



Stonegrove Community Trust Eco-audit Report Contents:

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Eco- Audit Report for: Stonegrove Community Trust

FAO: Gus Alston, CEO

Introduction

We would like to thank Gus Alston, for organising and facilitating the details for the eco-audit site-visit.

The key context in which this eco-audit takes place is the statement by the UN Secretary General in September 2018, that humanity has to have started radical cuts in fossil-fuel emissions within 2 years, if we were not to face potential extinction and the 2018 report of the IPCC that stated carbon emissions need to be cut by nearly half by 2030, to have a two thirds chance of avoiding temperatures rising above 1.5C.

This requires unparalleled civilisational changes. We hope this report will enable The Stonegrove Community Trust to plan how they can make an even bigger positive contribution to this effort, than they are doing already.

The Trust is based in a multi-occupancy new purpose-built community centre, including many of the latest energy and water efficiency elements. The Stonegrove Community Trust has many constructive opportunities to enable the local community to move towards a zero-carbon target.

Likewise, the trust can work in partnership with the other joint-tenants of the centre to cut their impacts and helping local people on low incomes to reduce their living costs, as well as environmental impacts. We were impressed at the knowledge and commitment that the centre-manager already has on these issues.

1. Headline Eco-Data Figures 2019/20

Building Energy Consumption		
Electricity (kwh):		51,000
Electricity CO ₂ (tons)		(14.5) ¹
Gas (kwh of heat via district heating system)		76,052
Gas CO ₂ (tons)		13.2 ²
Building Energy Carbon Footprint (tons)		27.6
(Taking green tariff into account - tons)		13.2
Flights CO ₂ (tons)		0
Vehicles CO ₂ (tons)		0
Energy carbon footprint (tonnes):		27.6
(Taking green tariff into account - tons)		13.2
Square meterage		1858
Kg CO ₂ /sq. meter		15
KgCO ₂ /sq. meter (using green tariff)		7
Mains water consumption (litres):		511,000
Water supply CO ₂ (tons)		0.5
A4 Sheets photocopying paper		20,000
% made from recycled paper		100
Trees saved by using recycled paper		1
Total annual waste (tons)		85.2
Non-recycled waste (tons)		57.2
Recycled (kg)		28.6
Waste CO ₂ (tons)		16.5
Recycling rate (%)		33
³ Bank: Co-operative Bank	Reserves: Trinity Bank	
Utility Bills		
Electricity		£ n/a
Gas		£ n/a
Water		£ n/a

¹ On green electric tariff

Government greenhouse gas reporting standards require reporting of national grid related emissions and voluntary reporting of the renewable component.

² UK Government June 2020 carbon conversion factor for gas-powered CHP district heating is 0.173kgCO₂/kwh of heat supplied.

This compares to 0.183kgCO₂/kwh for on-site natural gas heating and 0.233kgCO₂/kwh electricity.

³ Consider move to CAF Bank or Triodos Bank which have excellent eco-credentials.

Data Analysis

Carbon Footprint

Your annual energy carbon footprint for building energy is 27.6 tons or 13.2 tons by taking the green electricity supply into account.

27.6 tons is the equivalent of about 9 average UK homes annual energy consumption.

13.2 tons is the equivalent of about 4.5 homes.

The emissions per square meter at 15kg/m², are just over a quarter of what the average emissions for such a centre. This shows that the energy-efficiency measures included in this new-build centre are working.

This means that the emissions from unrecycled waste are now unusually your single largest source of waste emissions.

Examining how you can reduce your waste stream and increase your recycling rate are now a priority.

The total measured carbon emissions for energy, travel, water and waste was 32.5 tons.

Electricity

Your electricity emissions per square meter at 8 kg/m² are less than half the average for such buildings.

You have already switched to a green electricity supplier. The next step is to maximise the solar electricity potential of the large roof space and car-parking.

We understand that you are already seeking quotes for this project.

Gas

Your heating is provided by an off-site gas-powered combined heat & power via a district heating system.

The carbon emissions per square meter of 7kg is about a seventh of the average for such buildings.

To get to zero carbon for energy for the building you would have to switch to green electricity powered central or decentralised heating.

Waste/ Recycling

Your recycling rate is estimated at 33%. The national average recycling rate is 43%. We understand the main challenge here is the disposable waste produced by hall-hire.

