



Chesham Town Council Eco-audit Report Contents:

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Eco- Audit Report for: Chesham Town Council

FAO: Bill Richards, Town Clerk

Introduction

We would like to thank Bill Richards, the town-council staff and town-councillors for kindly organising and facilitating the eco-audit process.

The key context in which this eco-audit takes place is the statement by the UN Secretary General in Sept. 2018, that humanity has to have started radical cuts in fossil-fuel emissions within two 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 catastrophically rising above 1.5C.

In September 2019 and for many years previously, similar warnings about a possible pandemic were given but not acted upon. CV19 threatens 1% of the population, the climate and ecological crisis threaten all of humanity and what is left of nature.

However, in 2019, Chesham town-council decided to act and declared a climate emergency and set a target of 2030 to be carbon neutral.

This requires unprecedented civilisational change for the town and its community. We hope this report will enable Chesham Town Council to plan how they can make a positive contribution to this global effort by initially eliminating their own CO₂ emissions. Being the closest tier of government to the community, means it has many constructive opportunities to enable the town to move towards the 2030 zero-carbon and zero ecological impact targets.

1. Headline Eco-Data Figures 2019/20

Combined data for all premises:

Building Energy Consumption

Electricity kwh:	310,100
Electricity CO ₂ (tons)	86
Solar Electricity kwh produced	7,300
Tons CO ₂ saved	(2)
Gas kwh	1,147,500
Gas CO ₂ (tons)	218
Building Energy Carbon Footprint (tons)	304

Flights CO ₂ (tons)	0
Petrol (litres)	617
Petrol (tons of CO ₂)	1.5
Diesel (litres)	6,700
Diesel (CO ₂)	17.5
Total Transport Carbon Emissions	19.0
Total Energy carbon footprint (tonnes):	323

Square meterage n/a

Mains water consumption (litres): 14,733,000
Water supply CO₂ (tons) **14.7**

A4 Sheets virgin photocopying paper 1,250,000
 % made from recycled paper 0
 Trees consumed 147
 Paper carbon emissions 27

Total annual municipal waste (tons) 74
 Non-recycled waste (tons) (61,400 litres) 32
 Recycled (tons) (82,900 litres) 42
 Waste CO₂ (tons) 11.5
Recycling rate (%) **58**

Utility Bills

Electricity £ 40,100
 Gas £ 27,900
 Water £ 17,000

Bank: Lloyd's

Investment Bank: National Westminster

Breakdown of Electricity Usage (Kwh)

Elgiva	134,000
Gym & Swim	98,400
Town Hall	41,400
Depot	17,000
Lowndes	9,100
Codmore	8,500
Toilets	1,200
Total	310,100

Breakdown of Gas Usage

Gym & Swim	834,400
Elgiva	233,100
Town Hall	80,000
Total	1,147,500

Breakdown for Water Usage (Litres)

Gym & Swim (mains)	6,550,000
Depot	5,100,000
Elgiva	1,380,000
Allotments	745,000
Gym & Swim (extraction)	384,000
Town Hall	290,000
Public toilets	227,000
Lowndes (abstraction)	57,000

Breakdown of Building Energy Carbon Emissions (tons)

Manor Gym & Swim	185
Elgiva Theatre	83
Town Hall	27
Codmore	2.5
Lowndes	2.5
Toilets	0.3

Breakdown of Carbon Emissions kg CO₂/square meter

Gym & Swim	400 (464 sq.m)
Elgiva	71 (1,143 sq.m)
Town Hall	42 (630 sq.m)

Data Analysis

Carbon Footprint

Your annual energy carbon footprint for building energy is 304 tons, which is about the equivalent of the average energy emissions of about 101 UK homes.

The quickest way to get to net zero for energy consumption would be to switch to a green electricity supplier and to switch your gas heating and fossil fuelled vehicles to electric.

It would also mean that the council implements a comprehensive energy efficiency programme on its premises and to look at how it can maximise the production of the renewable electricity required to do this locally.

The elephant in the room of course is the open-air swimming pool. The carbon footprint of the Gym & Swim of 185 tons, makes up a staggering 61% of your premises carbon emissions.

It is also worth noting that the carbon emissions for your virgin paper usage are significantly higher than your total transport emissions. In addition, every mature tree stores up to one ton of CO₂. So, the trees felled for your annual paper usage would have stored 147 tons of CO₂.

It is positive that the council is looking at how it can work towards being a zero-carbon council itself, as this gives it credibility as it seeks to provide leadership in the community on the issues.

Other than water and paper, the audit did not assess the embedded carbon emissions in the rest of the council's annual purchases. A normal rule of thumb is to add another estimated 40% to the measured energy carbon emissions.

Electricity

Switching to a genuine green electricity tariff would make all your electricity consumption net zero.

Considering that all water-heating at the Gym & Swim is gas-powered, the high electricity consumption merits further investigation. The council should carry out an assessment of all its properties to see how it can maximise the production of solar and wind renewable energy.

Gas

As will be seen in the detailed heating section below, the first crucial priority will be to ensure all premises have working timing and zoning controls and that they are operated in line with the recommendations about the actual spaces being heated, the length of time they are heated and at what temperature they are heated at. To achieve zero carbon for energy, the gas boilers will need to be replaced with electrical heating of some form, powered by green electricity.

