

Carbon

Management Plan





Updated September 2025

The Carbon Management Plan reports current and historic performance against the School's carbon emissions reduction target for 2024/25. This includes carbon emissions from the London Business School campus.

The Plan is updated every six months with current carbon emissions figures

Within this document is an implementation plan, which lays out carbon saving projects over the coming years to ensure the School continues to make progress against the target.

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Executive Summary

Tackling climate change is a top international priority. Since 2011 London Business School have had in place a carbon management plan that records plans for, and measures progress against, a reduction target in carbon emissions against a 2005 baseline. The targets originally ran to 2020 but was extended out to 2025. This is the final carbon management plan report that sets out the carbon reduction performance over the 20 year reporting period. The school will continue to monitor its carbon performance and the carbon management plan will be superseded with a Net Zero Carbon plan with an overarching net zero emissions target, along with interim targets at set intervals.

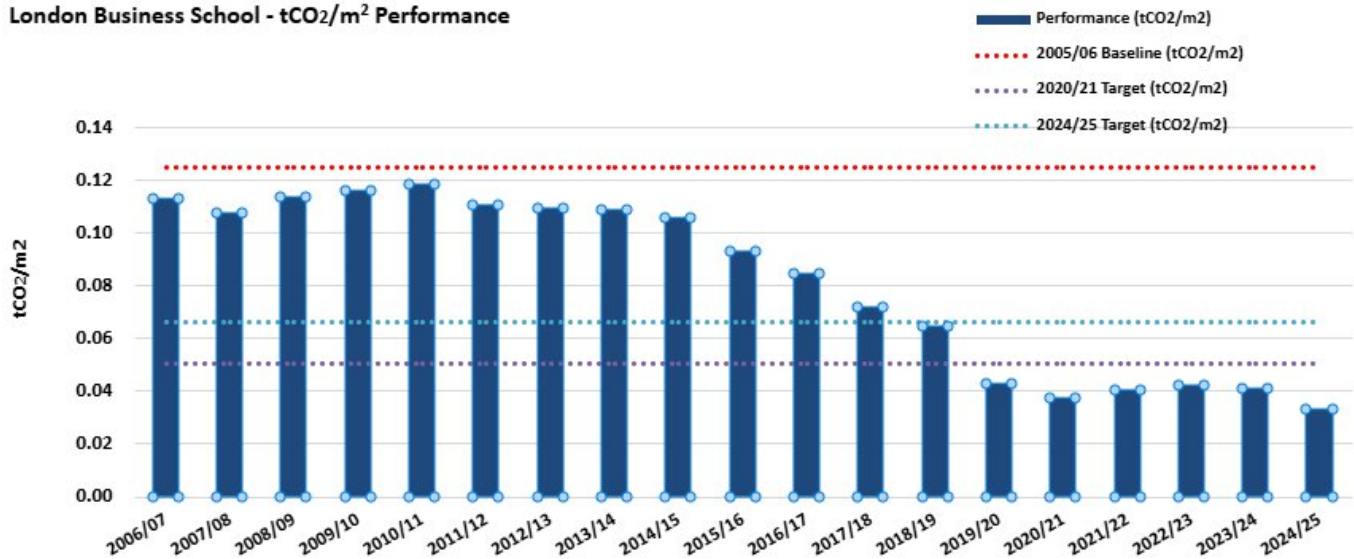
This document sets out the School's strategy for reducing its carbon emissions towards a relative target of 47% by 2024/25. The relative targets means that we are able to show progress in carbon emissions reduction whilst adjusting for School growth; target is shown as a relative measure per unit of floor area. An implementation plan is included, which gives details of projects that have been undertaken to reduce energy consumption and so cut carbon emissions. The plan is made up of standalone energy saving projects, energy savings resulting from any planned campus development and measures that will be taken to embed a low carbon vision within the workings of the School.

Relative carbon emissions over the 2024/25 year are 0.032996 tCO₂/m², a **73.6%** reduction on the base year. Absolute carbon emissions through electric and gas use on site increased 8.8% in 2017/18 compared to the previous year due to the addition of the Sammy Ofer Centre. In 2018/19 carbon emissions dropped back below the 2017/18 level, negating the impact of the new building. Overall, absolute emissions in 2024/25 are **59.5%** lower than the 2005 baseline.

As seen in the graph below, this brings the School down below the target tCO₂/m² level.

Figure 1 - Reduction in carbon emissions 2006/07 - 2024/25

London Business School - tCO₂/m² Performance



Progress against the implementation plan has been reported publicly every year. Measurement and review of carbon savings has been carried out and communicated internally every six months alongside the School's corporate plan reporting structure. Where actual savings fell below the forecast triggered a plan of action. Milestone targets of 12% in 2012, 29% in 2017 and 43% in 2020 (against a 2005 baseline) were set in order to measure interim progress.

The Head of Building Services is accountable to the Governing Body for delivery of the plan.

London Business School believes that delivering savings in line with sector targets over the timeframe in question, against a baseline that was established prior to the significant increases in site use and building capacity forecast over the next ten years, is a demonstration of the School's commitment to carbon management, energy efficiency and sustainable building design.

1 - Introduction

London Business School's sustainability policy commits the School to the:

- provision of effective leadership from its management to ensure that sustainability issues are considered strategically and that initiatives are implemented in a coherent and planned manner across the School
- setting of annual objectives and key performance indicators in relation to its work towards achieving sustainable development, in order that its performance can be monitored and reviewed, and be subject to continual improvement
- effective communication of its commitment to sustainable development and its performance against its annual objectives to its key stakeholders
- provision of appropriate training and consultation opportunities with employees and students on sustainability issues.

London Business School is taking an increasingly active role in promoting sustainability in its operational activities. Initiatives have included:

- targeting packaging from School food outlets
- reducing water consumption
- reducing waste sent to landfill
- procuring from local and regional suppliers

These have reduced the School's environmental impact and have worked well to increase awareness of sustainability on campus, but have not made a significant impact on reducing measured carbon emissions. Energy and fuel use are the only measured sources of carbon emissions within this document, which is why the focus is on electricity and gas use within the plan.

Going forward from the first draft of this plan issued in 2011, London Business School will focus on reducing the carbon footprint of the estate, as well as encouraging employee and student participation in green issues through promotion of energy saving and energy awareness campaigns.

This document sets out a plan for the period to 2024/25 with a target for relative reduction in carbon emissions. The document has been updated to include data from academic year 2024/2025

It is important to note that at the same time as putting in place a plan to reduce absolute levels of carbon emissions, the School is committed to growth. As such it is prudent to expect an overall growth in site demand for energy if no energy savings were to take place.

2 - Carbon Management Strategy

2.1 - Context

Over the past decade, the UK has set a series of legally binding targets for reducing carbon emissions. The UK Climate Change Act 2008 set a target for reducing greenhouse gas emissions of 80% by 2050 and at least 34% by 2020 against a 1990 baseline. Most recently this has been escalated to a target to have 'net zero' greenhouse gas emissions by 2050.