To really tackle this would require a stipulation in room-hire agreements that non-recyclable disposable ware is not permitted and maybe find some local companies that can provide ware and cutlery hire to clients.

In the meantime, including a stipulation that recycling of recyclable products is required in your hire contracts and ensuring that adequate, clearly labelled recycled facilities are made available in hire-rooms are steps that you can take to reduce this large source of carbon emissions.

Water

The water consumption at 0.51 million tons is modest for such a sized centre, as are the associated emissions of 0.51 tons.

2. Policy & Management Recommendations

Suggested Next Steps

1. Submit the eco-audit report to the Trustees with recommendations for action, including a request for explicit commitment to the organisation being environmentally responsible and to establish a target date to be net zero carbon for energy.
2. The CEO to ensure annual eco-audit report is produced and presented to the board including the above eco-data bench-mark measurements.

The report would include a brief summary of any other relevant environmental information, including progress on implementing eco-audit recommendations and successes and progress made on initiatives involving members / visitors/ local community.

3. Request the board to appoint a green champion to support CEO in implementation of the recommendations.
4. The CEO to ensure that procedures that address waste reduction, recycling, green-purchasing and energy-efficiency monitoring are in place.
5. Ensure that a spreadsheet reporting implementation progress of Eco-audit report recommendations, is a standard item on the relevant management committee meeting agenda.
6. Include eco-issues in future tenant and room-hire agreements, such as electrical and heating efficiency and participation in the recycling service.

3. Human resources

1. Staff contracts should be amended in consultation with the staff to include a new provision along the lines of:

“The Stonegrove Community Trust is committed to being an environmentally responsible organisation. You will be expected to help in delivering this commitment, in how you fulfil your day to day duties, as a member of our staff”.

2. Similarly, job-specifications should be changed where relevant, which will help ensure new eco-procedures are passed on to new staff.

Then targets for implementation of the green strategy can be included in relevant staff annual appraisals and include environmental training / awareness in any personal developmental plans.

3. Induction procedures for new staff should include procedures adopted to implement this policy of environmental responsibility e.g. energy efficiency including how to use the air-conditioning, green purchasing and waste-reduction & recycling procedures.
4. It is important that your cleaning staff are included in any new procedures that are being introduced to make the centre eco-friendlier.

4. Top Ten Priorities for First Year

The following items are suggested as your top dozen priorities for first year:

1. Do not heat the building above 18/19C.
2. Whilst decision on BMS system is being decided, ensure manual settings of heating system are in line with the varied occupancy patterns across the building, especially in the nursery.
3. Clarify whether you have an air-conditioning or air-handling system and learn how manage the controls efficiently.
4. Place hot-water boiler in kitchen and the water-cooler on timers, so they are only operating during opening hours.
5. Get a number of quotes for solar electric project.
6. Investigate options to reduce room-hire waste-stream.
7. Install infra-red panels in both church spaces.
8. Investigate options for moving to a potentially zero-carbon electric heating system in the rest of the building before investing in a building management system.
9. Ensure all paper products and bin-bags etc are made from recycled materials.
10. Implement annual reporting systems to the board.

5. Heating

Current Good Practice

1. Building has well draught-proofed double-glazed windows and doors and highly insulated walls.

Suggested Next Steps

1. The manager was already aware that the biggest source of heating inefficiency comes from not having an easily managed BMS system for the building, that would allow the various zones to be set in line with occupation.

Modern heating controls are usually one of the efficiency investments with the fastest pay-back. If you decide to retain the current fossil-fuelled district heating system, then this should be a top investment priority.

2. The main church space and smaller chapel both have extremely high-ceilings, making them slow and expensive to heat by the underfloor heating system. This means without the BMS system, that the heating for the whole building has to come on about 1.5 hours prior to opening, when the well-insulated fabric of the building would normally heat up in about 30 minutes.

Staff also reported that both spaces also lose their heat very quickly as soon as the heating is turned off.

The proposed BMS system would allow these 2 spaces to be controlled separately, allowing the rest of the building-heating to be turned on an hour later and potentially also turned off over an hour earlier. This could save potentially 14 hours of heating for the majority of the building per week.

However, as you exploring the potential to move to zero-carbon heating, it would make sense to install infra-red heating in these two church spaces. See later notes.