Waste/ Recycling

The reported recycling rate was 58%, which is significantly above the national average municipal recycling rate of 45%. The detailed section below lists a number of areas where recycling provision can be improved.

Water

The water consumption at the Gym and Swim is understandably again the largest of any of your premises. Combined with targeting efficiency measures, the more you can source your water by abstraction, rather than mains-supplied, the more you reduce the carbon emissions for pumping it to your premises. The large reported water consumption at the Depot, needs investigating.

2. Policy & Management Recommendations

Suggested Next Steps

1. Submit the eco-audit report to the Town Councillors with recommendations for action.
2. The Town Clerk to ensure annual eco-audit report is produced and presented to the council, 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 progress made on initiatives involving the local community.

3. Request the councillors to appoint a green champion to support the Town Clerk in the implementation of the recommendations.
4. The Clerk 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, water and heating efficiency and participation in the recycling service.
7. Any future contracts that the council signs should include criteria that facilitate it working towards its zero 2030 target. e.g. the café at the Elgiva Theatre is run by a private contractor.
8. Include a new Zero Carbon Chesham section on your website, where local residents can get information on the various ways that they can reduce their carbon and ecological impacts.
9. Consider staging a Zero Carbon Chesham Community Engagement Day in conjunction with local community groups, to see if you can stimulate some collective partnership actions locally.
10. The Neighbourhood Plan revision is currently being consulted on.
11. This needs to be revisited to ensure it facilitates & prioritises the delivery of a zero carbon Chesham.

Ensure that protected cycling infrastructure, local water sourcing, major expansion of tree planting, rewilding of open spaces, organic food-growing, reduction in cement usage, renewable energy etc are addressed with the priority required.

3. Human resources

1. Staff contracts should be amended in consultation with the staff to include a new provision along the lines of: *“The Chesham TC 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. including how to use the air-conditioning, green purchasing and waste-reduction & recycling procedures.
4. It is important that your in-house cleaning staff are included in any new procedures that are being introduced to make the council eco-friendlier.

4. Top Ten Priorities for First Year

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

1. Do not heat the buildings above 18/19C in winter.
2. Ensure heating and hot-water timers and zoning controls are set correctly.
3. Sign up to a 100% green electricity tariff.
4. Switch your all your paper products to 100% recycled paper.
5. Consult the local wildlife trust on developing a biodiversity action plan for your open spaces.
6. Programme the switchover of diesel and gas vehicles/appliances to green electricity.
7. Complete the switchover of all lighting to LEDs within a year.
8. Develop an action plan in conjunction with the local community on how to achieve a Zero Carbon Chesham.
9. Commission feasibility studies for maximising solar panel & wind-turbine installations on council properties and sites.
10. Implement annual environmental reporting to the council on the council's own environmental performance progress and the local communities.

5. Heating

The Town Hall

Current Good Practice

1. The windows and doors in the town hall are double glazed and in good condition.
2. The heating in the town-hall is off at weekends.
3. There is an efficient new boiler in the town-hall.

Suggested Next Steps

1. Town-hall opens at 8.30am
Official office hours are 9am to 5.30pm. from Monday to Friday.
Saturday's from 9 to 1pm.
But the central-heating is timed to come on at 6am. Staff did not know what time it was scheduled to go off in the evenings at. **Urgent.**

Trial the heating to come at 8.00am and to go off at 4pm or earlier, in the offices.

As the time the heating is turned off was unknown, we are unable to estimate the potential hours saved in the evenings but if the above recommendation works for the starting time, then over a week, it would save 12 hours of heating operation per week.

Experiment with these timings as they will vary according to the building's thermal insulation.

3. Recommended CCC winter heating room temperature for sedentary activities such as office-work is 18C. CIBSE recommend 19C.

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

As parts of council offices are being heated to as high as 24C, you are wasting up to 60% of your heating bills in parts of the premises.

The recommended temperature for the non-ambient elderly is 21C.

Town hall first floor landing was 22C.

Upstairs kitchen was 24C, despite being empty most of the week.

Lowndes Room was 22C and empty.

Community Hall 19C and empty.
Downstairs kitchen 23C and used just once a week.
Reception 22C
Main office 23C.
Stairwell 21C
Upstairs gents 20C
Bathroom 20C with windows open.
Town-clerks office 24C

4. Staff we spoke to were unaware of any thermostats or what temperature the systems were set at.
We were told however that the building central heating is divided into only two zones, upstairs and downstairs.
Get a quote for installing more zoning controls, as different parts of the building have different usage patterns.
For example, the large council chamber was heated despite being empty during the site-visit.
5. Get a digital thermometer for the premises and have named staff member assigned to implement the CIBSE recommended heating temperatures.
6. Turn heating in bathrooms/staircases/corridors/ kitchens etc. down to frost-protection.

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

The downstairs kitchen is only used once a week, so turn heating down to frost-protection and close the door for rest of the week.

Heating bathrooms above frost-protection is a significant waste of energy, as the windows are often left open to air them and people only use them for a brief time. The town-hall stairwell has doors into it both upstairs and downstairs, so this makes it easy to turn the heating down to frost-protection from the 21C it was at on site-visit.

