ASHTON
SIXTH FORM COLLEGE

Sustainability Report
2012-2015

Ashton Sixth Form College

Sustainability Report

2012-15

By

Sustainability Group

CONTENTS

SUSTAINABILITY POLICY

Policy Statement:

The college recognises that it has a responsibility to staff, students, governors and the community to become more sustainable and environmentally friendly.

Policy Objectives:

- The college will seek to become more sustainable and ingrain energy efficiency as a culture amongst all staff and students, and to be a factor in all future building projects.
- The College will be ambitious and inventive in developing energy efficient methods across the campus.
- The college will seek accreditation for its initiatives in raising the profile of sustainability issues and for responding to these issues in a positive and practical way.
- By the implementation of the travel policy the College will seek to improve the general health of students and staff, reduce congestion and pollution, and improve the general safety of students travelling to College
- The College overarching target is to reduce energy consumption and CO2 emissions by 25% by 2015 using 2005/06 as the base year.

Summary of Policy Actions:

- Create a culture of sustainability and energy saving amongst all staff and students.
- Make departments and staff accountable for sustainability.
- Reduce the number of car journeys made to college. Aim to encourage short journeys to be made on bike or on foot and long journeys on public transport.
- Ensure heating and electronics only operate at appropriate times so as not to use any more electricity than is necessary.
- Stop electronics such as monitors and printers from being left on overnight and when not in use.
- Sustainability Team to meet every term to discuss policy action and other eco-projects.
- Student council to create a base load reduction campaign, targeting lights, computers and heating.
- Re-commission heating and extraction controls to reflect weather and usage.
- Feasibility study into alternative heat sources and other energy saving devices.
- Improve roof insulation in the Main Building.
- Fit double glazed windows across the college.
- Provide improved facilities for cycle users, including bicycle locks.
- Making use of all resources and reducing waste where possible through recycling.
- Implement all actions in the college Travel Plan.
- Implement the Driving at Work policy.
- Encourage sustainable purchasing by using local suppliers where possible.
- Monitor the performance of the wind turbine, solar panels and rain water harvesting annually and report to SLT and Corporation.
- Create a college carbon footprint.
- Sustainability must be at the forefront in the planning and construction of new buildings and rooms.

Policy Monitoring:

Action –

- Annual review of the policy statement.
- Annual travel survey of A1 students.
- Audit of energy usage every year to monitor progress.

Documentation –

- McKinnon & Clarke Energy Survey
- Travel Plan
- Driving at Work Policy
- Value for Money Policy

Monitoring –

- The policy will be monitored and implemented by the Director of Finance and Resources and the Sustainability Group.

THE SUSTAINABILITY GROUP MEMBERSHIP

The Sustainability Group meet once every term and the group consists of the following members:

- Peter Down — Director of Finance and Resources
- Alex Grantham — MIS Officer
- Paul Martin — MIS Assistant
- Jean Hurlston — Chaplain
- David Bridge — ICT/Network Manager
- Val Nuttall — Librarian
- Julie Reid — Teacher
- Student Council representative

The Student Council now attend all meetings and the current membership is detailed in appendix A. Previously, the Student Council input has been to disseminate information to the student body, but moving forward a contribution to the campaign to raise the profile of sustainability issues is seen as a key target for the year.

Currently, the College's Chaplain organises an enrichment day activity each year where a group of students go to local areas and litter pick. The 2011 event was enjoyed by the students and staff that took part and gained positive feedback from neighbours and passers-by. This year (2013) the Sustainability Group plans to take part in the Climate Week challenge (4^{th} – 10^{th} March 2013), which will possibly include the planting of trees down Arundel Street with support from neighbours and the Council.

The minutes of every meeting are available on the Staff Intranet under 'Sustainability' and the page is updated and maintained regularly.

ENERGY CONSUMPTION

Electricity

The electricity contract was placed with M&C Energy Group in what they call a "Power Basket", the start date of the contract being 1st November 2011. Appendix B shows the analysis of the performance against target. The savings achieved are against the wholesale market price of £60 MWH when the College entered the basket agreement. If the College had entered a fixed price contract then the supplies would have been priced at £60 MWH for the length of the fixed price contract. The College has benefited from purchasing energy when the market best suits. The savings for year 1 were £11,489.45.

Table 1 Electricity costs and consumption

ELECTRICITY	2005-2006	2006-2007	2007-2008	2008-9	2009-10	2010-11	2011-12
£'s	£58,199	£94,264	£97,529	£113,862	£116,934	£107,197	£111,914
kWh	1,030,684	1,173,138	1,146,052	1,266,247	1,269,931	1,184,426	1,147,441

The electricity costs for the College for 2011/12 (see table 1) was £111,914, a £4,717 increase in costs from the previous year (a 4.4% increase). The College used 1,147,441 kWh of electricity, which is a reduction of 36,985 kWh following an 85,505 kWh reduction in the previous year. Since 2005-2006 the College has seen its electricity bills rise by 92.30% and its energy consumption rise by 11.33%. Although, electricity costs have increased this year (4%) it is pleasing to note that electricity consumption has decreased by 3%.

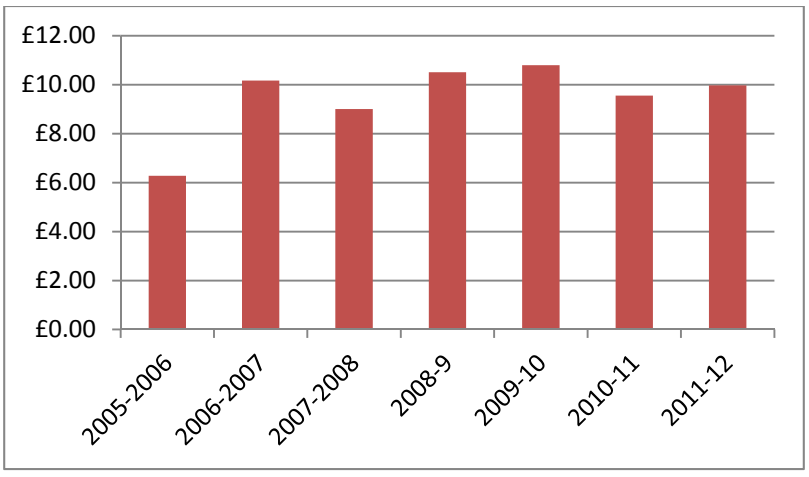


Figure 1 - Electricity cost (m2)

Figure 1 shows the energy costs per m2 and there are no clear trends emerging. Over the period the College signed up to fixed price deals and the timing of these deals has probably been reflected in the indistinct picture emerging from figure 1. Under the new arrangements for electricity (M&C basket) the costs per m2 have increased this year and this is reflection of the current market for energy generally; a 4% increase is a reasonable outturn given the volatility of the wholesale market for energy.

In terms of electricity consumption per m2 (figure 2), the trends are more favourable and show a consistent downward trend. Various initiatives put in place in recent years, including:

- Automatic shut off of computers
- Energy efficient lighting throughout the site
- Movement sensors in all classrooms and corridors
- Thermostatic controls and timers on all electrical heating equipment

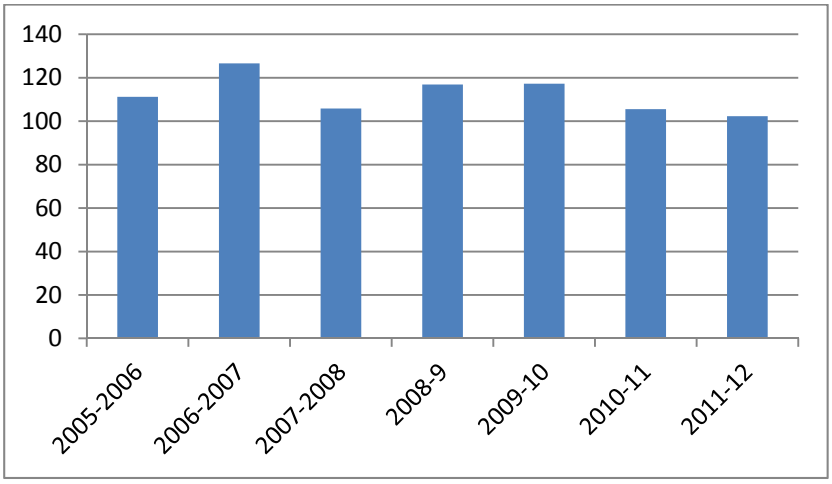


Figure 2 - Electricity consumption (m2)

Gas

This year the results for gas, cost and consumption, are less favourable with both showing an increase on the 2010-11 outturn, see table 2.

Table 2 - gas costs and consumption

	2005-2006	2006-2007	2007-2008	2008-9	2009-10	2010-11	2011-12
£'s	£33,068	£36,953	£27,603	£48,527	£38,252	£34,309	£35,868
kWh	1619006	1487600	1550067	1534110	1392645	1365800	1429017

There is a similar trend in terms of cost and consumption per m2, so the increases cannot be accounted for by increases in the size of the College site.