Higher education is required to play its part in meeting these targets. In its statement of policy for carbon reduction in 2010, the Higher Education Funding Council for England (HEFCE) set out a target for the sector of 34% by 2020 against a 1990 baseline. Owing to the high level of growth in the sector from 1990, a 2005 baseline was recommended as a basis for looking forward, and the sector target is a 43% reduction against a 2005 baseline. Milestones to measure progress have been set at 12% reduction by 2012 and 29% reduction by 2017 against a 2005 baseline.

London Business School recognise the urgency of tackling climate change, and the part that carbon emissions from building energy use play in addressing this. London Business School have a plan in place to continue to reduce energy use. In 2011, London Business School set out targets in line with the HEFCE. Despite the closure of HEFCE, London Business School will continue to update their carbon management plan and use it as a tool for driving energy reduction at the school (although it is no longer a regulatory requirement) in recognition of the importance of achieving continuous reductions in energy use.

Legislation has been put in place to drive reductions in carbon emissions across the UK to meet the targets set by the Climate Change Act, a number of which apply to London Business School.

DECs - Display Energy Certificates are required for all public buildings with a footprint larger than 250m². These provide information to building users of energy consumption within the building and provide an operational rating, showing the energy efficiency of the building on a graded scale, against a typical value. DEC's are accompanied by an Advisory Report, which is designed to help building occupiers increase their energy efficiency and so improve their rating.

The London Plan - Planning policy for London is based on The London Plan, a spatial development strategy for Greater London. It stipulates that future developments within London must meet high standards of sustainable design and construction which exceed current building regulations. Within the standards, onsite renewable generation along with combined cooling, heat and power (CCHP) and combined heat and power (CHP) systems are encouraged wherever feasible. One of the main aims of the plan is to contribute to sustainable development within the UK. This framework could directly impact the School through future plans for growth; planning permission is partly dependent on the forecasted environmental performance of any new building. Whilst this makes planning new building work more complicated, it does mean that any building work undertaken by the School will be highly energy efficient and should lower the organisation's footprint on a kWh/m² basis.

As well as legislative drivers, environmental performance has become increasingly important in other respects. It is playing a more important role in overall reputation, as demonstrated by indicators such as the Emissions Reduction Pledge (which London Business School has signed up to), Beyond Grey Pinstripes international business school ranking and the People and Planet Green League of Britain's universities.

Commentators believe that energy prices are likely to continue to increase into the foreseeable future. As such, the School will, as will many other organisations, continue to experience the financial benefits of improving energy efficiency and reducing carbon emissions.

2.2 - Vision

London Business School's vision is to have a profound impact on the way the world does business, and the way business impacts the world. The School recognises the importance of engagement in sustainable development in the achievement of this vision. It aims to promote awareness of, and engagement in, sustainable development and to work towards achieving sustainable development in all aspects of its activity.

2.3 - Existing Policy, Strategy and Targets

In order to achieve the School's vision, the School's work will focus on the following strategic priorities:

- Elevate the LBS brand
- Harness the power of digital
- Increase the School's relevance globally

Work towards these priorities will be underpinned by a number of key initiatives, including the implementation of an estates master plan to increase the capacity and quality of the School's estate. A number of small scale capital projects designed to refurbish and enhance the quality of the campus will also take place. The delivery of the capital projects will be co-ordinated with ongoing work to ensure that the School's employees, customers and visitors continue to enjoy a healthy and safe working and learning environment. Plans for the projects include sustainability and energy strategies, with a focus on keeping energy use within the development to a minimum.

The School's sustainability policy covers a wide range of aspects of sustainability, and has the support of the Governing Body and the senior management. It is available to view on the School website and the internal portal. There is also a Sustainability Initiative, which will concentrate on the following five key themes, with the following objectives, which match the areas of activity within the policy:

- Energy and emissions - to reduce energy related carbon emissions in line with the Carbon Management Plan.
- Waste and recycling - to increase the recycling rate against non-recycling rate during each academic year.
- Technology - to reduce the amount of photocopying and paper we print by 20%. Additionally, a schoolwide PC upgrade strategy has been initiated, and will continue over the coming years.
- Health and Well being - to improve the physical, mental and financial wellbeing of the LBS community.
- Community - to contribute to the sustainability of our local community.

The goals of this carbon management plan are to:

- Implement and maintain an automated monitoring and targeting system in order to measure energy use in detail
- Carry out energy efficiency projects within the estate
- Engage staff, faculty and students in energy conservation and carbon management
- Meet the sector target for reduction in scope 1 and 2 carbon emissions - allowing the School to grow without growing carbon emissions.

3 - Emissions Base-lining and Forecasting

3.1 - Scope

This plan includes all scope 1 and 2 emissions. Scope 1 emissions are defined as direct emissions that occur from sources that are owned or controlled by the organisation, for example emissions from combustion in owned or controlled boilers, furnaces or vehicles. Scope 2 accounts for emissions from the generation of purchased electricity consumed by the organisation.

Scope 3 emissions are all other indirect emissions that are a consequence of the activities of the organisation, but occur from sources not owned or controlled by the organisation - for example commuting and procurement. As of October 2023, these are not included within the scope of this plan at this stage. However London Business School is currently undertaking analysis to quantify both upstream and downstream scope 3 emissions within the supply chain. This includes an analysis of the energy generated from operational waste that is being converted to energy through incineration.

Scope 3 emissions are the largest contributor of emissions impact for London Business School. Currently analysis has shown that over 90% of total emissions from London Business School are from Scope 3 sources with student air

travel and procured goods and services accounting for over 65% of total scope 3 emissions. Once the scope 3 footprint analysis has been completed and a baseline established London Business School will look and setting targeted reductions to scope 3 emissions.

London Business School operates from teaching facilities in the Ratcliffe and neighbouring Plowden buildings, which face onto Regents Park, as well as the nearby Taunton Centre. Additionally, the school has extended teaching and other activities to the Sammy Ofer Centre building from the start of the 2017/18 academic year, and now has occupation of North Building.

The scope 1 and 2 carbon footprint of the School includes emissions from energy use in every building owned or leased by the School in the UK.

2021 saw the sale of three buildings on site - Lorne Close, 2-4 Huntsworth Mews and 36 Linhope Street. In early 2023 the lease for 17 Linhope Street came to an end and LBS no longer occupies this building. The Taunton Building is currently not in use and therefore the energy consumption for this building is very low and is not representative of the buildings typical energy use.

In April 2024 London Business School commissioned E2 Services Ltd to undertake a Net Zero energy audit of the buildings on site to identify suitable energy and carbon saving measures that could be implemented to reduce energy consumption and ensure further carbon abatement towards a zero emissions ambition.

Following the Net Zero audit London Business School has established a net zero ambition with a target of achieving an operational (Scope 1 & 2) Net Zero status across all of its buildings by 2040. This will be achieved through a combination of reducing building energy usage and procuring energy from renewable sources where possible.