7. Ensure that all relevant hot-water pipes and central heating pipes are insulated e.g. there were exposed pipes coming from the gas boiler.
8. Install heat reflectors behind radiators on outside walls.
9. Ensure radiators on outside walls are not blocked by furniture or boxes etc e.g. town-hall main-office
8. For the council to achieve net zero carbon for building energy would require three steps:
 - i. Sign up for 100% green electricity supplier.

ii. The conversion of heating boilers to electric heating, whether electric boiler, air-source heat-pumps or infra-red panels.

iii. A major energy efficiency drive, complemented by the installation of more solar PV systems on the relevant roofs & council car-parks (e.g. at Gym & Swim) and possibly wind-turbines at Lowndes Park.

13. Check whether cavity walls and roof in town-hall have been insulated. **Important.**

The Elgiva Theatre

Current Good Practice

1. Heating was off in all the foyer bathrooms.
2. Fire doors are well draught-proofed.
3. There is a door-closer on the foyer rear exit-door which helps keep the heat in.
4. The auditorium has its own separate air-handling heating system, which enables it to be off when unused. The heating there is set from 5 to 9pm.

Suggested Recommendations

1. The boilers are 22 years old and reported to have only 80% efficiency. The easiest way to move to a zero-carbon option for heating at the theatre would be to replace these simply with an electric boiler, coupled with a genuine green electric tariff.
2. The joints and pipes in the main boiler room need to be insulated to a modern standard.
3. Check if the cavity walls and ceiling have been insulated. It was built in 1998, so it is likely to have been.
4. Temperatures:
Manager's Office 22C
Back stairwell 18C
Backstage corridor 21C
Auditorium 22C
Dressing-room corridor 24C

The box-office hours are 9.30am to 5pm.

The main central heating is on from 8am to 9pm.

See recommendations on temperatures & timers in town-hall section above.

5. The back stairwell is a very large space to be heating to 18C, but it has an exit-door upstairs and downstairs to the rest of the building and so can be independently controlled. Turn the heating down to frost-protection.
6. The dressing-room, backstage and under-stage areas are heated during all opening hours, despite often being empty. Ideally, this would have a separate zoning control installed, so that it can be turned off when us-used.

Gym & Swim

Current Good Practice

1. Hot water is maintained at 55C and not above.
2. Windows are all double-glazed and well draught-proofed.
3. Radiators are turned off all year round in the gym.
4. Whilst having an outdoor heated pool is inherently shockingly wasteful in energy, the pool has at least got an extra thick pool-cover. Wind increases heat-losses.
5. The operating temperature of the pool has been reduced from 32C to 28C which is a significant step for efficiency.
6. New efficient boilers have been recently installed.

Suggested Recommendations

1. Opening hours are from:
6am to 9pm Monday to Friday
8am to 6pm Saturday & Sunday

But the central heating was reported as being on 24/7!

Ensure you have a working 7-day timer and it is set according to usage.

Trial the following operating hours:
5.30am to 7pm Monday to Friday
7.30am to 4pm Saturdays/Sundays

If this works it would save central heating operating hours of 10.5 hours / day Monday to Friday and 15.5 hours/day Saturday and Sundays!

This would potentially reduce operating hours from 168 hours per week to 84.5 hours / week or a saving of 50%.

Urgent!

2. Insulate the hot-water pipes in the downstairs boiler room and the pipes leading from the boiler in the Ladies boiler room.

3. Check the town-hall section on temperatures for the central heating. The disabled bathroom was at 25C and corridor 28C!
4. The door from the reception office to the gym is left open, to allow staff to double as help for gym-users and as reception staff.
But as the gym is unheated and the windows generally left open, this means that a cold draught enters the rest of the building via the office which is heated and the heat is also lost from the heated parts.

One solution to this would be to ensure the door from the entrance foyer to the viewing room is kept closed using a door-closer, get rid of the over-head electric curtain heaters at the entrance door and instead provide an infra-red heater for the reception office which will heat the staff but not the air.

5. The central heating has no zoning controls and the sole reported thermostat is located in the draughty reception office.

This means even if it was set at correct 18C temperature at the office, other parts of the building would be over-heated. The corridor was at a sweltering 28C!
Move the thermostat to the centrally heated part of the building but ensure only trained staff have access to it. **Urgent!**

6. The building was built in 1986 and so the walls and roof may not have been professionally insulated. Check whether this was done in the 1997 refurbishment. If not, ensure the centrally heated sections of the building are professionally insulated.
7. The hot-water is on 24/7 in the downstairs boiler room. Set a timer to be in line with usage.
8. The styro-foam insulation on the pipes in the plant room need sealing to make it effective.
9. Joints in plant room need insulation. There are Velcro insulating wraps available on the market which makes this easier.
10. As the gym is not heated, draught-proof the door into the pool-view room which is heated.
11. Install insulating heat-reflectors on all radiators on outside walls and on wall between pool-view room and gym (as gym is unheated.)
12. Whilst pool temp has already been reduced from 32 to 28C, challenge every degree of heat, especially in summer months.
Also debate needed to determine if such a high energy facility as an open-air pool in winter is justifiable in this climate emergency.

13. The higher you can place reinforced glass wind-barriers around the pool enclosure, the less heat you will lose to wind-shear.

6. Electricity

Existing Good Practice

1. A community energy company is being investigated by the council.

Suggested Next Steps

1. Switch 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 council premises carbon-neutral.

Orsted Energy undertake to match regional electricity price quotes:

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

Good Energy and Ecotricity are the top two rated green electricity suppliers and SSE also have good quality renewable energy tariffs, if you would like additional quotes to Orsted Energy.