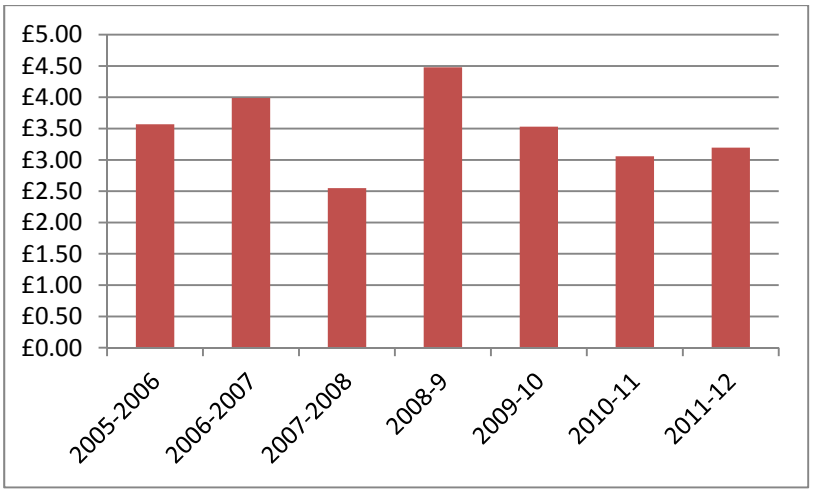


Figure 3 - Gas costs (m2)

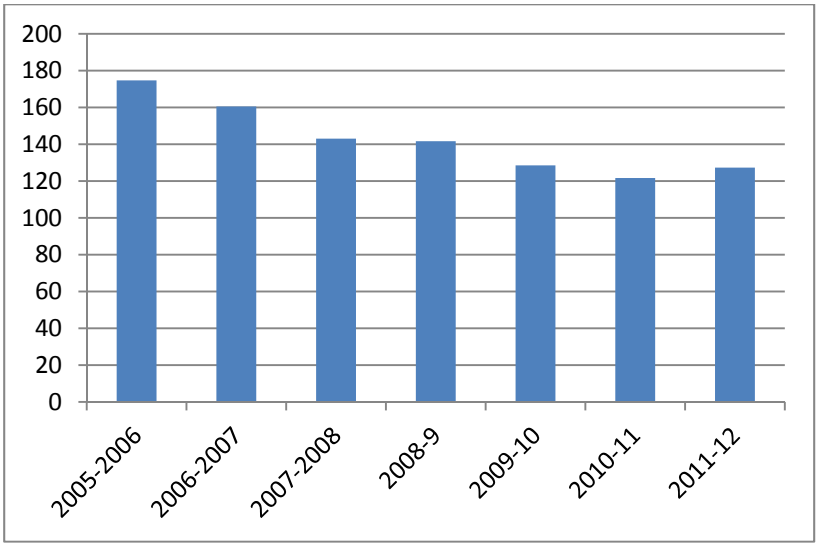


Figure 4 - Gas consumption (m2)

The figures 3 and 4 both show that the College has been extremely successful in reducing gas costs and consumption since 2008-9. The College has continued to invest in up grading the

College's heating system, including the installation of radiator thermostats throughout the site, so to see this trend being reversed in 2011-12 was a surprise. The College has carried out an analysis of weather trends over the years and the 2011 winter was not especially cold, see appendix C. The increase in consumption cannot, therefore, be accounted for by changes in weather patterns. The College has found it difficult to identify one specific cause for the increase in costs and consumption of gas in 2011-12; there are likely to be a number of contributing factors. In the year there was a breakdown of two boilers resulting in them being set, in error, to constant rather than auto. Also the construction of the student centre and main building ground floor refurbishment could have contributed to increased heating costs.

This year timer and control settings on the boilers and on air conditioning units have been adjusted so the various systems are not competing against each other to heat and cool rooms simultaneously, see appendix D for building timer settings. The Estates staff have also been assigned the task to turn off all systems (heating and cooling) in all buildings not occupied over the holiday periods. The College still needs staff to be responsible for the heating and cooling of their own rooms. Too often staff members turn the air conditioning up if a room gets too warm, as opposed to opening a window, or manually turning down the radiator.

Overall Energy Consumption

Table 3 highlights there has be a rise in the cost and consumption of energy in 2011-12 driven by the increases in gas.

Table 3 Overall energy consumption

	2005-2006	2006-2007	2007-2008	2008-9	2009-10	2010-11	2011-12
Total £'s	£91,267	£131,217	£125,132	£162,389	£155,186	£141,506	£147,782
Total kWH	2649690	2660738	2696119	2800357	2662576	2550226	2576458

Table 3 shows that energy costs have increased by 62%, whilst energy consumption has fallen by 2.8%, despite a 21.08% increase in the size of the site. In terms of energy consumption per M^2, this has decreased by 19.70% (20.51% in 2010-11). The College's target is to reduce energy consumption by 25% by 2015.

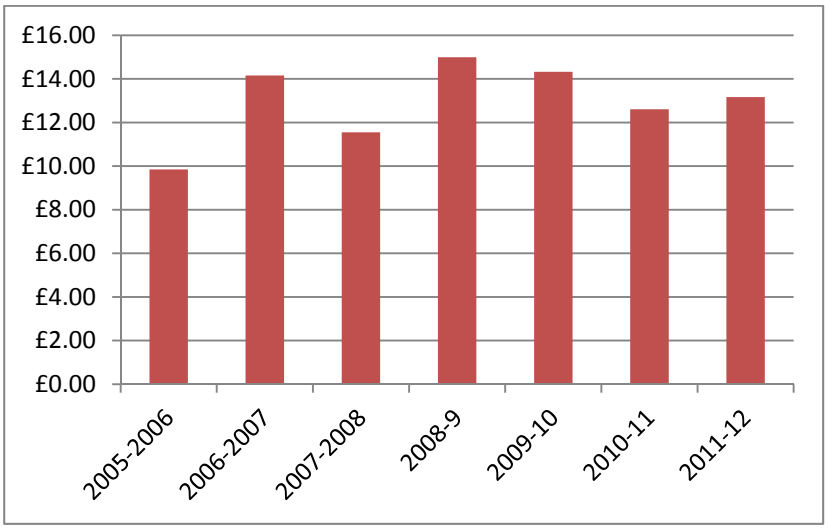


Figure 5 - Overall energy cost (m2)

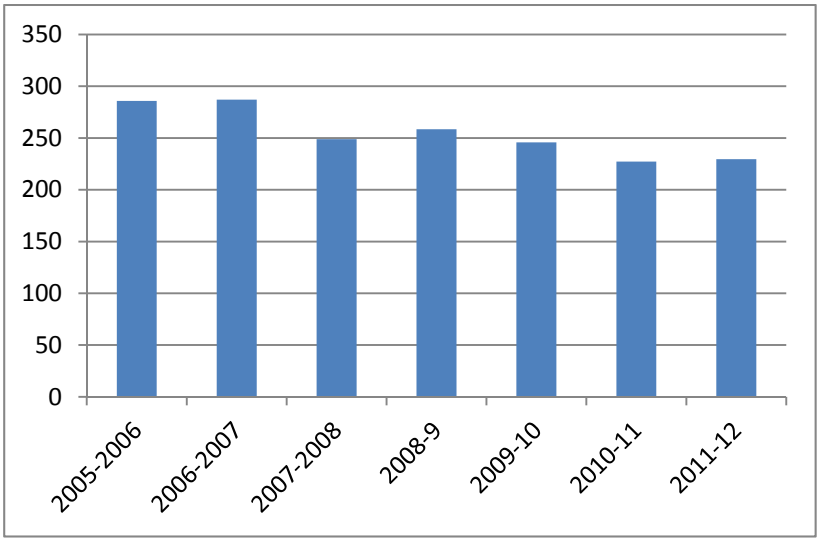


Figure 6 - Overall energy consumption (m2)

Figures 5 and 6 both depict the change for 2011-12 clearly. After a decline in consumption and cost in the two years from 2008-9, 2011-12 shows the first increase, which is very disappointing. The actions identified in the gas section above and other initiatives, such as, the installation of solar panels may help to reverse this trend. A important initiative going forward will be to get staff and students to use heating and cooling systems more responsibly.

WIND TURBINE

The College wind turbine has been underperforming since its installation in 2008. According to the Windrotor Payback Calculator we were expecting to produce £2,988 a year, however, it has only produced £400 worth of electricity. We have gone to great lengths to identify the source of the problem. McKinnon and Clarke (M&C) have produced a performance study, and we have also had a meeting with the Italian manufacturers of the turbine, both believe the reason the turbine has not produced the anticipated amount is because of the very low average wind speed.