Now the School has reached the end of the current Carbon Management Plan target period in 2025. A new carbon performance report will be established. The new report will be based upon a path of further carbon reductions towards the 2040 net zero target. Intermediate target milestones will be established between 2025 and 2040 to track year by year carbon reduction performance.

3.2 - Baseline

SQW Consulting was commissioned by HEFCE to calculate estimated carbon baselines for all HE institutions. For the majority of institutions, 2005 data has been taken from the 2005-06 Estate Management Statistics (EMS) returned by universities. Total sector emissions for scopes 1 and 2 for 2005 were found to be 2.046 million tonnes of carbon dioxide (MtCO₂), a 15% increase on 1990 figures.

The School's 2005 baseline, against which performance is measured, is a 3,822.05 tonnes of carbon dioxide (tCO₂) carbon footprint. The total carbon emissions for the 2021/22 year were 1,885.88 tCO₂; an absolute reduction of 50.7% on 2005 levels. Significant increases in gas and renewables generation and subsequent decreases in coal generation have resulted in an improved carbon content of supplied electricity; 2021/22 CO₂ factors for electricity decreased by 59.8% since the baseline. The 2019/20 academic year saw a very large drop in energy and associated carbon due to Covid-19 closures - a 24.5% drop on the previous year. The first months of 2021/22 also saw totals remaining at the lower level compared with pre-pandemic energy consumption, although with increased campus activity 2021/22 saw an overall increase in energy consumption compared with 2020/21.

Year	Gas (Scope 1) (kWh)	Electricity (Scope 2) (kWh)	Gas conversion (tCO ₂ /kWh)	Electricity conversion (tCO ₂ /kWh)	Gas emissions (Scope 1) (tCO ₂)	Electricity emissions (Scope 2) (tCO ₂)	Total emissions (Scope 1 + 2) (tCO ₂)
2005/06	5,357,825	6,034,122	0.0001836 6	0.00047033	984.0	2,838.0	3,822.1
2006/07	4,514,077	5,682,201	0.00018366	0.00046359	829.1	2,634.2	3,463.3

2007/08	4,306,139	5,076,791	0.00018366	0.00049263	790.9	2,501.0	3,291.9
2008/09	4,475,593	5,396,955	0.00018366	0.00049054	822.0	2,647.4	3,469.4
2009/10	4,337,537	5,701,049	0.00018366	0.00048219	796.6	2,749.0	3,545.6
2010/11	5,451,708	5,833,213	0.00018366	0.00044917	1,001.3	2,620.1	3,621.4
2011/12	4,462,971	5,620,610	0.00018366	0.00045706	819.7	2,569.0	3,388.6
2012/13	5,119,550	5,450,028	0.00018366	0.00044238	940.3	2,411.0	3,351.2
2013/14	3,898,470	5,332,571	0.00018456	0.00049023	719.5	2,614.2	3,333.7
2014/15	4,996,346	5,041,031	0.00018407	0.00045850	919.7	2,311.3	3,231.0
2015/16	4,363,401	4,995,741	0.00018365	0.00040957	801.3	2,046.1	2,847.4
2016/17	4,464,093	5,278,036	0.00018381	0.00034885	820.5	1,841.2	2,661.8
2017/18	5,639,934	6,619,728	0.00018362	0.00028088	1,035.6	1,859.4	2,895.0
2018/19	5,132,074	6,526,439	0.00018385	0.00025358	943.5	1,655.0	2,598.5
2019/20	4,336,230	5,041,694	0.00018387	0.00023104	797.3	1,164.8	1,962.1
2020/21	4,854,774	4,365,574	0.00018282	0.00021016	887.6	917.5	1,805.0
2021/22	4,755,915	5,297,277	0.00018219	0.00019121	866.4	1012.8	1885.8
2022/23	4,346,952	5,691,621	0.00018256	0.00020496	793.6	1,166.6	1,960.1
2023/24	4,153,615	5,574,637	0.00018293	0.00020707	759.8	1,154.3	1,914.1
2024/25	2,528,463	5,235,338	0.00018293	0.00020705	462.5	1,084.0	1,546.5

Table 1 - Actual carbon emissions for London Business School since 2005

3.3 - Past Actions

The School has already undertaken a number of sustainability projects focused on energy savings, which have reduced scope 1 and 2 emissions:

- Upgrading all PCs to Energy Star V5 compliant systems (ongoing schoolwide strategy in place to continually review and upgrade PCs and laptops)
- Implementing motion sensors to control lighting in interview and group study rooms in the Taunton Centre, the Nash Lounge, Park Road, A Wing seminar rooms, Huntsworth Mews and Linhope House
- Implementing continuous building management system (BMS) updates depending on day to day occupancy changes
- Extending the BMS to cover more of the campus, and upgrading for various buildings to align across the whole site
- Installing a swimming pool cover to reduce heat loss
- Rolling out LED lamps
- Installation of voltage optimisation units at the main incoming supplies
- Replacement of the Plowden and Sainsbury boilers for high efficiency, fully modulating types
- Moving the essential server load off site
- Replacing the main chiller plant with more energy efficient units
- Installing a sub-metering system across the main energy users on campus
- Decentralisation of the Plowden Domestic Hot Water plant; point of use water heaters are now installed - no domestic hot water stored on the main campus
- Replacing the motors and fans in the air handling units that supply Lecture Theatres 1-6.

- The hot and cold water system on the main campus has been upgraded. The first phase included installation of boosters for the supply and installation of point of use water heaters in all areas excluding the B wing bedrooms.
- Undertaking optimisation of HVAC plant via BMS at the Sammy Ofer Centre.
- Replace North Building roof.
- Extract fans replaced across site.
- Installed further sub-metering to measure all main plant and areas.
- Replaced fixed speed fans and pump sets with more energy efficient variable speed alternatives.

3.4 - Initial Energy Performance

In developing this carbon management plan, an energy reduction survey was carried out in 2011 and energy mapping was undertaken to identify how energy was being used across the campus at that time (see figures 2 and 3 below). A number of areas came out as having high usage, particularly the low temperature hot water (LTHW) and domestic hot water (DHW) services, together with heating, ventilating and air conditioning (HVAC) motive power. This indicated where savings were possible, and projects were identified to minimise energy use in these areas.