3. The opening hours for the building are 9am to 7pm, 7/7.
Ideally for those parts occupied all day, the timer would be set to come on at 8.30am and go off about 5pm.

Experiment with these timings to line them up with the thermal capacity of the building.

4. The opening hours for the nursery are different from the main premises. It is important that the timers for this part of the building are set correctly in line with use and the relevant person in charge of their timer, knows how to set timer correctly.

It is currently reported to be on same hours as rest of building and so this will be quite wasteful, especially at weekends, when the nursery is closed. **Urgent.**

5. Consider installing infra-red heaters in the 2 church spaces, due to the height of the ceiling. This is because rather than heating the large amount of air above the congregation, infra-red panels heat the people themselves and the fabric of the rooms.

They are also much more easily controlled than under-floor heating.

Many churches have installed them for these reasons.

I thought these links might be useful place for you to start investigating infra-red heating for churches.

<https://www.thegreenage.co.uk/heating-church-infrared/>

<https://www.theecostore.co.uk/how-do-infrared-heaters-work/>

6. Recommended CIBSE/CCC winter heating room temperature for sedentary activities such as office-work is 18/19C.
The exception is 21C for the non-ambient elderly.

Important: *Each extra degree wastes up to 10% of your heating bill.*

Thus. if the premises are being heated to 22C, you would be wasting up to 40% of your district-heating gas bill.

7. Get a digital thermometer to ensure implementation of the CIBSE recommended heating and cooling temperatures for the premises.
8. Turn heating in bathrooms/storerooms/staircases/lift-lobbies/landings etc. that are not used for sitting-down in to frost-protection.

They do not need to be heated to the same temperature as occupied parts of the premises.

9. Some of the pipes in the plant-room where the district heating system enters the building need to be professionally lagged.
10. You were considering inserting an energy-efficiency additive to your heating pipes. The Energy Savings Trust certifies that one such product Endotherm delivers about a 15% efficiency improvement for cases uses condensing boilers.

<https://energysavingtrust.org.uk/business/products/manufacturers/endotherm>

11. For the centre to achieve net zero carbon for energy would require three steps:
 - i. Sign up to a 100% genuinely green electricity-supplier.
 - ii. Switch from gas-powered district-heating system to electric-heating, whether by electric-boiler, air-source heat-pumps or infra-red panels.
 - iii. Installation of more solar PV systems on the relevant roofs & car-parks of the centre.

6. Electricity

Existing Good Practice

1. Your kitchen ovens are electric operated and so not using fossil fuels, so long as you are on a genuine green electricity tariff.
2. You are already in the process of obtaining quotes for the installation of solar PV panels on the roof and potentially in the car-park on car-ports.
The current proposal when we visited was for a 59kw system, which would roughly produce about 50,500kwh per annum, which is almost exactly current reported consumption for electricity.
There would not be a surplus left over for electric heating, which would have to be run largely by imported green electricity.
If you are looking for an additional quote, try The Solar Shed which has certified installers across the UK. Kevin Holland Tel: 07737 457208
3. Your IT system is cloud-located rather than with on-site servers This saves about 90% of the electricity required, due to greater cloud efficiencies.
4. You have 3 laptops, which use about one third of the energy used by PCs.

Suggested Next Steps

1. You are with Opus Energy which is part of the Drax group which is seeking to build Europe's largest new fossil-fuel fed power-station.

We were unable to find out whether they use just REGO certificates or whether they genuinely produce and directly buy 100% renewable electricity themselves. But 12% of the electricity is produced by biomass boilers, likely to be the Drax turbines burning imported wood from the States.

<https://www.opusenergy.com/blog/where-does-opus-energys-energy-come-from/>

You could consider switching to a green electricity supplier who sources all of their electricity from zero carbon sources such as hydro, wind and solar panels, as this would make all of the electricity used by The Stonegrove Centre carbon-neutral, if it is not already.

Orsted Energy undertake to match regional electricity price quotes:

<https://orstedbusiness.co.uk/en>

Good Energy and Ecotricity are the top two rated genuine green electricity suppliers, if you would like additional quotes to Orsted Energy.

Ensure laptops/computers are set to energy saving mode and lower the screen brightness to appropriate level for users, unless people have specific eye-problems.