The payback prediction was calculated based on an average wind speed at the height of the mast of 6 m/s. The turbine also requires constant wind to generate at the expected wattage. In actual fact, a detailed study of the wind speeds in the first year showed an average of just 2.2 m/s. The start up speed of the turbine is 3m/s which goes to show the wind speed has simply not been strong enough.

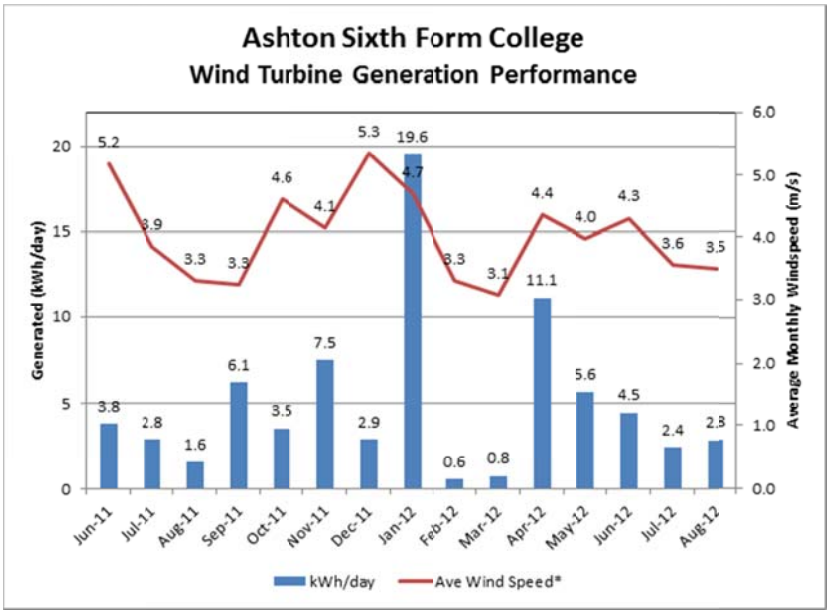


Figure 7 - wind speed and generation analysis

The College has carried out further analysis, see figure 7. The pattern of generation appears to have little or no relationship to the average monthly wind speed (*based on Manchester Airport weather station data). The wind speeds reported at Manchester airport do support the view that the overall wind speeds in the area are a major factor in the underperformance of the turbine.

During the 15 month period covered by the chart, the total output from the system was 2,070 kWh, somewhat lower than the estimated annual generation of 19,272 kWh.

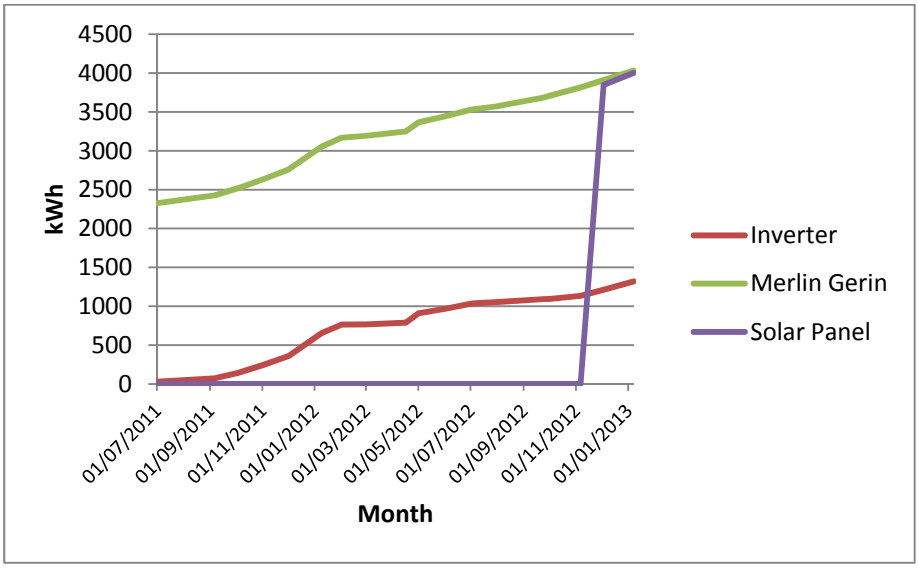


Figure 8 - Energy generation from wind turbine & solar panel

Figure 8 depicts further issues with the wind turbine. The green line shows the energy produced by the turbine and the red line shows the energy produced by the inverter. By way of comparison the performance of the solar panels is included, which shows that they have the potential to significantly outperform the wind turbine.

Figure 8 does highlight concerns with the performance of the inverter[1]. The College has discovered that the performance of the wind turbine inverter is compromised due to the out of hours voltage of the college. This high 'grid voltage' is causing the inverter to 'lock out' due to the inverter being unable to produce an output voltage at the defined voltage differential to the grid voltage. This differential is probably about 8-10 volts, so when the college has a grid of 252V the inverter output should be 260-262V, which is beyond the allowable limit of the inverter. To

[1] The wind turbine will be producing low voltage alternating current (ac). The inverter will be converting the voltage from the turbine to a usable voltage (~240v ac) so that it can be used by on the grid. The inverter will also alter the frequency of the wind turbine output and convert it to a normal frequency used on the grid (~50 Hertz).

overcome this Ropatec are suggesting increasing the output from 20kW to 25kW. M&C has advised that there could be problems with this approach as the voltage output limit of the inverter is there for safety reasons. Increasing the output from the inverter may cause equipment failure and they have known a site where a grid voltage of 255V caused some electrical fires within computers.

M&C has been working on an alternative solution, which will not only benefit the wind turbine but also the whole college. The 6.6 kV mains transformer on Darnton Road is generating a voltage which during the normal college operating hours is being pulled down to approx. 244 V. Outside of this period it is reaching 252 V. There is a method of reducing the output voltage from mains transformers called 're-tapping', this is commonly done in industry. After re-tapping, the output voltage should be closer 220-230 V. This will increase the difference between grid voltage and the Inverter output voltage. This will also have a positive impact on the college as a whole by reducing the onsite voltage and will reduce energy consumption on most items of plant. M&C is currently awaiting notification from Electricity North West to conduct a survey of the main transformer to check for re-tapping capability and also a cost to complete.

Originally an application was made to Ofgem for the wind turbine system to be registered under the Renewables Obligations Scheme (RO). Last year M&C made an attempt to convert the turbine from RO to the new FIT scheme but was told that the final submission date had passed. It now transpires that the RO application was never completed due to the final paperwork not being returned to them and this was the reason why the turbine had not been transferred onto the FIT scheme. This actually is beneficial as we are now able to register under the FIT scheme, which has greater payments. M&C has been in touch with the electricity supplier Total Gas and Power and they are happy to make the necessary application for the turbine on the FIT scheme with hopefully a swift completion. Under the FIT scheme payments of 21 p/kWh are available for the size of the turbine.

The cost of the wind turbine including fees less capital grants was £41,235. Currently it is only generating hundreds of pounds per year so pay back is significantly down on projected levels. The installation of the ‘re-tapping’ and payments from the FIT scheme will hopefully improve the performance going forward.

SOLAR PANELS

Introduction

The College approved the installation of solar panels based on the following assumptions and rationale.

Savings

- PV displaces grid-supplied electricity directly. This source of clean, carbon-free electricity is inflation-proof and will provide a free source of electricity for decades to come. This is measured in the savings realised by buying less grid-supplied electricity.
- The proposed PV system would provide savings of £62,933 over the 25yr FiT term. And because PV provides 50+yrs of maintenance free operation, it could provide further savings of £453,967 between years 2036 - 2061 if electricity prices continue to rise at 10% pa.

Income

- In addition to measurable savings in grid-bought electricity, PV provides a guaranteed income stream from the Government backed FiT (feed-in-tariff). Under this 25yr scheme, you are paid an index-linked rate for every unit/kWh of electricity the system produces. The proposed PV system would provide a government backed income stream of £46,572 over 25yrs.

Reliability

- PV is the most-rigorously field-tested of all the renewable technologies available following the PV Major Demonstration Programme (2005-06) and the Low Carbon Building Programme (2007-09). We provide a 30 year electrical output warranty and PV has a proven, operational lifespan of up to 50+years.

Education

- Schools and colleges are the ideal environment to install PV, where the full range of benefits can be observed and understood by pupils and students. Energi have a particularly strong track record in the education sector and have worked alongside UCLAN, Sr Thomas Rotherham College, Bury College and Manchester Metropolitan University over many years.

Figure 8 shows that energy production from the solar panels is hugely encouraging, especially relative to the performance of the wind turbine. The college is in the process of submitting the first FIT return. For the next report a more detailed analysis of the performance will be prepared.

INFRA-RED FLYOVER

The College commissioned a thermal imaging survey of the site last year which revealed potential problems with a number of the newer buildings. A ground based survey to complement the aerial surveys was carried out to investigate further whether there were problems with the new builds; a potential problem could be the plastic flat roofs on certain buildings. The reports have been forwarded to the Employers Agent used on the: Geoff Higgins building project, and the performing arts extension projects to identify whether there are any issues with the design and construction to determine whether the College has any recourse against the Builders.