LBS - Energy Consumption (kWh/yr)

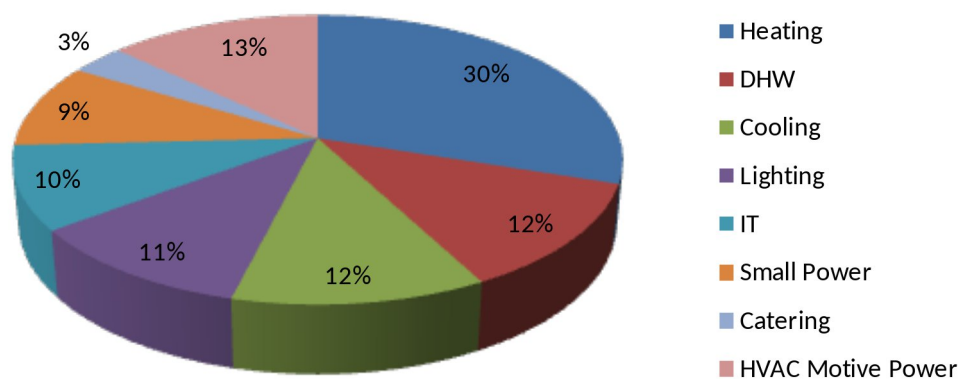


Figure 2 - Energy use (kWh) in 2011 for London Business School

LBS - Energy Carbon Emissions (tCO₂/yr)

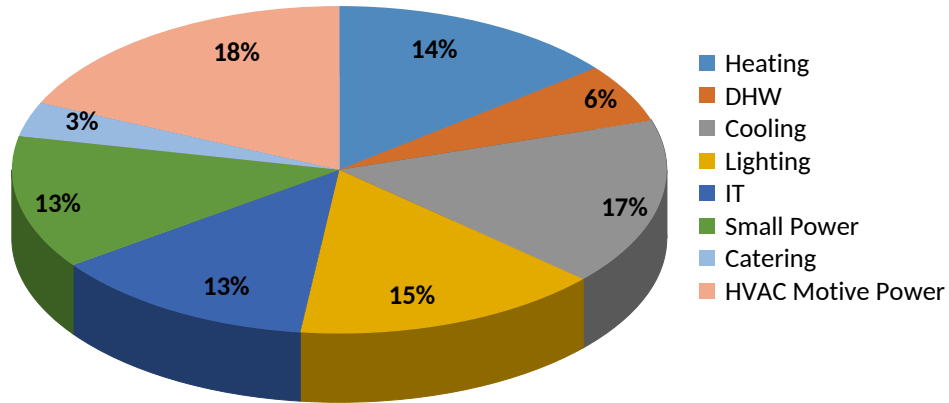


Figure 3 - Energy use (tCO₂) in 2011 for London Business School

In autumn 2015 a further energy mapping exercise was carried out as part of a further energy survey as required as part of the Energy Savings Opportunity Scheme (ESOS), for which London Business School qualified. The results for the 2015 survey are given below:

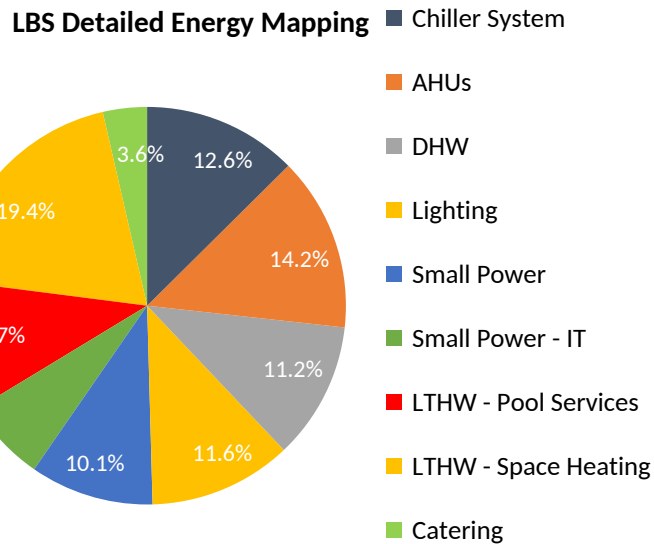


Figure 4 - Energy use (kWh) in 2015 for London Business School

This more recent mapping showed a decrease in IT consumption, due to the reduction in on-site server capacity, but an increase in the level of other small power (which includes employee and student laptops and other electronics). Other than catering services, the proportion of energy used for building services has stayed fairly constant, although in real terms has decreased.

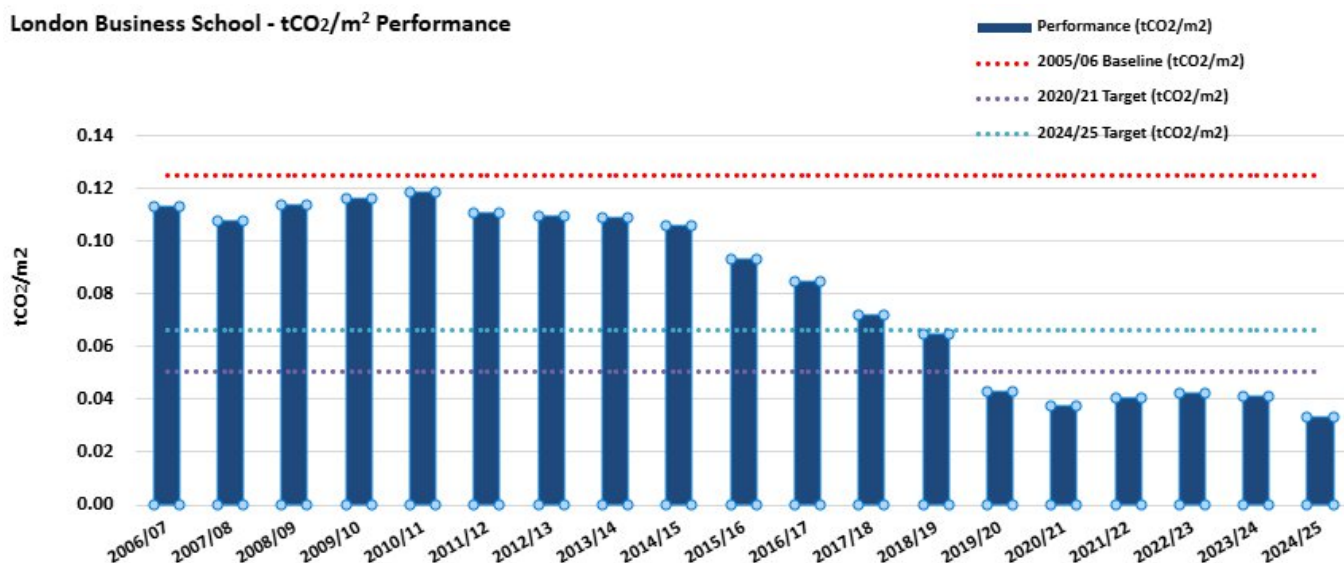
3.5 - Projections

As set out in its strategic priorities, the School will continue to expand its programme portfolios. To support this planned growth, the School extended teaching and other activities to the new Sammy Ofer Centre building from the start of the 2017/18 academic year. Further development of the main campus has seen the School acquire the neighbouring 27 Sussex Place building (North Building) from the Royal College of Obstetricians and Gynaecologists.