2. Install a timer on your hot-water boiler in the kitchen, so it is only heating during opening hours, when operational.
3. Put on 7-day timer on the mains-fed water-cooler, so that it is only on during opening hours.
4. If post cv19, you reopen a café in the reception area, consider seeking to find a pre-used display cabinet that is closable, so that the energy being used is not constantly being lost.
5. Likewise, if you retain fridges post cv19 operation, ensure that any empty fridges are turned off and fridges in operation are cooled to 5C and no lower and freezers to minus 18C.
6. In many premises that have district heating (like yours) or solar hot-water systems, there will be an electric immersion heater back-up system.

However, due to complexity of controls, again like yours, the electric immersion heaters can be on 24/7 by mistake.

Check with your electrical contractors to clarify how the controls work in your system, so that you can ensure this is not happening here.

Cooling

The management did not know whether the building has an air-handling or air-conditioning system installed, as the contractors who built the building have already gone out of business.

Endeavour to find out from your electrical contractors which system it is.

If it is an air-handling system, ensure there are timers in place, so that it is only operational during opening hours and if it is zoned, that it is only on in those parts of the building that are occupied.

If it is an air-conditioning system, it is important to know that air-conditioned buildings can use up to 100% more energy than non-air-conditioned buildings. It is crucial therefore that you use it in an energy efficient manner and figure out the temperature and timing controls if present.

Suggestions if you discover that you do have an air-conditioning system:

- 1. Air-conditioning should only be used to cool premises down to the CIBSE recommended temperature of 25C and no colder.**

Cooling it below this e.g. to 20/21C, could be wasting up to 100% of the energy used.

It is strange but often staff who are cold in winter at 19C and want heating to be raised to 22/23C, often want air-conditioning to be cooled to 18C in summer, both of which are very wasteful in energy and carbon!

Train any staff who may be operating the air-conditioning units in their efficient operation. This is especially important for the receptionist and caretaker who operate the hall's air-conditioning system, due to the expense of cooling such a large space.

2. Do not let untrained people have access to the air-conditioning controls. If controls are accessible to the public, ideally place a security box around them.
<https://www.securitysafetyproducts.co.uk/security/protective-covers-cages/thermostop-thermostat-cover-small.php>
3. Ideally, all other means should be tried to cool the building before using the main air-conditioning units, which on average consume up to 2,000 watts each!

Usually best method of avoiding their usage, is to create cross currents of fresh-air. These require open windows or doors on opposite sides of the rooms. Ensure such actions are in line with fire regulations.

4. It's important that staff know that if they turn on the air-conditioning that the doors and windows must be closed, otherwise it's as wasteful as having them open with the heating on in winter, as the money spent cooling the air is lost as it escapes.

7. Lighting

Current Good Practice

1. All the lighting is already efficient LED.
2. There were no inefficient recessed lighting fittings installed.
3. Sensors have been installed throughout the premises, so that lights cannot be left on in empty bathrooms, kitchens etc.

Suggested Next Steps

1. If there are light-sensors in naturally lit rooms, ensure that they are not keeping the lights on when naturally lit. There are dual light-sensors which only come on when there is no natural light and the space is occupied e.g. Gus's office.
2. Encourage staff to maximise use of natural light. Artificial light was being used in rooms that were well lit naturally.

8. Waste Reduction/ Recycling

Current Good Practice

- 1 You have installed hand-driers in the bathrooms, which eliminates need for wasteful paper-towels.
- 2 There is a main-connected water-fountain which eliminates needs for deliveries of bottled water.
- 3 You have energy-efficient Dyson hand-driers in the bathrooms, which eliminates the need to buy paper hand-towels.
- 4 Bathrooms have refillable soap-dispensers, which reduces packaging wastage.
- 5 Real crockery and glasses are used by staff.

Recommended Next Steps

1. Train those with purchasing authority, such as furniture, food, stationery etc in green purchasing policies, i.e. reduce, re-use, recycle and how to implement them. For example, first checking to see if the item is actually required or is available pre-used on eBay or on your local Freecycle etc.

2. Avoid buying anti-bacterial soap, as it should only be used in clinical situations.

The FDA says that traditional soap works just as well for ordinary bathroom usage.