The ground based survey also found that there was a potential issue with the insulation in the walls of the Geoff Higgins building. This building has had problems with the roof and this could be compromising the insulation of the building. This issue is also being addressed by the Employers Agent.

Extracts of both reports are attached as appendix E.

CARBON TRUST SURVEY – FOLLOW UP

The College has been in contact with the Carbon Trust who carried out a free energy audit of the College. The purpose of the survey was to highlight areas where the College could improve energy efficiency and possibly assist in future grant and award applications.

The key recommendations and findings from the report are outlined below and the outstanding items are included in the revised action plan.

Recommendation	Action	Completed (Y/N)	By	Date
Opportunity 1 - Introduce an official energy policy to the site	Sustainability policy completed	Y	DOFR	2011
Opportunity 2 - Introduce Measuring Monitoring and Targeting to the site	Annual reports and action plans produced	Y	DOFR	2011
Opportunity 3 - Staff Awareness Campaign	No progress to date included in current action plan	N	Sustainability Group	2013
Opportunity 4 - Lighting changes T8 to T5 fluorescent tubes	T8s remain in public service and offices on the ground floor of the main building and will be replaced as part of Phase 7	N	DOFR	2014
Opportunity 5 - Install a Building Management System	Quote being obtained to install system in the summer holidays	N	DOFR	2013
Opportunity 6 - Reduce Base Load Consumption at Weekends and Evenings	Actions to reduce base load have had an impact in reducing electricity consumption	Y	DOFR	2012
Opportunity 7 - Insulate Roof of Main Building	Infrared analysis carried out, new buildings with flat roofs are a cause of concern and currently being investigated	N	Estates Manager	2013
Opportunity 8 -Consideration should be given by the IT department to changing over to the thin client type of computers which are being installed in many schools and colleges now	Thin client technology being trialled this year	Y	DOFR	2013

PEACE GARDEN

The College has had a long standing wish to create a peace garden for staff and students. Difficulties in funding the cost and finding an appropriate location have meant that the project has not been progressed. The commissioning of the student centre project (part of Phase 6) has allowed the College to part finance some of the work, included in the landscaping budget of £45-50K. The College will endeavour to secure grants for the plants which will be planted up after completion of the project in March 2013. The draft design for the peace garden is attached as appendix F

The College's Chaplain has agreed to oversee the development of the Peace Garden. An application has been submitted via Ashton Rotary to the Woodland Trust to receive a number of shrubs and in particular a commemorative oak sapling nurtured from the royal gardens to mark the Queen's Diamond Jubilee. Following the chaplain's work with the Holocaust Educational Trust and subsequent visit to Auschwitz, we shall be receiving a rose grafted from the original rose that grew in Anne Frank's Garden. The Peace Garden is an exciting project as it will draw from and add to the life of the local community. Small areas within the garden will be themed; therefore it will be not only a pleasant green spot in the midst of building/structure but it will be an area for thought and learning. Organisations are being approached to donate plants/cuttings for sustainable development.

A link has been forged this term with Canon Burrows C of E Primary School *(an "eventual" feeder school!)* which has a strong commitment to environmental issues – and 5 ECO flags to show for it. Their eco team of 6 with a member of their staff has linked with our own student green team under the leadership of the Student Council Environmental Officer and the College Chaplain. Canon Burrows School is supporting ASFC to develop a college community strategy along similar lines to their own. They also have a school garden nurtured by pupils and this pooling of advice and resources is a very positive step forward.

A mentioned previously the College's sustainability group will take part in the Climate week challenge (4th – 10th March 2013), which will involve planting of trees on Arundel Street with support from neighbours and the Council.

RE-CYCLING

The College has secured a waste removal contract with B&M waste services, whereby all waste placed in the bins throughout the College is recycled. There is no need, therefore, to segregate waste on site as all waste is sorted off site.

For the 12 months (1st January 2012 to 31st December 2013) the total percentage recycled/recovered is 87%. In terms of the College's carbon footprint the carbon saved is 78947kg, which is equivalent to 67 trees or 22099 car miles. A more details report of the waste management process and outcomes is included in appendix G.

The College could make more of the successes achieved in re-cycling so will publish the data more widely and increase signage around the site, i.e. all waste put in bins will be re-cycled.

WATER

The College has not paid particular attention to water consumption, but water is a key environment resource and is now quite a significant cost to the budget.

The attached report, appendix G, from M&C shows that in the last three years water consumption has increased by 6.8% and the cost has increased by £2,100 (8%). The College is in the process of installing a water harvesting scheme (formed part of the student centre and peace garden project). The total cost of the scheme is £15-18k and the performance will be monitored with the help of M&C. If the scheme is successful it will be rolled out and included in future building projects and existing buildings.

The current installation is connected to the new student toilets in the student centre project, so is likely to achieve the maximum benefit. Improvements to the sports hall and exercise gym would be a logical project to include a further rain water harvesting scheme.

ACTION PLAN

Objective		Action	Responsibility	Date
	To ingrain energy efficiency as a culture amongst all staff and students.	• Promote and implement a turn down campaign (keep all radiators set at 3)	Chaplain/ Student Council	Dec 2013
	The College's overarching target is to reduce energy consumption and CO2 emissions by 25% by 2014using 2005/06 as the base year.	• Continue to monitor the performance of the wind turbine and solar panels • Install re-tapping if feasible and cost effective • Obtain FIT grant on wind turbine	Peter Down/ Estates Manager	Feb 2013
	The College's overarching target is to reduce energy consumption and CO2 emissions by 25% by 2014 using 2005/06 as the base year. Response to reports from the Carbon Trust	• Evaluate thin-client trial and include in ILT Strategy for roll out into other curriculum area if successful. • Obtain quotes and evaluate cost effectiveness of a monitoring and control systems for the heating systems • Install a system of rain water harvesting and evaluate the success of the scheme	Peter Down/ Estates Manager	Dec 2013
	To ingrain energy efficiency as a culture amongst all staff and students.	• Apply for grant support for various initiatives including the peace garden • Take part in the Climate Week Challenge	Chaplain/ Student Council	Dec 2013
	The College will seek accreditation for its initiatives in raising the profile of sustainability issues and for responding to these issues in a positive and practical way.	• Draw up and submit accreditation submissions to appropriate bodies	Chaplain/ Student Council	Dec 2013

APPENDIX A- STUDENT COUNCIL MEMBER SHIP

STUDENT COUNCIL

President	Laura Allen
Vice president	Sam Thomas
Marketing Officer	Stef Postles
Environmental Officer	Amy Wardle
Charities Officer	Meghan Dyer
Health Officer	Zubiah Iqbal