Town Hall

1. The roof of the council offices has some reasonable potential for the installation of a solar array.

The Solar Shed installs large and small arrays and we have found their site surveys to be honest about a site's feasibility or not.

They also have experience in installing arrays in open fields. So, you might like to ask them about potential arrays at the various car-parks.

<https://www.thesolarshed.co.uk/about-us/>

https://www.bre.co.uk/filelibrary/nsc/Documents%20Library/BRE/89087-BRE_solar-carpark-guide-v2_bre114153_lowres.pdf

2. 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.

3. Put a 7-day timer on the mains-connected water-cooler in the town-hall, so that it is only on during opening hours.
4. The Sadia electric water-heater in the town-hall boiler-room is on 24/7. Install timer so it is on only when open.
5. The fridges upstairs were empty. Turn them off when un-used. Query if they are actually needed.
6. The very large fridge in the downstairs town-hall kitchen is almost empty except for carton of milk for staff fridge.

See if you can get a very small cabinet fridge for the milk and turn off the large fridge when unused.

7. The air-conditioning for the district council's CCTV room is set at 15.5C. BT have had their servers at 27C for over a decade.

Check with manufacturers for the correct temperature setting. Air-conditioning units use about 2,000 watts each, so this is important.

8. The door-curtain electric fan-heater at town-hall reception entrance should be turned off.

The Elgiva Theatre

Current Good Practice

1. There is no air-conditioning in the theatre.

This is a positive from a carbon perspective, as an air-conditioned building can double the carbon footprint of a premises.

Suggested Recommendations

1. Install a timer on the drinks-cooler cabinets in the bar. Bar is only open from 6pm to 10pm.
2. Rationalise the two half-empty ice-cream freezers into one and turn one off.
3. See if the line-coolers can be placed outside the beer cellar, as the heat from them, makes the refrigeration system have to work harder.
4. Ensure beer cellar is kept at correct temperature, ever 1C colder uses about 10% more energy.

Gym & Swim

Current Good Practice

1. A solar system has been installed on the roof of the gym.
2. Electric heating was off in empty therapy room.

Suggested Recommendations

The Gym & Swim has much higher electricity consumption than we would expect.

The main possible reason could be inefficient operation of the electric heating. Ensure it gets turned off at night, is not on in rooms with windows open and is operated at correct temperatures (18C in seating areas and 16C in physical exercise areas.)

1. Turn the two over-head electric door-curtain heaters off at main-entrance, once you get an infra-red heater for the staff at reception.
2. Get timers for the vending machines so they are only running during opening hours.
3. Electric heater in abs room was set at 21C. Should be 16C maximum for exercise room or consider if heating is needed at all, as there is none provided in the gym.
4. The electric tube-heaters in the gents changing room are on 24/7. Put a 7-day timer on them and programme according to recommendations in town-hall heating section.
5. The gents dressing room has large gap above wall and six-inch gap under door. Thus, the heat you are paying for is constantly escaping.
6. Get timers for the heaters in the large downstairs studio.
7. As the ladies changing room was being used during the site-visit, we were unable to access it. It is likely the above heating issues are also relevant.

Depot

Current Good Practice

1. Windows have been double-glazed.

Suggested Recommendations

1. The electric heater in the workshop is left on 24/7. Replace it with an infra-red panel which heats the workers rather than the air, which is relevant heat due to building not being thermally insulated and so only needs to be on when the workshop is used.

2. Heating at the Depot is already all electric so if you switch to genuine green electricity supplier, it will be net zero.

3. Temperatures:
Empty managers office 23C.

4. Get 7-day timers for the heaters and set them in line with occupation.

Opening hours are 8 to 4pm (3.30pm on Fridays) – so try them set at 8am to 2.30pm (2pm on Fridays).

5. The large tea-urn is on all day. As this uses about 3,000 watts, this is wasteful.

Consider getting commercial kettle and just boil what is needed for pot of tea.

6. The hot-water boiler is on 24/7. Get 7-day timer and programme for it to be in line with opening hours.

7. The layout of the depot block is unusual from a heating point of view.

It has two heated rooms (drying room & managers office) separated by an unheated storeroom from the heated staff-room.

Also, the heated drying-room has a door into the bathroom which has its window open permanently for fresh-air.

Install door-closers from heated rooms into the unheated store-room and the bathroom and draught-proof the doors with door-brushes and strip-insulation as though they were outs

8. Check if there are cavity walls and if there are, if they have been insulated.

9. The heating in bathroom and drying room is on 24/7.

Turn heating in bathroom down to frost protection and only turn heating on in the drying room when the workmen's clothing is wet and needs drying, rather than being on 24/7.

7. Lighting

Town Hall

Current Good Practice

1. Some LEDs already in use in town-hall, e.g. downstairs ladies, small amount in council chamber
2. Bathrooms and small upstairs kitchen in town hall have movement light-sensors.

Suggested Next Steps

Whilst the town-hall does not have any inefficient tungsten or halogen lighting and only some inefficient T8 fluorescent tubes, the main lighting issue, is that many parts of the building have large amounts of recessed lamps.

These waste up to 90% of the energy used to run them, as the light is wasted in the recess and so they can only light the space immediately beneath them.