The active ingredient Triclosan in many anti-bacterial soaps is polluting waterways and the seas.

<https://www.fda.gov/ForConsumers/ConsumerUpdates/ucm378393.htm>

A plant based soap for refills is available from Bio-D

<https://biodegradable.biz/shop/hand-soaps/bio-d-geranium-sanitising-hand-wash-5/>

3. Promote copying onto scrap-paper when clean paper is not needed for internal purposes.
4. By getting your cleaners to use e-cloths for bathroom surfaces, kitchens and windows, you can eliminate almost all of the need for bottled liquid cleaning products. <https://www.e-cloth.com>

9. Purchasing/Miscellaneous

Current Good Practice

1. All the bathroom taps are push-button operated and so cannot be left running. This is important in bathrooms open to the public.
2. There is an Amazon storage facility in the centre, which reduces the number of individual trips needed to be undertaken by vans locally.

Suggested Next Steps

1. Only buy bathroom tissue and any paper-towels required made from 100% post-consumer waste recycled paper.

2. Request 100% post-consumer recycled paper for any external printing work for flyers, posters etc.
Last year you purchased a minimal 1000 pages of external print but it was not on recycled paper.
Some printers do not charge a premium for using recycled paper. If you cannot find one locally, [alocalprinter.co](http://www.alocalprinter.co.uk) does recycled paper with vegetable-ink printing at a reasonable rate.
<http://www.alocalprinter.co.uk/eco-printing/green-printing-policy>

Don't forget to include "printed on 100% recycled paper" on the artwork.
3. Buy bin-bags made from recycled plastic.
4. Ensure stationery items such as post-it notes, envelopes, small note-pads, new files, flipchart paper, etc are made from recycled materials.
5. Buy refillable pens and markers.
6. Buy organic and fair-trade tea/coffee, sugar and organic milk.
<http://www.traidcraftshop.co.uk>
7. For your remaining cleaning products consider Bio-D eco-cleaning products, which are made in the UK.
<https://biodegradable.biz/laundry>

10. Events Tick List

The Stonegrove Community Centre has many events over the year, so it is important that you pay attention to their environmental impacts.

All events have different environmental impacts but this suggested general tick-list could be considered by those arranging events by the centre or room-hirers:

1. Appoint a named staff member to be the Green Champion responsible for the centre's environmental performance at each event.

2. They should be trained on how to use heating and air-conditioning (if present) efficiently with the correct temperatures and doors and windows operated sensibly. Train them also in how to minimise need for air-conditioning if it is installed.
3. Natural light should be used where practical.
4. Any electrical equipment should be used efficiently and turned off when no longer needed.
5. Ensure recycling facilities are available, properly labelled and easily found.
6. Avoid use of disposable crockery and cutlery for food and drinks.
7. If using disposable serviettes, ensure they are made from recycled paper.
8. Consider food-miles when choosing wine and other drinks. Ideally if serving wine, it should be English and organic.
9. Use jugs of tap water, rather than bottled water.
10. Try to use local organic food and drink. UK soils are being lost at an alarming rate due to industrial agriculture, with some soils reported by UK government to have only 40 crops left in them.
11. Avoid tropical or orange juices; try English apple or pear juices instead.

A litre of orange juice is estimated to represent 1,000 litres of imported water, usually from a water-scarce country such as Spain, California, Morocco or Israel.
12. Consider doing all-vegetarian catering. The UN has estimated that the meat industry contributes about 18% of total global climate-crisis gases. It also makes it easier to cater for different religious and cultural tastes.
13. If this is not possible at this stage, then seek to at least avoid beef and lamb, which have the highest carbon emissions.
14. If serving fish ensure it's MSC (Marine Stewardship Council) certified, as coming from a sustainable fishery which is not being over-exploited.
15. Encourage people coming to events to use sustainable transport methods by providing local public transport and cycle route information.
16. If providing any printed literature, ensure that it is on recycled paper and labelled.

11. Eco-audit Implementation

1. E-mail eco-audit report to all board & other centre co-occupiers.
2. Add implementation of eco-audit report recommendations as a standard agenda item for management meetings.
3. Create a spread-sheet with traffic-light coding for each specific recommendation, identifying whether done, being implemented, postponed or rejected.

Donnachadh McCarthy, 3 Acorns Eco-audits August 2020