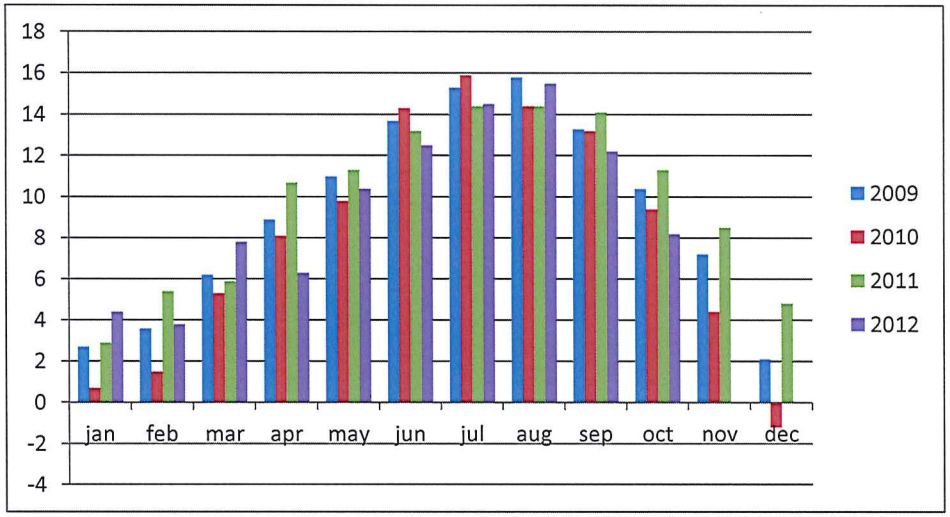
APPENDIX B – POWER BASKET DATA

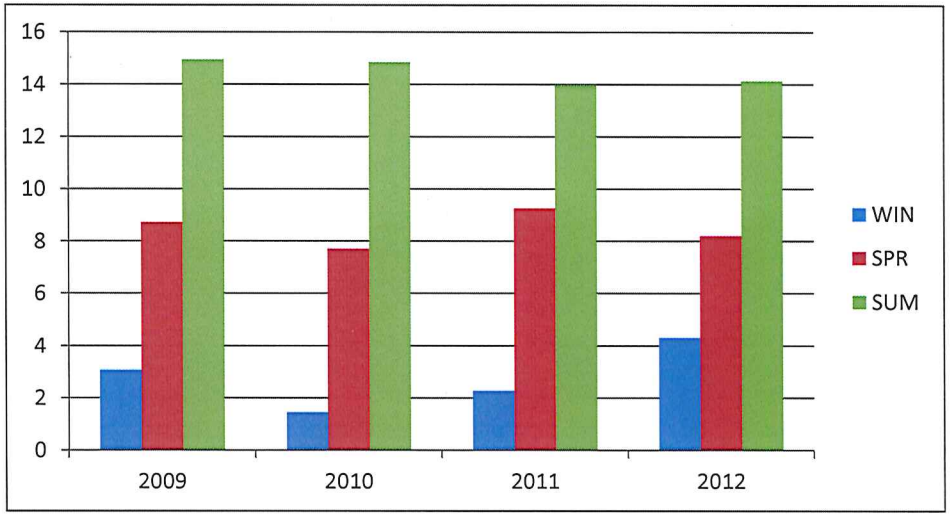
APPENDIX B

Month	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Total
Monthly Consumption	103,187	106,399	107,727	106,971	110,641	87,814	108,041	87,347	74,137	69,112	96,939	
Wholesale Commodity Price (MWh)	£60.00	£60.00	£60.00	£60.00	£60.00	£60.00	£60.00	£60.00	£60.00	£60.00	£60.00	
Achieved Commodity Price (MWh)	£52.14	£49.73	£45.23	£44.56	£46.60	£47.77	£45.60	£43.63	£44.23	£43.46	£44.89	
Savings Achieved	**£44.01**	**£493.86**	**£930.33**	**£1,003.49**	**£739.97**	**£1,135.86**	**£1,649.39**	**£1,511.94**	**£1,233.93**	**£1,200.29**	**£1,546.38**	**£11,489.45**

APPENDIX C – CLIMATE INFORMATION

	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec
2009	2.7	3.6	6.2	8.9	11	13.7	15.3	15.8	13.3	10.4	7.2	2.1
2010	0.7	1.5	5.3	8.1	9.8	14.3	15.9	14.4	13.2	9.4	4.4	-1.2
2011	2.9	5.4	5.9	10.7	11.3	13.2	14.4	14.4	14.1	11.3	8.5	4.8
2012	4.4	3.8	7.8	6.3	10.4	12.5	14.5	15.5	12.2	8.2		





	WIN	SPR	SUM	AUT	ANN
2009	3.08	8.73	14.95	10.32	9.23
2010	1.46	7.73	14.85	9.02	8.02
2011	2.28	9.26	13.99	11.31	9.75
2012	4.32	8.21	14.15		

APPENDIX D – BUILDING TIMER SETTINGS

Heating Schedule

Heating off throughout college on Saturday and Sundays

Building		Monday	Tuesday	Wednesday	Thursday	Friday
Main Building	*Start*	0600	0600	0600	0600	0600
	finish	1600	1600	1600	1600	1600
	Holiday shut down					
Public Services	*Start*	0600	0600	0600	0600	0600
	finish	1630	1630	1630	1630	1630
	Holiday shut down					
Science & Tech	*Start*	0730	0730	0730	0730	0730
	finish	1730	1730	1730	1730	1730
	Holiday shut down					
IT & cafeteria	*start*	0730	0730	0730	0730	0730
		1600	1600	1600	1600	1600
	Holiday shut down					
Centenary	*Start*	0630	0630	0630	0630	0630
	finish	1600	1600	1600	1600	1600
	Holiday shut down					
Geoff Higgins	*start*	0600	0600	0600	0600	0600
		1600	1600	1600	1600	1600
	Holiday shut down					
Sports hall	*start*	0600	0600	0600	0600	0600
	finish	1600	1600	1600	1600	1600
	Holiday shut down					
Art	*start*	0630	0630	0630	0630	0630
	finish	1600	1600	1600	1600	1600
	Holiday shut down					

APPENDIX E – INFRA – RED DATA

Commission Air Ltd
the aerial photographers

Aerial View

Sports Centre

Geoff Higgins Building

The thermal survey was carried out on the two highlighted buildings to discover heat loss from the buildings.

The report below identifies heat loss and some of the reasons for the heat loss.

However, The extent of heat loss of the building can clearly be seen, however this could be due to the different U values of the building material used (BS EN ISO 13789)

The BS ISO 13789:2007 specifies conventions for the assessment of the thermal performance of a building.

The terms and definitions used in this report are derived from that standard.

Commission Air Ltd
the aerial photographers

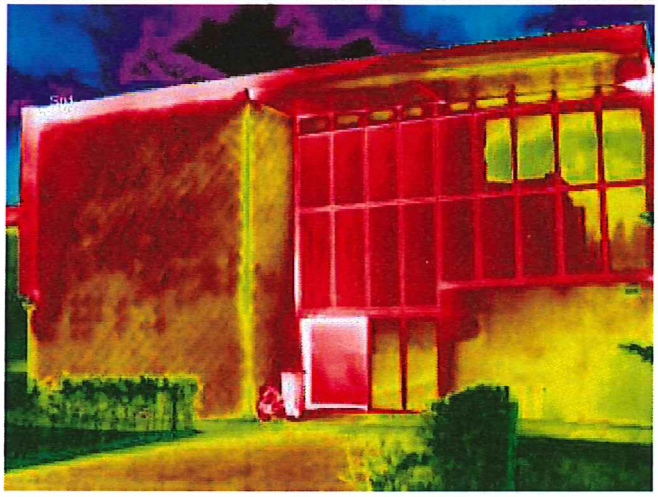
Building Thermography Report

Building Address/Identification	Geoff Higgins Building
Building Year	
Customer	Aston Six Form College
Address	Ashton Under Lyme
Thermography date	26/04/2012
Thermographer	DB
Weather	Overcast
Wind	1.2m/s

Standard	BS ISO 13789:2007
Report Date	26/04/2012
Authorized By	
Function	
Signed:	

Commission Air Ltd
the aerial photographers

Thermal Insulation Report



Location

Date	25/04/2012
Location	

Insulation Alarm

Max Temperature	16.2 ºC
Min Temperature	-48.3 ºC
Thermal Index	
Outdoor Temperature	
Atmospheric Temperature	4 ºC
Insulation Temperature	
Area	
Threshold	

IR File Information

Filename	IR_0203.jpg
Camera Type	FLIR T640

Notes

Analysis

The thermal image shows heat loss from the door frame and windows.
There is also heat loss from the top of the building of over 16ºC

Commission Air Ltd
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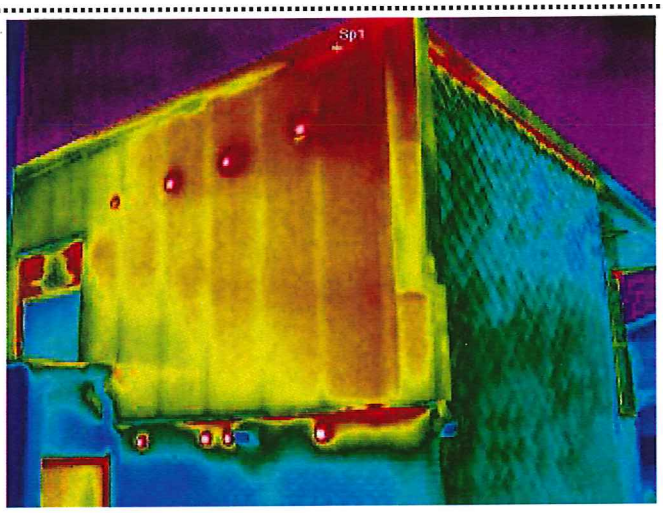
Thermal Insulation Report



Location

Date	25/04/2012
Location	

Insulation Alarm

Max Temperature	23.5 °C
Min Temperature	-40.2 °C
Thermal Index	
Outdoor Temperature	
Atmospheric Temperature	4 °C
Insulation Temperature	
Area	
Threshold	

IR File Information

Filename	IR_0204.jpg
Camera Type	FLIR T640

Notes

Analysis

Comment	
	The thermal image shows heat loss from the top of the building, the maximum temperature shown is coming from the vents. However there is heat loss from the top of the building and Eaves.