To allow for the planned expansion of the School, this carbon management plan includes both expected reductions and increases in carbon emissions owing to factors going forward. There is an estimate of the energy consumption of the new buildings (based on current energy use, the GIA and the ECG054 benchmarks), as well as an annual increase in use of small power such as PCs, printers and other devices. These increases have been taken into account in the forecast emissions and the reductions targets going forward. Savings resulting from projects in one academic year have been counted going forward from the next year.

Figure 5 - Actual emissions based on the actions in the implementation plan and planned expansion

London Business School - tCO₂/m² Performance



4 - Emissions Reduction Targets

London Business School has set a target of 47% relative reduction in scope 1 and 2 carbon emissions by 2024/25 against a 2005 baseline. This is reported based on the energy use per unit of floor area across the campus.

This is based on carrying out all the actions in the implementation plan, which are challenging yet achievable with the School's resources. Recent savings are broadly broken down as follows:

- In 2019/20, a 65.8% reduction in carbon emissions/m² was achieved against the 2005 baseline
- In 2019/20, a 48.7% reduction in absolute, total carbon emissions was achieved against the 2005 baseline.
- In 2020/21, a 70.3% reduction in carbon emissions/m² was achieved against the 2005 baseline
- In 2020/21, a 52.8% reduction in absolute, total carbon emissions was achieved against the 2005 baseline.
- In 2021/22, a 67.8% reduction in carbon emissions/m² was achieved against the 2005 baseline
- In 2021/22, a 50.6% reduction in absolute, total carbon emissions was achieved against the 2005 baseline.
- In 2022/23 a 66.4% reduction in carbon emissions/m² against the 2005 baseline
- In 2022/23, a 48.5% reduction in absolute, total carbon emissions against the 2005 baseline
- In 2023/24 a 67.2% reduction in carbon emissions/m² against the 2005 baseline
- In 2023/24, a 49.9% reduction in absolute, total carbon emissions against the 2005 baseline
- In 2024/25, a 73.6% reduction in carbon emissions/m² against the 2005 baseline
- In 2024/25, a 59.9% reduction in absolute, total carbon emissions against the 2005 baseline

This will be achieved through following the implementation plan, which sets out projects along a timeline to 2025.

4.1 - Milestones

In order to track interim progress against the 2024/25 target, milestones were created along the timeline. These are not necessarily evenly spread, but are based on the initial timing of projects from the original plan.

The summary of the milestones is as follows:

Year	London Business School Target Reduction on 2005 Emissions (%)	HEFCE Sector Target Reduction on 2005 Emissions (%)	Actual London Business School Carbon Emissions/m ² Reduction (%)
2005-06	0%	0%	0%
2009-10	7.6%		7.6%
2012-13	12%	12%	12.3%
2017-18	29%	29%	42.6%
2020-21	43%	43%	70.3%
2024-25	47%	N/A	73.6%

Table 2 - Carbon reduction target milestones

The reduction in carbon emissions/m² achieved by London Business School at 2012/13 compared to 2005/06 was 12.3%. This matched the HEFCE target for this milestone. 2017/18 was 42.6% down on the base year. This surpassed the milestone target for this year. The 43% target was reached and surpassed in 2019/20, and 2021/22 performance saw a 67.8% reduction on the base year.

5 - Implementation Plan

The implementation plan contains details of projects that will be carried out in order to work towards maintaining and exceeding the 43% target reduction in carbon emissions. Savings estimates are based on consultants' experience of similar projects, and where a range of results is possible, the most conservative has been used.

The building potential has been continuously reviewed since the plan was originally put in place, and individual projects have been added, adjusted or taken off the plan as technology in the field develops.

Project	Year	Project Costs (£)	Annual Project Savings		
			(kWh)	(£)	(tCO ₂ e)
EN1 - BMS Upgrade & boiler & chiller upgrade in North Building	2021-24	£679,800	99,463	£13,437	18.4
EN2 - Improve type and control of lighting across estate	2018-25	£87,500	20,800	£6,921	3.9
EN3 - AHU refurbishment and replacement programme	2019- 2024	£128,011	182,710	£63,948	34.9
EN4 - Add BMS lighting control for Lecture Theatres	2021-24	£38,280	22,714	£7,949	4.3
EN6 - Schoolwide PC upgrade	2020-25	£TBC	71,580	£25,053	16.5
EN9 - Window replacements at Main Campus	2022/23	£1,400,000	189,307	£11,358	34.8
EN12 - Chandler Chiller Room	2024	£1,600,000	TBC	TBC	TBC
EN13 - E Wing Refurbishment	2024	£2,000,000	TBC	TBC	TBC
EN14 - Plowden Hub	2025	£6,000,000	TBC	TBC	TBC
Totals		£11,933,591	586,574	£128,666	112.8

Table 3 - Summary of projects in the implementation plan

EN1 - BMS Upgrade & boiler & chiller upgrade in North Building

Project Start Date	FY 2022/23	Project Completion Date	Completed (June 2024)
Owner	Head of Building Services	Support	Project Manager
Total Cost	£679,800	Funding stream	BMS budget
Annual Savings	99,463kWh	£13,437	18.4 tCO ₂ e

Project Details

The Building Management Systems across the portfolio have all been upgraded so that they are now aligned. Any outstanding issues following this work have now been addressed, and the system is operating effectively.

This project includes upgrading the Building Management System (BMS) at North Building to bring it in line with the Trend IQ Vision control across the rest of the campus. The graphics have been completed, so that the system can be accessed from the same central system as the rest of the campus, but the controllers are still the originals. The upgrades for these will follow in line with the upgrades of the rest of the main plant in the North Building. All of the upgrades were completed and commissioned by June 2024. Annual savings are currently based on the BMS upgrade improvements alone but it can be assumed that further savings will be achieved through the improved efficiency of the new boilers and chillers.

Risks

There are no risks associated with this project, providing the emphasis is on maintaining and improving comfort conditions for employees and students, with a by-product of energy savings from the improved measures.

Next steps

- Project underway

EN2 - Improve type and control of lighting across estate

Project Start Date	September 2014	Project Completion Date	Ongoing (Completion by July 2026)
Owner	Head of Building Services	Support	Project Manager
Total Cost	£6,000/year (planned £50,000 influx in 2021/22 to accelerate project)	Funding stream	Estates budget
Annual Savings	20,800kWh/year	£6,921/year	3.98tCO ₂ e/year

Project Details

Lighting is provided by a variety of lamp types and sizes of an overall average efficiency. Lighting improvements have been undertaken, including replacement of halogen dichroic lamps and T12 fluorescents with LEDs. This includes around 90% of the lighting in the North Building, and in some lecture theatres on other parts of the campus.

Further lighting improvements are planned. This includes conversion of the B Wing bedrooms, which will include replacement of old lighting as part of an overall refurbishment. The original project savings and costs were based on replacing 200 lamps every year throughout the estate spread over 10 years. These new lamps will use on average 104kWh/year less than the existing stock. The annual savings above represents the replacement of 200 lamps per year over the foreseeable future, in line with refurbishments of different areas of the School.