Replacing the recessed fittings with pendant lamps with LED bulbs, would reduce amount of wattage required by up to 90% in many places around the town-hall.

When replacing any lighting, ensure you do so in future only with LED lamps, which use about 40 to 50% less electricity than fluorescent tubes and energy saving lamps.

Replace all remaining inefficient T8 fluorescent tubes with LED tubes, e.g. the 4 x 100-watt tubes upstairs at town hall.

For example:

- The Lowndes Room has 12 x 56-watt fluorescent tubes = 672 watts. This could be reduced to 330-watts by switching to LED tubes. They are not recessed or boxed tubes which is good.
- The Community Hall has 16 x 58-watt fluorescent tubes = 928-watts in total. This could be reduced to 460-watts by switching to LED tubes.
- Downstairs kitchen has 3 x 56-watt fluorescents.
- Main office has 13 x 72-watt fluorescent tubes = 830 watts. This is the equivalent of 41 living rooms worth of light.
- Town-clerk's office has 6 x 72 watts fluorescent tubes = 432-watts or 20 living rooms. Consider replacing with 2 x pendant 20-watt led lamps and a 5-watt LED desk-lamp.
- Both the reception and upstairs corridor have 400 watts each of CFL lamps, equal to 20 living rooms worth in each.

- This could be radically reduced by replacement with 18-watt pendant LED lamps.
- The council chamber in addition to the 9 LED lamps, has got 64 x 18-watt recessed CFLs burning a total of 1,152 watts.
 - The upstairs corridor has 22 x 18-watt CFL recessed lamps = 400-watts or 20 living rooms worth of light.

The Elgiva Theatre

Existing Good Practice

1. Almost all the inefficient halogen spot-lamps in the reception area have been switched to efficient LED spots, as have 7 halogen spots in both foyer bathrooms and the side of stage lights.
2. The main lighting-rig in theatre has been converted to LEDs spots. This is important as LED spots only use about 100-watts, compared to the old tungsten spots of up to 1000 watts.
3. 50% of the lamps in the foyer are pendant lamps which enable all of the light to be useful.
4. A quote is being sought to convert the tungsten auditorium house-lights to LEDs. This is important due to the number of inefficient lights present. There are 44 x 80-watt lamps = 3,520 watts.

Suggested Recommendations

1. The theatre has some T5 fluorescent tubes but LED tubes are now about 30% more efficient, so replace them in future with LED tubes e.g. Manager's Office Manager's office corridor.
2. The back staircase which has 3xT8 old inefficient 100-watt fluorescent lamps, which should be replaced and it also needs a movement sensor, as it is only used occasionally.
3. Get movement sensors for all the bathroom lights, including the disabled bathroom in the foyer.
4. Turn off the two LED floodlights over the ticket office window, as they appear to be serving no purpose.
5. Both foyer bathrooms are inefficiently lit with 26-watt CFLs. Switch to LED options.
6. There are still about 6 to 12 tungsten spot-lamps left in the theatre lighting-rig. These could use up to 12,000 watts if all were being used at same time. If used regularly, seek to complete the switch-over of all stage lights to LEDs. 12 LED stage-lights would use about 1,200 watts.

7. The blinds in the foyer were drawn and the lights during the site-visit. Train staff to maximise use of natural light.

Gym & Swim

Current Good Practice

1. Plans in place to move lighting to LEDs.
2. Downstairs small studio electric heating is usually left off.

Suggested Recommendations

1. Install movement sensor for disabled bathroom lights.
2. Get movement sensor for the lights on the stairs.
3. The downstairs studio lights cannot be turned off when empty, as there is not a separate switch. Install one.
4. Likewise, the therapy room and adjacent bathroom are on shared switch. Get separate switch so the therapy room when empty can have its lights off.

Depot / Parks

Current Good Practice

1. Plans are already in place to switch the office, security, park and public toilet lights to LEDs.
2. Workshop already has LED lamps.
3. Security lights already on movement sensor.

Suggested Recommendations

1. Consider including motion sensors when replacing current park lights with LEDs, to ensure that they are not on all night when nobody is present.

8. Waste Reduction/ Recycling

Town Hall

Current Good Practice

- 1 You have installed hand-driers in the town-hall bathrooms, which eliminates need for wasteful paper-towels.
- 2 You have refill dispensers for soap rather than one-use plastic bottled soap.
- 3 The regular mail-out to all allotment holders is ceasing and moving to email.
- 4 Real mugs are used for staff drinks at town-hall.

Recommended Next Steps

1. Place well-labelled recycling bins around the town hall.
2. Train those entrusted with purchasing authority, such as furniture or equipment, 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 elsewhere.
3. 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 and to tackle cv19.
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-5l/>
4. For those councillors who are comfortable using a laptop or tablet, provide agenda papers electronically.
5. Promote copying onto scrap-paper when clean paper is not needed for internal purposes.
6. Ensure flyers for the theatre and the town-guide are printed in future on 100% post-consumer recycled paper.
7. Explore potential for cutting down the number of pages for the town-guide by sign-posting in it the more detailed information to be provided on your website.

8. Get re-usable plastic glasses for water-cooler. You are using disposables at the moment for fear of them breaking.
9. Get refillable whiteboard markers, pencils and refillable pens.
<https://www.greenstat.co.uk/refillable-pens>
<https://www.greenstat.co.uk/markers-and-highlighters>
10. 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>

The Elgiva Theatre

Current Good Practice

1. There are driers in foyer bathrooms and no paper-towels.
2. A recycling system is in place for cans, card, paper, plastic bottles, glass.
3. An estimated 50% of waste is recycled which is slightly better than UK average of 45%. (One 1,100 l euro-bin/week of each).