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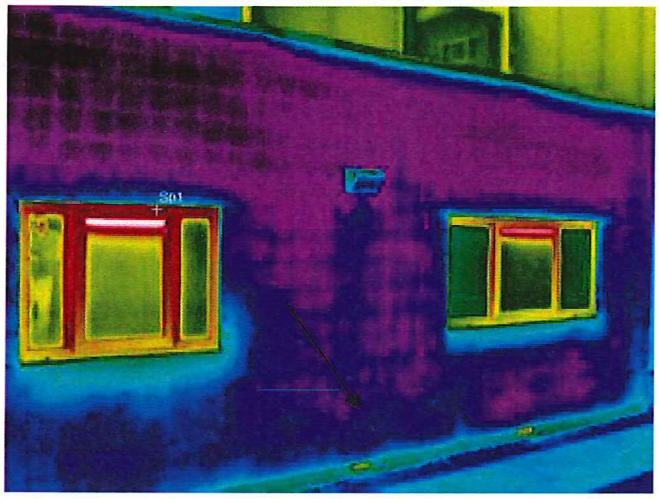
Thermal Insulation Report



Location

Date	25/04/2012
Location	

Insulation Alarm

Max Temperature	21.2 ºC
Min Temperature	-26.1 ºC
Thermal Index	
Outdoor Temperature	
Atmospheric Temperature	4 ºC
Insulation Temperature	
Area	
Threshold	

IR File Information

Filename	IR_0205.jpg
Camera Type	FLIR T640

Notes

Analysis

Comment	
	The thermal image shows heat loss mainly from the window frames There could also be moisture ingress behind the tiles

Commission Air Ltd
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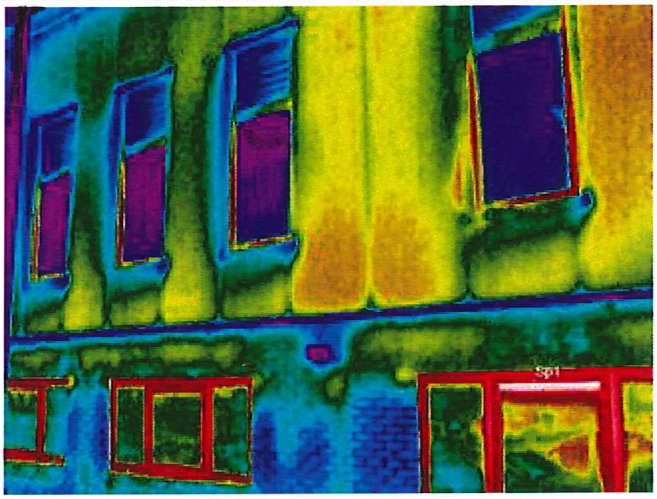
Thermal Insulation Report



Location

Date	25/04/2012
Location	

Insulation Alarm

Max Temperature	14.1 °C
Min Temperature	-4.9 °C
Thermal Index	
Outdoor Temperature	
Atmospheric Temperature	4 °C
Insulation Temperature	
Area	
Threshold	

IR File Information

Filename	IR_0206.jpg
Camera Type	FLIR T640

Notes

Analysis

Comment	
	The thermal image shows heat loss from the window frames and the side of the building.

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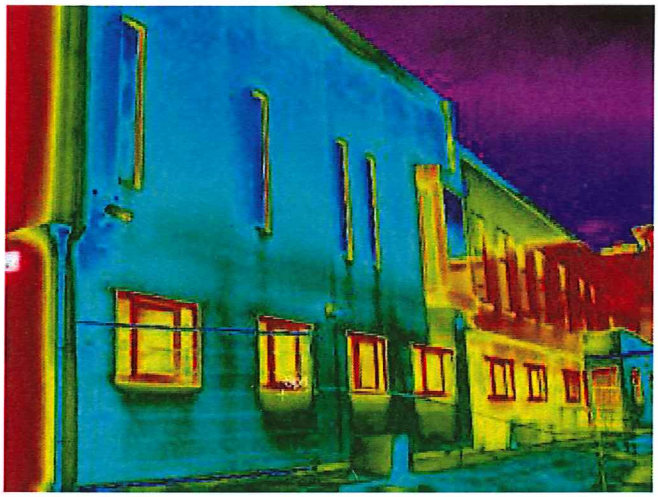
Thermal Insulation Report



Location

Date	25/04/2012
Location	

Insulation Alarm

Max Temperature	25 °C
Min Temperature	-29.6 °C
Thermal Index	
Outdoor Temperature	
Atmospheric Temperature	4 °C
Insulation Temperature	
Area	
Threshold	

IR File Information

Filename	IR_0207.jpg
Camera Type	FLIR T640

Notes

Analysis

Comment
The thermal image shows heat loss from the window frames.

Commission Air Ltd
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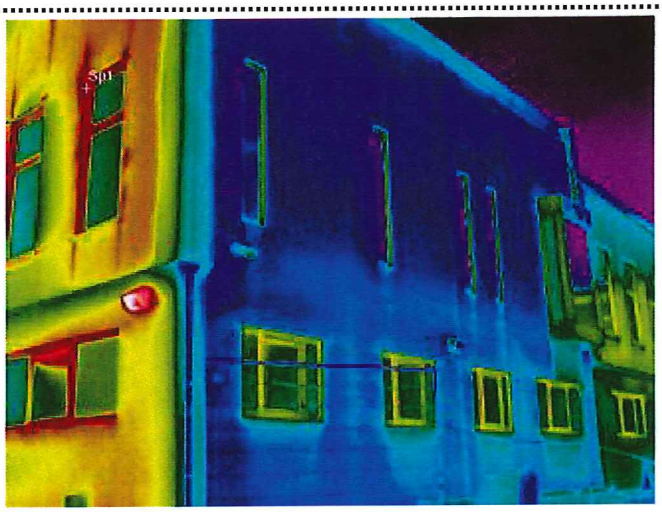
Thermal Insulation Report



Location

Date	25/04/2012
Location	

Insulation Alarm

Max Temperature	37.7 °C
Min Temperature	-21.6 °C
Thermal Index	
Outdoor Temperature	
Atmospheric Temperature	4 °C
Insulation Temperature	
Area	
Threshold	

IR File Information

Filename	IR_0208.jpg
Camera Type	FLIR T640

Notes

Analysis

Comment	
	The thermal image shows heat loss from the window frames, the outside wall temperature 12°C

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Thermal Insulation Report

Location

Date	25/04/2012
Location	

Insulation Alarm

Max Temperature	37.7 °C
Min Temperature	-11 °C
Thermal Index	
Outdoor Temperature	
Atmospheric Temperature	4 °C
Insulation Temperature	
Area	
Threshold	

IR File Information

Filename	IR_0209.jpg
Camera Type	FLIR T640

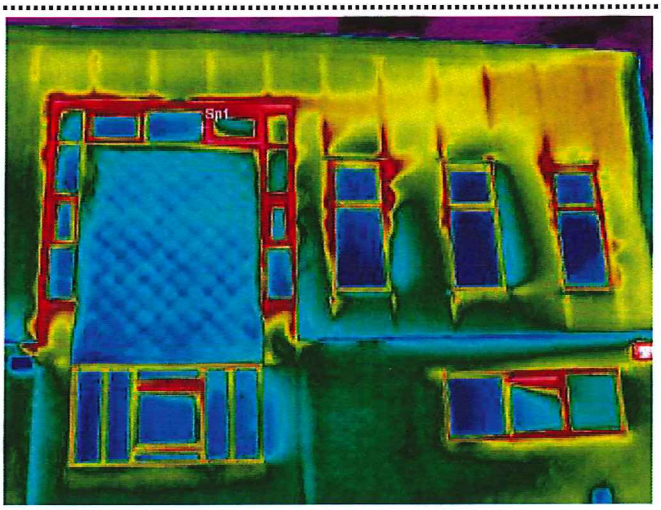
Notes

Analysis

Comment	
	The thermal image shows heat loss from the window frames, and joints. The outside wall temperature 12°C

Commission Air Ltd
the aerial photographers

Thermal Insulation Report



Location

Date	25/04/2012
Location	

Insulation Alarm

Max Temperature	37.6 ºC
Min Temperature	-14.1 ºC
Thermal Index	
Outdoor Temperature	
Atmospheric Temperature	4 ºC
Insulation Temperature	
Area	
Threshold	

IR File Information

Filename	IR_0210.jpg
Camera Type	FLIR T640

Notes

Analysis

Comment
The thermal image shows heat loss from the window frames and the building.

Commission Air Ltd
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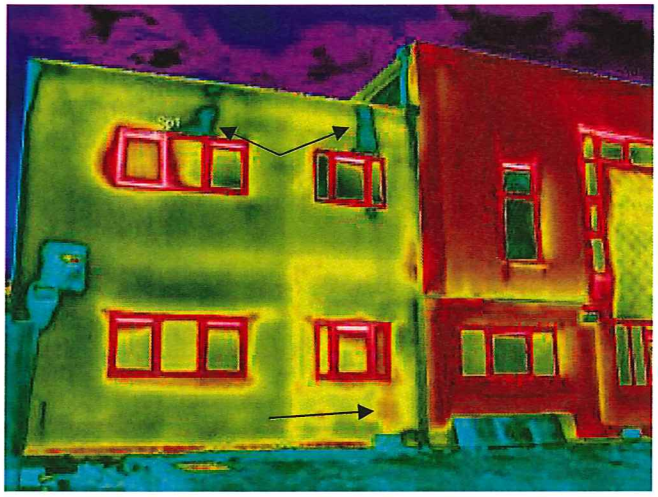
Thermal Insulation Report



Location

Date	25/04/2012
Location	

Insulation Alarm

Max Temperature	19.5 ºC
Min Temperature	-4.7 ºC
Thermal Index	
Outdoor Temperature	
Atmospheric Temperature	4 ºC
Insulation Temperature	
Area	
Threshold	

IR File Information

Filename	IR_0211.jpg
Camera Type	FLIR T640

Notes

Analysis

Comment	
	The thermal image shows heat loss from the walls and window frames. The arrows at the top of the building point out moisture ingress as the arrow at the bottom points out insulation issues.