This project is still ongoing and currently upgrades are being undertaken on a rolling basis with any remaining fluorescent tubes being replaced with LED alternatives. Recently completed areas include LED upgrades and new lighting controls at:

- LT1
- LT6
- RG06
- LT3
- NUFFIELD HALL
- COUNCIL CHAMBER

Approximately 85% of lighting across the state is now LED. The remaining 15% of light areas are targeted to be upgraded by July 2026.

Risks

In order to keep the lighting types to a narrow range of lamps, any new refurbishments in particular areas or additional lighting should be kept in line with lamps used in other areas.

Next steps

- Continue to implement lighting replacement programme

EN3 - AHU refurbishment and replacement programme

Project Start Date	2020/21	Project Completion Date	Complete
Owner	Head of Building Services	Support	Project Manager
Cost	£128,000	Funding stream	Estates budget
Annual Savings	182,710kWh	£63,948	34.9tCO ₂ e

Project Details

The air handling units around the School vary in age and condition. Many have belt drives, and the motors are not variable speed.

A programme is in place to replace fans and motors for the AHUs.

The first phase of these staged works included the replacement of the motors and fans in the 2 air handling units that supply Lecture Theatres 1 - 6, which was completed over summer 2019.

The E Wing toilet extract fans were then both replaced in the spring of 2021. The A Wing toilet and kitchen extract fans were completed during Christmas 2021. In 2023 the E wing upgrades were completed and the B wing kitchen extract fans were upgraded in 2024.

Further phases of works will then be scoped based on the records of the age, size and type of the air handling units around the School, including AHUs at North Building once they come into LBS responsibility.

Risks

-

Next steps

- Finalise staged programme of replacement and refurbishment works
- Price improvement works
- Timetable AHU downtime to install, refurbish and commission parts and system
- Monitor performance and associated savings

EN4 - Add lighting controls for Lecture Theatres and seminar rooms

Project Start Date	2021/22	Project Completion Date	Complete
Owner	Head of Building Services	Support	Project Manager

Cost	£38,280	Funding stream	Estates budget
Annual Savings	22,714kWh	£7,949	4.34tCO ₂ e

Project Details

The lighting in the lecture theatres is currently controlled locally from the front of the theatre or from the main entrance.

If these circuits are added to the new BMS system, then the lighting schedule can be checked from a central location, so there is less danger of the lights being left on when groups leave the theatres.

This project started in the seminar rooms - 10 rooms Ratcliffe 1st floor, now link lighting to the HVAC plant, and controllers allow HVAC and lighting to be brought on once they are occupied, but then revert back to default status once the room has been vacated. 12 rooms in the E Wing have also been completed, covering the ground and first floor and group rooms in the North Building. The remaining upgrades to lecture theatres were completed in 2024.

Risks

-

Next steps

- Await feedback on operation of seminar room control
- Address any issues, and roll out across further rooms
- Carry out detailed scoping of current and required lighting controls in lecture theatres.

EN5 - Schoolwide PC Upgrade

Project Start Date	July 2016	Project Completion Date	Ongoing
Owner	Head of Estates	Support	Project Manager
Cost	£Ongoing	Funding stream	Estates budget
Annual Savings	71,580kWh/year	£25,053/year	16.5tCO ₂ e

Project Details

London Business School has been undertaking a schoolwide PC upgrade strategy, which is currently underway. The roll out will continue over the coming years. All new PCs and laptops are ENERGY STAR qualified.

ENERGY STAR qualified computers use energy efficient power supplies, operate efficiently in multiple modes of operation (Off, Sleep, and Idle), take advantage of power management features, and provide user education about these features.

Annual savings are based on a percentage of the total PCs across the school been upgraded each year.

The main program of works is completed, but there continual pc equipment upgrades when required.

Risks

- The PCs are being replaced through a planned programme, with gradual replacement taking place to give plenty of flexibility in case of issues arising from replacement in particular areas.

Next steps

- Continue PC roll out.

EN9 - Window replacements at Main Campus

Project Start Date	2021/22	Project Completion Date	Ongoing (Completion by July 2026)
Owner	Head of Building Services	Support	Project Manager

Total Cost	£1,400,000	Funding stream	-
Annual Savings	189,307kWh	£11,358	34.8 tCO ₂ e

Project Details

32 timber box windows and all of the secondary glaze have been replaced on the first floor of Plowden Building. The next phase due for completion is the Plowden E wing

Planning permission has been obtained to replace 454 listed windows. The window replacements will take place in 3 phases:

- Phase 1 - June/July 2023: A & B Wing **Complete**
- Phase 2a. - Dec/Jan 2023/2024: E Wing. **Complete**
- Phase 2b. - Dec 2024/Jan 2025: Plowden **Complete**
- Phase 3 - June/July 2026: Ratcliffe Building

Risks

As this is an asset replacement that is required for a number of reasons, the units will not simply be chosen based on energy efficiency. Other factors such as aesthetics will be central to the decision. This will ensure that all stakeholders are happy with the replacements.

Next steps

- Calculate heat losses through existing windows.

EN12 - Chandler House Chiller Room

Project Start Date	January 2024	Project Completion Date	Completed (August 2024)
Owner	Head of Capital Projects	Support	Project Manager
Total Cost	£1,600,000	Funding stream	
Annual Savings	TBC kWh	£ TBC	TBC tCO ₂ e

Project Details

A new chiller plant room in Chandler House with all new equipment was completed in 2024.

Risks
TBC
Next steps
Works to commence

EN13 - E Wing Refurbishment

Project Start Date	June 2024	Project Completion Date	Completed (January 2025)
Owner	Head of Capital Projects	Support	Project Manager
Total Cost	£2,000,000	Funding stream	
Annual Savings	TBC kWh	£ TBC	TBC tCO ₂ e

Project Details

A complete refurbishment of the E Wing has been undertaken. This has included the installation of new AHU's, FCU's and VRF systems. Additionally areas of glass roof lights were replaced.

Risks
The refurbishment works should result in improved building energy efficiency. However levels of operational waste are likely to increase during the demolition and refurbishment phases.
Next steps
- Undertake the refurbishment works - Continue to monitor energy use following the project completion.

EN14 - Plowden Hub

Project Start Date	June 2024	Project Completion Date	Completed (August 2025)
Owner	Head of Capital Projects	Support	Project Manager
Total Cost	£6,000,000	Funding stream	
Annual Savings	TBC kWh	£ TBC	TBC tCO ₂ e

Project Details

The Plowden Building is undergoing an extensive refurbishment. Existing office space will be redesigned over 4 floors.

The demolition works were completed in August 2024 with the refurbishment works to be undertaken between September 2024 - August 2025

Risks
The refurbishment works should result in improved building energy efficiency. However levels of operational

waste are likely to increase during the demolition and refurbishment phases.

Next steps

- Undertake the refurbishment works
- Continue to monitor energy use following the project completion.