Suggested Recommendations

1. The bar serves all drinks in one-use plastic glasses for safety reasons. Switch to re-usable plastic glasses instead.
2. Buy bin-bags made from recycled plastic.
3. Switch to a more benignly packaged crisp brand than Pringles, which is an unrecyclable combination of plastic, aluminium and cardboard.
4. Do not use anti-bacterial soap.

Gym & Swim

Current Good Practice

1. Soap dispensers are used in the bathrooms, which reduces plastic soap bottled waste.

Suggested Recommendations

1. There is currently no recycling service at the premises. Introduce the system you have at the Elvira Theatre.

2. Avoid buying anti-bacterial soap, whose ingredients are damaging to water-life. The US FDA says ordinary soap is just as effective.

Depot

Current Good Practice

1. There are three mixed recycling bins in the park.

Suggested Recommendations

1. The workmen do not recycle waste collected on litter-picks in open spaces, as this would mean they have to carry two separate sacks. However, if it was done in pairs, you could have one doing recyclable waste and the other general waste.

9. Purchasing / Miscellaneous

Suggested Next Steps

1. Switch to 100% post-consumer-waste recycled photocopying paper. Evolve is one of the better-quality brands on the market.
This would save about 56 trees per year (excluding external printing).
You are currently using 100% virgin paper for photocopying but it is certified by PEFC.
2. Request recycled paper for any external printing work for flyers, posters etc.
This is a large source of the council's paper usage with the theatre alone using about 747,000 A4 equivalents of paper per annum.

Switching this to 100% post-consumer recycled paper would save about 78 trees per annum.

Some printers do not charge a premium for using recycled paper. If you cannot find one locally, [alocalprinter.co](http://www.alocalprinter.co) does recycled paper with vegetable-ink printing at a reasonable rate.

<http://www.alocalprinter.co.uk/eco-printing/green-printing-policy>

If both your photocopying and external printing were switched to recycled paper, it would save over the next decade an estimated 1,340 trees or the equivalent of a small woodland.

These trees would also store up to 1,340 tons of carbon.

Don't forget to include "printed on 100% recycled paper" on the artwork.

3. Ensure bathroom tissue, kitchen roll and paper-towels are all made from 100% post-consumer recycled paper.
4. Buy bin-bags made from recycled plastic.
5. Ensure those in charge of stationery purchasing, are aware of your green purchasing policies and ensure in future that items such as post-it notes, envelopes, small note-pads, new files, flipchart paper, etc are made from recycled materials.
6. Buy organic and fair-trade tea/coffee, sugar and organic milk. If not available locally, try: traidshop.co.uk
7. For your remaining cleaning products switch to Bio-D, which are made in the UK, unlike Ecover's.
<https://biodegradable.biz/laundry/laundry-liquid-with-juniper-seaweed-5l.html>

The Elvira Theatre

Current Good Practice

1. Hand driers are already in place in almost all bathrooms except for one, which means no wasteful paper-towels are needed.

Suggested Recommendations

1. Buy 100% post-consumer recycled paper bathroom tissue, kitchen rolls and paper-towels.
2. If buying business cards in future do not laminate them in plastic, as this makes them unrecyclable.
3. Install a hand-drier in the remaining bathroom without one and remove the paper-towels.
4. Install soap dispensers in all bathrooms, to avoid one-use plastic soap bottles. Avoid use of anti-bacterial soap which is toxic to wildlife. The US FDA says ordinary soap is just as effective, including for cv19 as it is a virus not a bacterium. Bio-D does liquid soap refills.

Gym & Swim

Current Good Practice

1. Bio-degradable coffee cups have been introduced for coffee machine.
2. Reusable coffee cups also available.
3. Bathrooms have hand-driers and so not providing wasteful paper-towels.

Suggested Recommendations

1. Ask coffee machine supplier if they will supply organic coffee, sugar and tea.
2. Buy bin-bags made from recycled plastic.
3. Ensure bathroom tissue and paper -towels are made from recycled paper.

Depot

Suggested Recommendations

1. Ensure all paper products (bathroom tissue/paper towels / kitchen roll etc) are made from 100% post-consumer recycled-paper.
2. Buy bin-bags made form recycled plastic.

10. Transport

The council has 3 vans, 2 open pick-ups, 1 tractor.

Existing Good Practice

1. The council has no company cars.

Suggested Next Steps

1. Consider feasibility of switching to an electric cargo-bike for at least one of the vehicles. The embedded carbon footprint of a new pick-up or Land Rover can be over 30 tons!

2. Query the need for the Can-am
3. The leasing of electric vans allows you to trial them to see if they fulfil the council's requirements.
4. Ensure the new Strategic Plan incorporates comprehensive protected cycle-network.

11. Grounds Maintenance / Water / Cemeteries

Existing Good Practice

1. The town-hall has a living green-wall.
2. The swimming pool has an extraction licence for 384,000 litres of water from a bore-hole. This eliminates the energy which would have been used to transport this water from the water-works to the pool.
3. All shower heads at the pool were reported as being efficient aerating shower-heads.
4. Some areas in the cemetery are already being used to encourage wildflowers.
5. The Elvira Theatre showers are press-button operated.
6. Staff are not wasting one-use plastic bin-bags to collect leaves for composting etc.
7. The practice of cut and leave is being implemented on most parks and verges.
8. A small number of verges are being managed for wild-flowers and it is being monitored.