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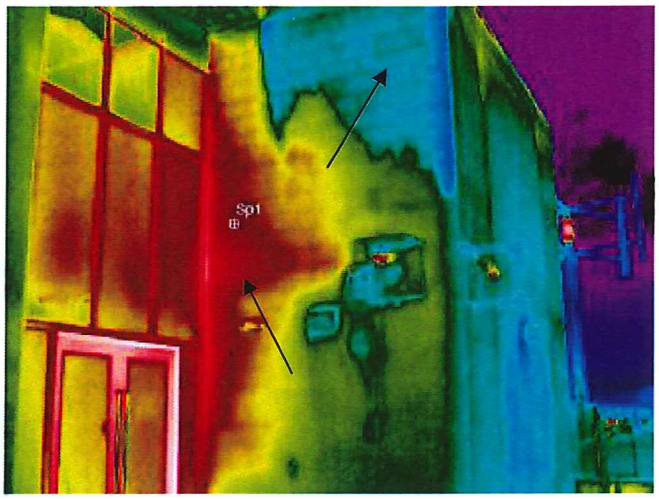
Thermal Insulation Report



Location

Date	25/04/2012
Location	

Insulation Alarm

Max Temperature	13.7 °C
Min Temperature	-53.1 °C
Thermal Index	
Outdoor Temperature	
Atmospheric Temperature	4 °C
Insulation Temperature	
Area	
Threshold	

IR File Information

Filename	IR_0212.jpg
Camera Type	FLIR T640

Notes

Analysis

Comment	
	The thermal image shows heat loss from the edge of the framework also from the door frame. Check walls for moisture ingress.

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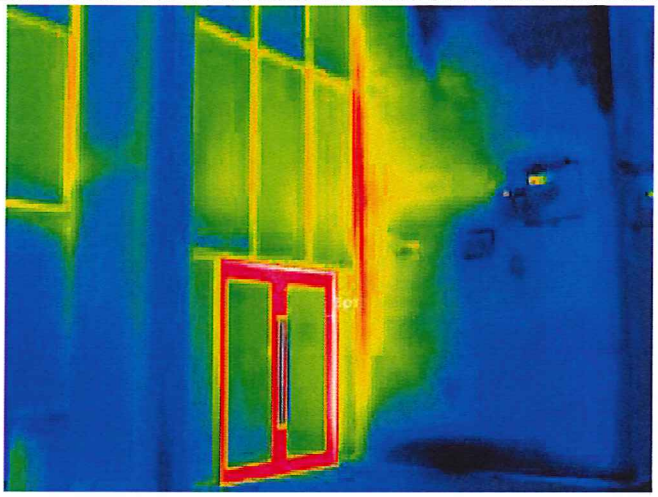
Thermal Insulation Report



Location

Date	25/04/2012
Location	

Insulation Alarm

Max Temperature	13.6 °C
Min Temperature	-28.2 °C
Thermal Index	
Outdoor Temperature	
Atmospheric Temperature	4 °C
Insulation Temperature	
Area	
Threshold	

IR File Information

Filename	IR_0213.jpg
Camera Type	FLIR T640

Notes

Analysis

Comment
The thermal image shows heat loss from the edge of the framework also from the door frame. Check walls for moisture ingress.

Commission Air Ltd
the aerial photographers

Thermal Insulation Report

Location

Date	25/04/2012
Location	

Insulation Alarm

Max Temperature	14.1 °C
Min Temperature	-37.5 °C
Thermal Index	
Outdoor Temperature	
Atmospheric Temperature	4 °C
Insulation Temperature	
Area	
Threshold	

IR File Information

Filename	IR_0214.jpg
Camera Type	FLIR T640

Notes

Analysis

Comment
The thermal image shows heat loss from the open vents at the top of the building as well as the window frames.

Commission Air Ltd
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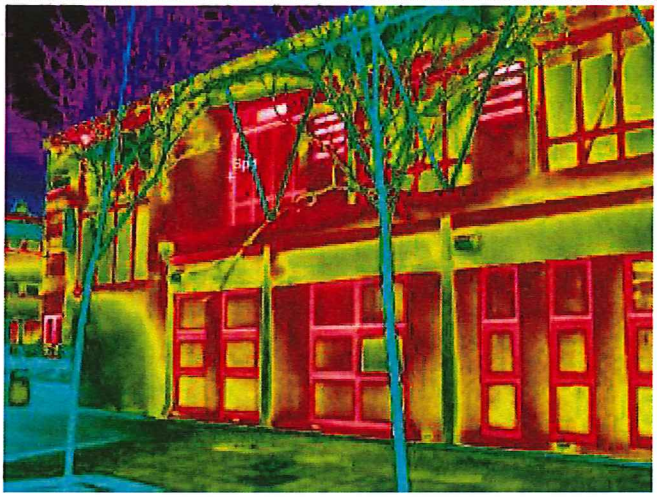
Thermal Insulation Report



Location

Date	25/04/2012
Location	

Insulation Alarm

Max Temperature	15.6 °C
Min Temperature	-4.7 °C
Thermal Index	
Outdoor Temperature	
Atmospheric Temperature	4 °C
Insulation Temperature	
Area	
Threshold	

IR File Information

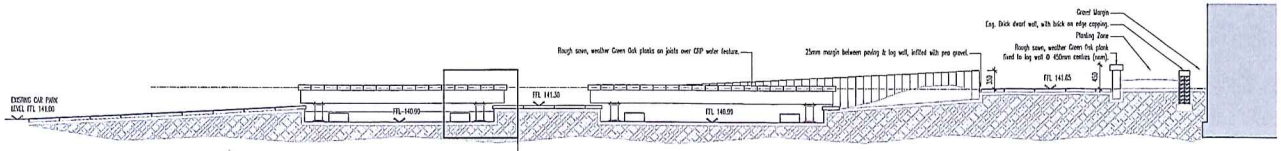
Filename	IR_0215.jpg
Camera Type	FLIR T640

Notes

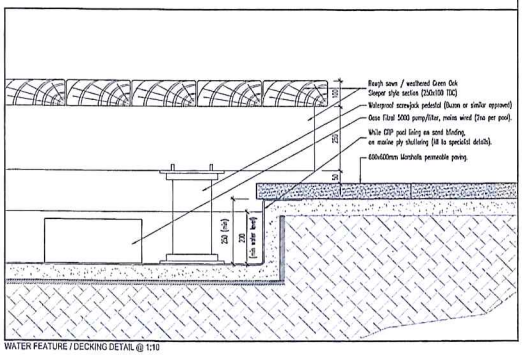
Analysis

Comment
The thermal image shows heat loss from the open vents at the top of the building as well as the window frames.