5.1 - Sources of Financing

London Business School has sources of funding for projects within the implementation plan as follows:

- £150,000 current annual budget specifically for energy efficiency measures, which will be varied year on year to meet the forecast costs of planned projects. During the 2018/19 year it was £250,000 in order to include the hot and cold water upgrade project. Major projects for energy efficiency were delayed over the 2020/21 year, and funding paused. The £50,000 budget will be focused this year on upgrading fluorescent/halogen lighting to LED in various areas of the Campus.
- There is a £210,000 separate budget in place for the window replacement project.
- There was a £1.1M separate budget in place for the North Building roof replacement project (now complete).
- The boiler, chiller, Huntsworth Mews and data centre move projects were funded separately as individual asset replacement projects.
- Salix Energy Efficiency Loans Scheme (SEELS) funding was secured for historic Voltage Optimisation and lighting replacement projects, but has not been used for more current projects.
- Additional £100,000 added to the BMS budget for previous years when the upgrade project was in place across the campus (this does not include North Building).
- An annual budget is also planned for refurbishment of areas going forward. This will be used to fund lighting replacement and controls in some existing areas. Where necessary, replacement of small items of old or faulty equipment within other building services will be carried out. Savings from small works of this nature are not included within the plan, but are expected to result in savings of between 1 and 2% for each building that is refurbished on top of the planned projects. Major projects for energy efficiency were delayed over the 2020/21 year.

6 - Carbon Stakeholder Engagement

6.1 - Strategic Process

The School is committed to effective communication with stakeholders on sustainability practices and progress against targets. A plan for communication of issues relating to carbon management and the carbon management plan is outlined in sections 6.2 and 6.3 below.

6.2 - Identifying Stakeholders

Key stakeholders are identified in the table below.

Name/Position	Interest	Specific Indicators	Method of Communication
Governing Body	Reputation of School	Progress against carbon management plan and targets	Progress summaries submitted to Governing Body meetings
Secretary	- Reputation of School - Compliance with legislation and HEFCE requirements - General carbon management	Progress against carbon management plan and targets	Progress summaries submitted to Governing Body and Health, Safety and Environment Committee meetings
Head of Building Services	- Progress of current projects - Planning of upcoming projects - Budget planning - Compliance with legislation and HEFCE requirements	- Detailed progress against project timelines - Updated carbon management plan - Progress against carbon management plan and targets - Legislative updates	- Project timelines and notes - Provide progress reports to Estates Strategic Steering Committee - Amendments to carbon management plan
Deputy Secretary	- Compliance with legislation and HEFCE requirements - Progress of current projects - Planning of upcoming projects	- Detailed progress against project timelines - Progress against carbon management plan and targets - Legislative updates - Updated carbon management plan	- Project timelines and notes - Provide progress summaries to relevant stakeholders - Amendments to carbon management plan
Project Manager	- Progress of current projects - Planning of upcoming projects - Resource allocation	- Detailed progress against project timelines - Updated action plan from carbon management plan	- Project timelines and notes - Provide regular updates to Head of Buildings Management.
Health, Safety and Environment Committee	- Progress of current projects - Factors that might affect the plan - Updating the plan	- Progress against carbon management plan and targets - Updated carbon management plan	Progress summaries submitted to meetings, and the 6 monthly updates are signed off.
School employees, student body and alumni	- Working practices and environment - Awareness of promoted actions and practices - General carbon management	- Progress against carbon management plan and targets - Awareness actions	- Publicly available on School website and Portal intranet - Other communication channels including email, School newsletters and surveys

Catering, cleaning, security and out of hours staff	- o Working practices and environment - o Awareness of promoted actions and practices - o General carbon management	- o Progress against targets - o Awareness actions	- o Specific information in service level agreements - o The Carbon Management Plan is publicly available on School website
Suppliers and contractors	- o Awareness of carbon policy - o Specific School requirements	o Signposting to sustainability policy, and carbon management plan	o The Carbon Management Plan is publicly available on School website
Prospective students and employees	- o Reputation of School - o School attitude and commitment to carbon management	o Signposting to sustainability policy, and carbon management plan	o The Carbon Management Plan is publicly available on School website

Table 5 - Identified stakeholders and their interest in the carbon management plan

6.3 - Internal Communication

Issues relating to sustainability are currently communicated to employees and students of the School in the following ways:

- The sustainability policy, carbon management plan and corporate plan reports are made publicly available on the School's website and intranet Portal

The following key communication channels will be used to ensure that all stakeholders remain updated on London Business School's carbon management plan and associated projects. Where possible these communications will be electronic rather than in hard copy.

Specific Indicators	Communication Method	Responsibility	Frequency
Progress against carbon management plan and targets	Summary report - included within papers for meetings of the Governing Body and communicated to other relevant stakeholders. Also published on website and Portal.	Deputy Secretary	Six-monthly
Updates and amendments to carbon management plan	When the carbon management plan is reviewed, amendments will be communicated to Health, Safety and Environment Committee and other relevant stakeholders, and the new issue of the plan will be made publicly available.	Head of Building Services & Deputy Secretary	Six-monthly
General progress against plan	Inclusion onto agenda of the Health Safety and Environmental Committee	Head of Building Services	Six-monthly
Awareness of actions	Information will vary - energy awareness material is more effective when methods and messages are regularly refreshed.	Deputy Secretary	Varying

Table 6 - Summary of planned communications relating to the carbon management plan

6.4 - Influence and Outreach

One of the objectives of the sustainability policy is to develop ties with the School's surrounding community in order to reduce collective environmental impact. Actions to support this objective include the development of a Community Action Group, which makes a positive contribution to employee volunteering in the community and the donation of unwanted resources to local charities. The School allows for specific volunteering days. The School has introduced a cycle to work scheme for staff and faculty - which had its funding increased in the 2020/21 academic year- and invested in communications technology to provide alternatives to travelling to meetings.

In terms of carbon reduction, these community outreach activities will contribute to the reduction of scope 3 carbon emissions and the emissions of other organisations, rather than the energy related scope 1 and 2 emissions which are the focus of this carbon management plan.

6.5 - Future-Proofing

This carbon management plan has been based on the current strategies and plans that the School has for the future. Whilst this has made the plan as robust as possible, the plan will need to respond to changes. The ultimate goal of the plan is to achieve a 47% reduction in scope 1 and 2 carbon emissions through conducting energy saving projects and entrenching low carbon practice within the School's routine. If any aspects of the School's policy or plans change, then it is essential that this goal can still be achieved.

For each energy saving project, a specific KPI will be established to measure success. One of the actions within the implementation plan was to put into operation an automated monitoring and targeting system, with the installation of sub-meters on main plant and in other areas (now complete). This will make it possible to confirm the level of energy reduction for each project. Should it be necessary for the scope of one of the projects to change, or that upon completion the savings are not as high as estimated, action will be taken to identify another opportunity for carbon reduction, and a budget requested and an owner nominated. Carbon savings will be reviewed termly, in detail by the Estates Strategic Steering Committee, and at a higher level by the Health, Safety and Environment Committee alongside other sustainability issues.