Suggested Next Steps

1. As the town is located in the Chilterns unique chalk landscape, it is important to take any opportunities to maximise local wildlife diversity, especially the area's rare insects and flowers.
See if you can expand the experiment on wild-flower encouragement through your mowing regime, onto all the verges you now manage, having taken them over three years ago.
2. For open grassed areas, that you wish to keep mown, explore mixing in more low-height flowering and herb cover plants e.g. clover and chamomile.

3. It is important to value the existing and potential wild areas in your open spaces, as these are the spaces where wildlife, insects and birds can thrive.

Britain is one of the countries with the greatest wildlife losses on the planet. Globally we have lost 60% of all wildlife populations since the 1960s.

Blank open green spaces of just grass are in reality ecological deserts. See if you can increase the amount of wildlife friendly areas by reducing the amount of “cleaning and tidying up”.

But it is important to indicate to the public that such areas are deliberately left wild by having a nice tidy border or fencing around them and maybe a sign explaining the purpose.

It would be good for the town council to do more to help protect and restore more local wildlife.

2. Converting some of your grassed areas to wildflower meadows, with neat trimmed borders, would help re-establish some local insect populations, needed by birds to feed off.
3. Boundary fencing around the cemetery could include an edible forestry approach, with hedges including hazelnut and walnut trees etc
5. Staff were considering buying a bio-composter but rather than duplicating the embedded carbon emissions, approach Amersham council to see if you could share theirs.
6. The Co-op Field & Marston Fields are basically large green grassed deserts with a boundary of mature trees. Consider installing a natural wood kids play area in the Co-op Field and developing the boundaries of both fields into a wider woodland boundary and create some wild-flower meadows.
7. The electric leaf-blower that was acquired is not strong enough for doing the leaves in parks, so diesel blowers still being used. Carry out research into what more powerful brands are available.

Which Magazine have carried out a review of leaf-blowers:

<https://www.which.co.uk/reviews/leaf-blowers>

One of our clients with large school grounds, have made the switch and are happy with the results.

<https://bestofmachinery.com/best-electric-leaf-blowers/>

8. Identify a spot for composting leaves and grass cuttings onsite at all of your open spaces, rather than wasting fuel transporting it to the depot. Alternatively get a mulching grass-cutter if you do not already have one.

9. See if you can eliminate usage of the herbicide glyphosate, which is a recognised potential carcinogen and damaging to bees.

<https://www.bbc.co.uk/news/world-us-canada-45155788>

Options could include a return to manual weeding or alternatively, you might consider jointly buying with adjacent town-councils a completely chemical free steam weed-killing machine:

<https://multevo.co.uk/products/waterkracht/>

10. Get aerating shower-heads for the Elvira showers. These use about 30% less hot-water.

<https://aqualogic-wc.com/shop/product/vandal-resistant-standard-shower-head-9-litres-per-minute/>

11. Ask your cleaners to trial eco-tubes in the two urinals in the theatre gents.

12. Check with your plumber to see if the sinks have flow-restrictors to reduce water wastage.

Gym & Swim

Current Good Practice

1. Showers operated by push-buttons and so cannot be left running.

Suggested Recommendations

1. Get aerating shower heads for the showers.
2. Check whether the urinal is leaking.
3. Ask your cleaners to use eco-tubes to radically reduce amount of water used for flushing the urinal.

<https://www.bunzlchs.com/Cleaning-Chemicals/Biological-Cleaning/Pro-57-Bio-Cube-Urinal-Blocks-50-Cubes~p~165209>

Cemetery

Suggested Recommendations

1. Consider installing an edible fruit forest boundary edge right around the bare boundaries of the cemetery. Fruit trees, with fruit shrubs underneath, with perennial herbs and wild-garlic on the ground-layer.

2. Consider offering woodland burials, as the cemetery does not have many trees. Maybe one tree for every four to six plots in designated woodland area.
3. The cemetery could also offer a form of woodland burial for cremated remains, with a tree being planted for each four to six cremation containers. Each tree will store a ton of carbon when they are mature. You could add the annual and cumulative number of trees planted here to your eco-data.
4. Designate areas of the cemetery to be devoted for wildflower meadows. The current grass cutting regime is 12 times per year, carried out by a contractor. A wildflower regime would be just twice a year. They could have their borders kept mown and signs explaining what is happening, so that to the public it looks deliberate and not just abandoned. A staff member says he remembers hearing crickets singing there when he was a lad, but no longer.
5. Glyphosate was introduced 3 years ago, to keep the pathways clear. As this has already been found to be damaging to bees, see if you can return to previous methods.
6. It would be good if the empty unused church could be rented out, so that the resources used in its building are not wasted.