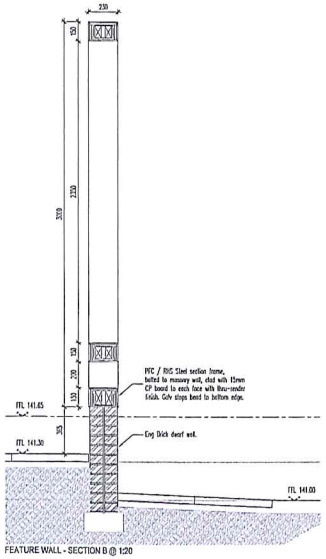
APPENDIX F – PEACE GARDEN DESIGN



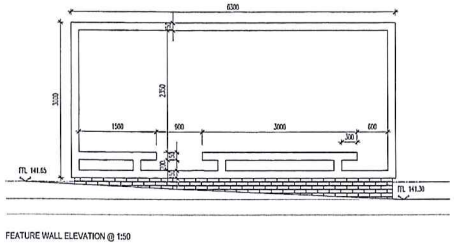
OVERALL PEACE GARDEN - SECTION A



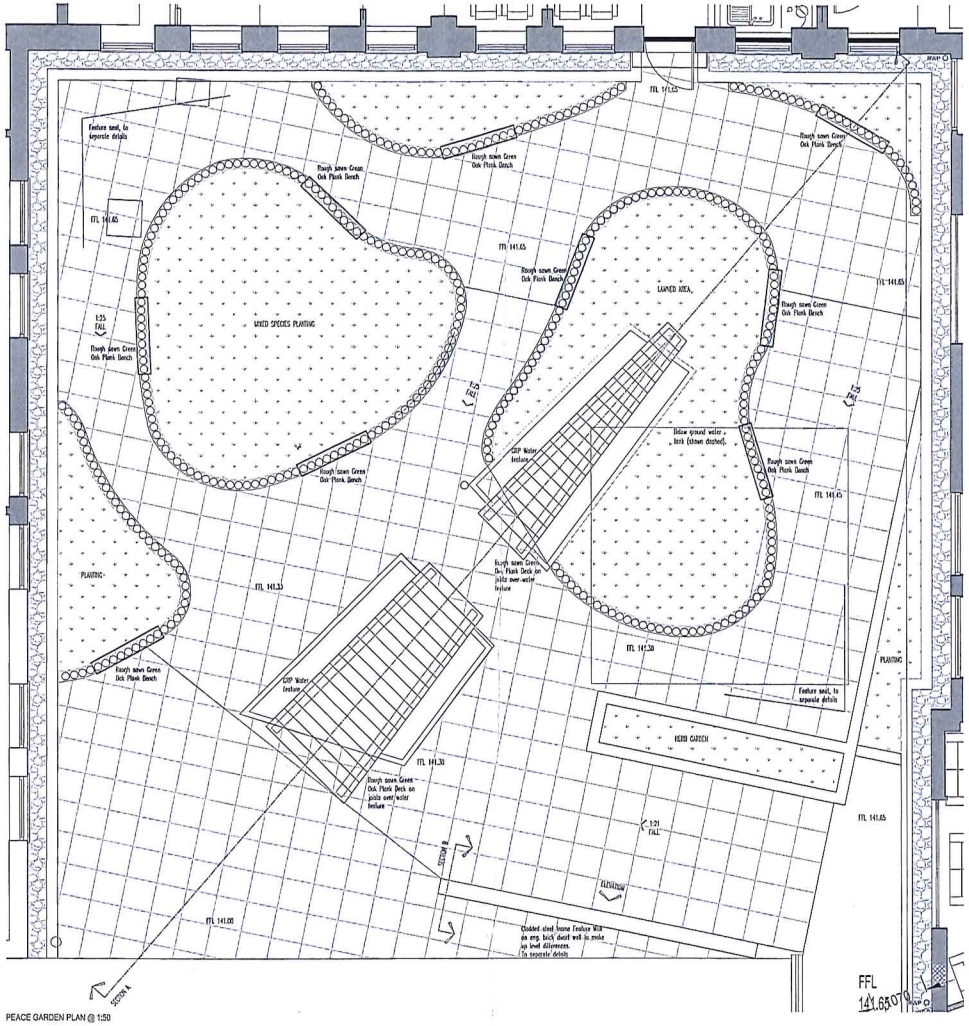
WATER FEATURE / DECKING DETAIL @ 1:10



FEATURE WALL - SECTION B @ 1:20



FEATURE WALL ELEVATION @ 1:50



PEACE GARDEN PLAN @ 1:50

MARSHALS PERMEABLE PAVING - SPEC TBC

TOP SOIL FOR NEW PLANTING BY OTHERS

300MM GRAVEL MARGIN TO BUILDING PERIMETERS

rev	description		date
C	FEATURE WALL DETAILS ADDED	SJM/SR	20.07.12
B	LEVELS AMENDED, SECTIONS ADDED	SJM/SR	27.07.12
A	PROPOSED PEACE GARDEN ADDED	SJM/SR	23.06.12

DO NOT SCALE OFF THIS DRAWING

LEACH RHODES WALKER
ARCHITECTS

client: AuL SIXTH FORM COLLEGE

project: PHASE 6

project no	drawing no	rev
7075	L(90)10	C

description: STUDENT CENTER EXTERNAL WORKS

scale	date drawn	drawn by	authorised by
1:50 @A1	OCT 11	SR	

purpose of issue: planning ○ building regs ○ tender ○ comment ○ approval ○ construction ○

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APPENDIX G – WATER DATA

APPENDIX G

Ashton Sixth Form College
Water Review

M&C ENERGY GROUP

Year 1
1 April 2009 - 31 March 2010

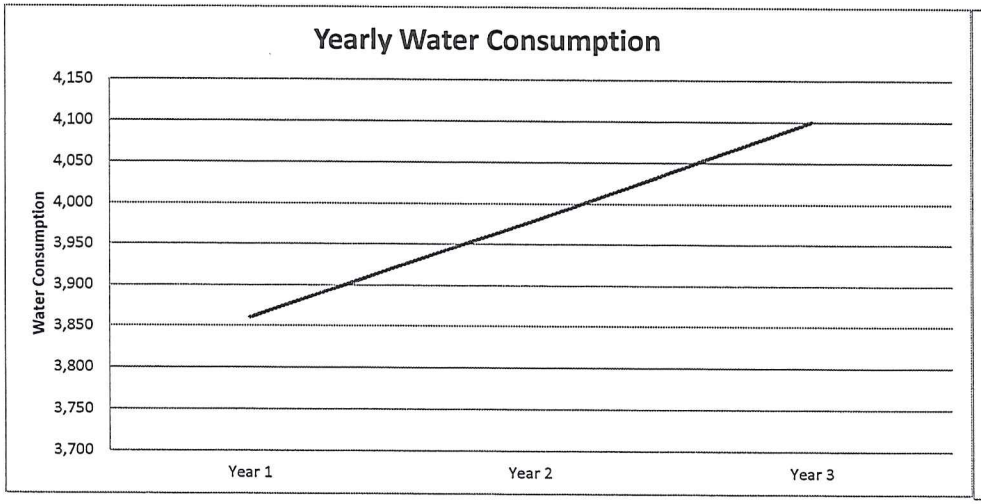
	Water Bill 1		Water Bill 2	
Account Number	408 502 9132		404 020 8348	
Type of Bill	Water & Waste		Site Area	
Tariff	Standard			
Meter Serial Number	03A047166	07W705931		
Meter Size	40mm	50mm		
Meter Standing Charge	£126.00	£190.00		
Yearly Consumption	3,650	210		
Rateable Value			18,869	
Rateable Value Charge			£3,981	
Site Area Banding			8	
Site Area Charges			£12,250	
Type Cost	£8,948.05	£697.57	£16,231	
Total Yearly Cost 09/10	£25,876.98			

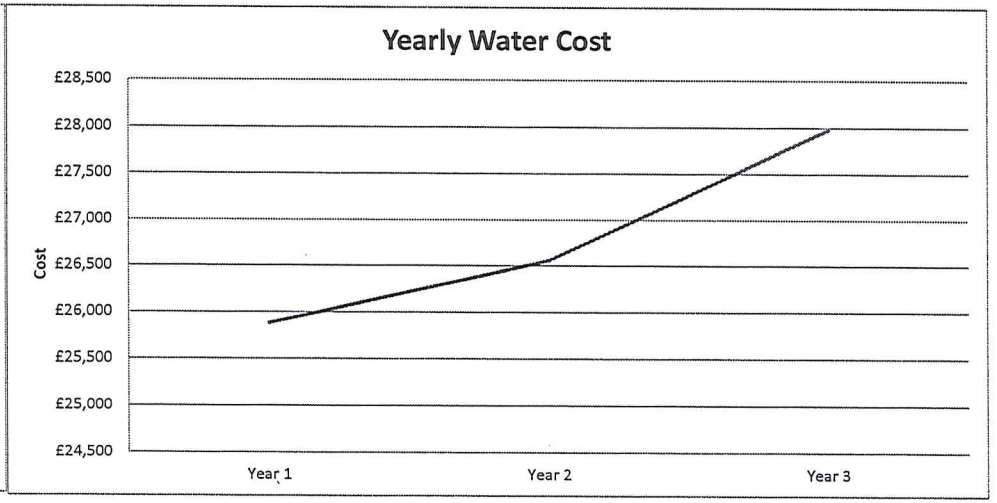
Year 2
1 April 2010 - 31 March 2011

Water Bill 1		Water Bill 2	
408 502 9132		404 020 8348	
Water & Waste		Site Area	
Standard			
03A047166	07W705931		
40mm	50mm		
£126.00	£191.00		
3,789	188		
		8	
		£16,923	
£8,999.84	£631.30	£16,923	
£26,554.51			

Year 2
1 April 2011 - 31 March 2012

Water Bill 1		Water Bill 2	
408 502 9132		404 020 8348	
Water & Waste		Site Area	
Standard			
03A047166	07W705931		
40mm	50mm		
£134.00	£203.00		
3,900	200		
		8	
		£17,550	
£9,731.90	£695.20	£17,550	
£27,976.66			





ASHTON
SIXTH FORM COLLEGE

Sustainability Report 2012-2015

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