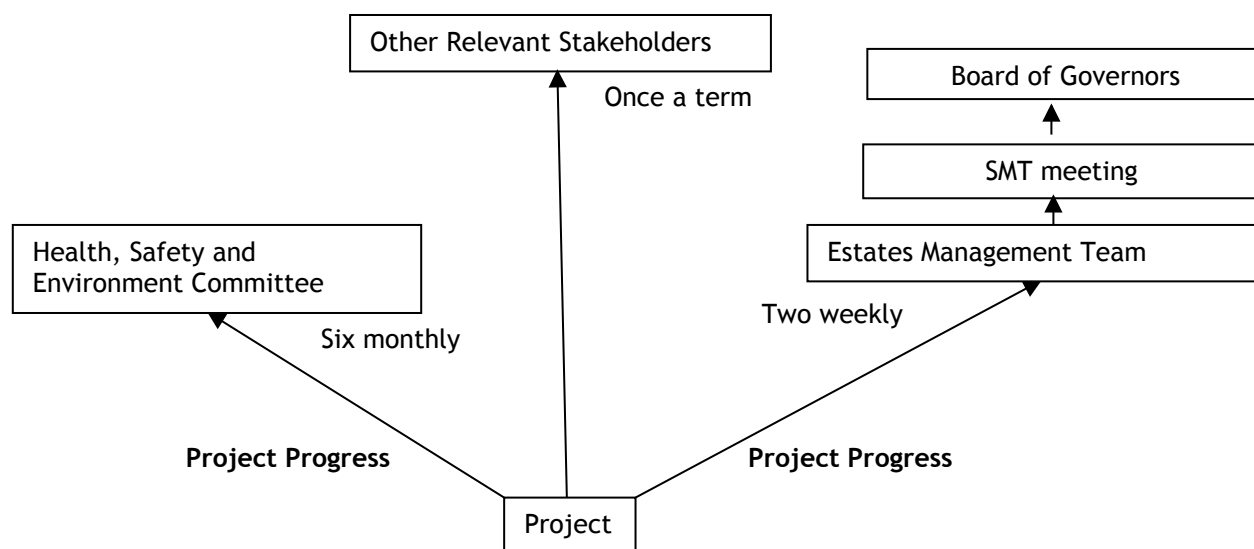
As part of the School's vision, the estate continues to grow; further buildings have already been added to the campus since the Carbon Management Plan was first drafted. The energy use and floor area of any new buildings are taken into account and added to the performance figures. The overall forecast performance will then be reviewed, and changes made to the implementation plan if necessary to make progress against targets.

7 - Programme Management

7.1 - Governance

The carbon management plan will be kept updated and revised as necessary. The document will be reviewed by the Health, Safety and Environment Committee and any amendments to general policy or responsibility added. New issues will be circulated to key stakeholders and made publicly available.

Existing project management procedures at the School entail the project manager reporting to the Operations Management Team every two weeks to pick up any problems on progress. This detail is also fed upwards to the fortnightly Senior Management Team meetings. These bring together all departments to ensure that the School is on track for meeting regulations and project timelines. Progress will also be reported every six months to the Health, Safety and Environment Committee once the plan has been updated, in order for the committee to review and sign off the updated plan.



The action plan, associated timeline and project documentation will be kept separately to the main carbon management document, and will be updated if any major changes are made to the projects. Any project documentation created by the project owner will be signposted from the action plan as a record of when improvements were commissioned, for measuring purposes.

Overall progress against targets will be reported every six months and included in the sustainability progress reports. This will be in the form of a summary of the current projects and the progress against the carbon emissions milestones set out in section 4.1. For any projects not on track to achieve the estimated savings, action will be taken to identify other opportunities for reducing carbon emissions and, if required, further budget requested for allocation the following year.

Feedback from employees and students will be directed to the Deputy Secretary, who will forward it to relevant members of staff and arrange for appropriate actions to be assigned.

7.2 - Accountability

Accountability for progress against the carbon management plan lies with the Head of Building Services.

7.3 - Ownership

Ownership of individual projects has been assigned. It is the owner's responsibility to progress the project as far as possible. To ensure that projects achieve the estimated savings, project owners will create and report the following (see section 6.3) in line with the School's current project management practice:

- Project timeline against the start and completion date in the implementation plan.
- Two weekly progress updates to the Operations Management Team (where projects are estate based), through notes against the project spreadsheet, recording any changes to projected timeframe, costs and project details. The frequency of these meetings was interrupted during 2020 due to the School's Covid response, but will continue once the School returns to business as usual.
- Two weekly general progress and status updates to the Senior Management Team meetings. The frequency of these meetings was interrupted during 2020 due to the School's Covid response, but will continue once the School returns to business as usual.

- Ensure that a measurement indicator is set up so that savings can be accurately and easily reported going forward.

Progress will also be summarised six-monthly for Health, Safety and Environment Committee and the regular sustainability progress reports.

7.4 - Risks

The key risks identified are as follows:

- Changes to the campus master plan. When the campus footprint grows, this causes the energy use to increase. This is why London Business School have adopted a relative measure against the target, so that floor area is taken into account. When this occurs, then the 'Business as Usual' case is adjusted to incorporate the increase in energy use. The energy reduction projects will then be applied to this profile, to give the expected energy use in future.
- Project delays. Each project will be managed separately and risks to project completion will be mitigated as part of this where appropriate. The risk to the carbon management plan is that delays to projects will postpone the realisation of reductions in carbon emissions. Estimated carbon savings from projects have not been included in forecast emissions levels until the year after they are implemented. This means that within the milestone targets there is some flexibility for projects to run late without impact. When projects are created within the School's system, both a Manager and Stakeholder are generated. This means that projects have at least two parties driving progress.
- Carbon emissions reductions are lower than forecast. Where the measured savings from a project are lower than estimated, this will be reported. Whilst savings against estimates are bound to vary slightly, if at the end of the year, overall savings are lower than estimated, then action will then be taken to identify an opportunity for saving elsewhere, which will be added to the implementation plan and a budget requested if needed.

8 - Conclusion

London Business School seeks to build upon its reputation as one of the world's top business schools with an ambitious development programme that will ensure improved and enlarged facilities for years to come. It will also allow for a larger number of students to access the London Business School experience.

In order to continue to improve performance, further projects will be reviewed and added to the implementation plan as possible. These require scoping fully, and the estimated savings will be added to the plan during the next update. Of equal importance is the ongoing reporting and defined structures for accountability to provide the foundations for successfully lowering carbon emissions at London Business School, all of which are detailed within this carbon management plan.

Overall, the School will continue to recognise the importance of sustainability in achieving its vision amongst staff, faculty, students and stakeholders alike, and can look forward to promoting a lower carbon future both on campus and beyond.