Date _____

Please place the questionnaire in the enclosed stamped addressed envelope to Croydon Council and reply by the 8th of April, 2008.

Thanks for taking the time and effort to complete our questionnaire.