Codmore Botley Playing Fields

Current Good Practice

1. A small far corner of the field has already been allowed to be rewilded.

Suggested Recommendations

1. This site is a large grassed open field with two football pitches. Staff suggested they were used only once a week. So maybe you should consider if this justifies the amount of space devoted to it and if those matches could be played elsewhere and the space properly landscaped with wildlife areas, woodland, benches, natural play spaces, open air gym, grassed picnic spots and wildflower meadows. Every extra mature tree on the site would store an additional ton of carbon.
2. The road verge here is very wide and consists largely of manicured grass. Switch the maintenance to encourage wildflowers, trees and native insects and consider if a protected cycle-lane along this road would be useful.
3. If you decide not to relocate the football, consider extending the wildlife site treatment from the far-corner, all along the 3 non-road edges of the field.

The Pavilion:

This small building which is not in constant use, emits almost the same carbon emissions as the average UK home. This seems excessive and indicates significant wastage in electricity consumption.

1. Install a 7-day timer on the large electric immersion heater, so it is only on when needed, not 24/7.
2. Showers already have push-button controls.
3. Consider replacing the inefficient electric blow-heaters to infra-red panels, this would negate need to insulate the building.
4. The roof and car-park have good potential for solar PV installation.

Lowndes Park

Current Good Practice

At the top of the hill, some rewilding and tree planting is taking place and the grass is not as heavily maintained. This gives a more informal rural landscape, which blends nicely with adjacent woodland. Much of the rest of the park is largely an ecological green desert of maintained grass.

Suggested Recommendations

7. Consider installing an evergreen hedge e.g. yew, along the road-side boundary of the lake, to reduce noise and car-pollution affecting the pond and park.
8. Get a feasibility study for wind-turbines at the top of the park's hill.
9. Stop heavy maintenance of the inside of the hedge along Chartridge Hill and allow all that side to be rewilded.
10. The large sloping hillside sections of the park are dominated by large expanses of green grassed ecologically dead spaces.

Significant parts of these could be turned into wild-flower meadows, copses and wildlife sites, whilst retaining significant open spaces, including retaining the spaces needed for tobogganing in the event of winter snows.

11. The more trees that are allowed to mature on the top of the hill and along the slopes, the more water will be trapped and slowed down in heavy downpours.

If this was adopted extensively along the adjacent valleys, it would help protect the centre of the town from more frequent flooding, as rainfall episodes gain in severity as the climate warms.

It is important for the council to lead by example by doing this.

12. Events Tick List

The council organises a number of events over the year, including the Mayor's annual charity dinner, so it is important that you pay attention to their environmental impacts.

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

1. Appoint a named staff member to be the Green Champion responsible for the environmental performance at each event.
2. They should be trained on how to use heating efficiently with the correct temperatures and doors and windows operated sensibly.
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 together are responsible for a staggering 7.5% of all UK domestic carbon emissions.

For example, if steak was chosen for the Mayor's dinner and there were 300 people in attendance, this alone would emit about 3 tons of CO₂ or more than the Depot emits in a year or the equivalent of a year's emissions by the average UK home for both gas and electricity.

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 as such.

13. Domestic Family Carbon Emissions

Staff asked if I could give you the summary of the sources of an average UK family's carbon emission:

16.00 tons	Consumer purchases
12.00 tons	Meat based diet (Vegetarian family 6 tons / Vegan 4 tons)
10.00 tons	Family Holiday Flight (to Disneyworld Florida)
4.60 tons	Two car family driving average annual number of kilometres
1.00 tons	Unrecycled waste
0.75 tons	Electricity
0.25 tons	Water supply

14. Proposed Expansions

Prior to the cv19 pause the council was contemplating expanding the theatre and gym.

Any building works or expansions involve considerable embedded carbon emissions and expanded buildings will have increased energy demands.

Thus, the first question that always should be asked, if each project is absolutely necessary and in a climate emergency are they the correct priority.

If you do decide that the projects are necessary, consider the following suggestions:

1. When selecting architects consider if they have experience using wood as the main building material. Wood stores carbon, whereas concrete has very high carbon emissions.
2. Include in the brief a request to maximise natural light.
3. Stipulate that recessed lamps are to be excluded.
4. Ensure bathrooms have sensor lights.
5. Specify electric heating, so that when combined with a genuine green electric tariff, it can be net zero carbon.
6. Ensure that the heating spec includes ability for separate zoning for areas that will not be in use all the times, the rest of the premises are being used. This will require the ability to separate these areas off by doors etc.
7. If you go ahead with the Gym & Swim expansion, consider including the car-park solar shelters as part of the brief.
8. Include entrance lobbies for both projects as part of the brief, so that open doors do not continue to lose large amounts of heat.
9. Consider including natural air-ventilation systems such as those by Monodraught for the theatre expansion and explore if these can be retro-fitted to the existing auditorium.
10. Ask your architect to include rain-harvesting systems to supply the bathrooms. These can be dual mains water/ rainwater operated automatically.

11. Get the projects assessed for solar PV potential and include them in the specs for the architects if the assessments are positive.

13. Eco-audit Implementation

1. E-mail eco-audit report to all town councillors, staff member and members of the youth council.
2. Add implementation of eco-audit report recommendations as a standard agenda item for staff/management meetings.
3. Create a spread-sheet with traffic light coding for each specific recommendation, identifying whether done, being implemented, postponed or rejected.
4. As the council buildings are publicly-owned they will qualify for interest-free loans from Salix Finance, which is a scheme run by the government to finance energy efficiency in public buildings.
<https://www.salixfinance.co.uk/>

Report by Donnachadh McCarthy, 3 Acorns Eco-audits April 2020