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Executive Summary

Tackling climate change is a growing international priority. In response to the rapidly increasing number of drivers for London Business School to make carbon reduction a priority, a carbon management plan is in place to plan for and measure progress against the 2020 reduction target in carbon emissions against a 2005 baseline.

This document sets out the School’s strategy for reducing its carbon emissions towards an absolute target of 43% by 2020, which is in line with the Higher Education sector. In order to show progress in carbon emissions reduction whilst adjusting for School growth, the target is also shown as a relative measure per unit of floor area. An implementation plan is included, which gives details of projects that will be 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 2017/18 year are forecast to be 0.085tCO2/m², a 30.6% reduction on the base year. Absolute carbon emissions through electric and gas use on site have increased from last year due to the addition of the Sammy Ofer Centre; currently estimated to be 8.5% lower than the 2005 baseline.

Taking into account the School’s planned level of growth, carrying out the implementation plan will result in a reduction in carbon emissions going forward as shown below. The planned reductions, combined with the estimated consumption for new buildings, deliver an overall absolute reduction of 8.9%. The relative carbon levels, taking into account the growth in campus facilities, are due to be 39.3% down on the baseline by 2020/21. Although further projects will need to continue to be added to the plan; progress remains positive.

Progress against the implementation plan will be reported publicly every year. Measurement and review of carbon savings will be carried out and communicated internally every six months alongside the School’s corporate plan reporting structure. Action will be taken in the case of actual savings falling below the forecast. Milestone targets of 12% in 2012 and 29% in 2017 (against a 2005 baseline) were set in order to measure interim progress.

The carbon management plan will sit alongside the School’s existing sustainability policy, and fits with the overall strategic priorities of the School. The Head of Estates Services will be 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
- the setting of annual objectives and key performance indicators at both a School-wide and departmental level in relation to its work towards achieving sustainable development, in order that its performance can be monitored and reviewed
- the effective communication of its commitment to sustainable development and its performance against its annual objectives to its key stakeholders
- the 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. Although energy use has fallen since 2005 the overall measured carbon footprint of the School has not decreased to the same degree, due to a number of building expansion projects, an increase in the electricity to gas usage ratio, changing carbon emissions factors and increasing student and staff numbers.

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 2020 with targets for absolute and reductions in carbon emissions. The School will publicly report both absolute and relative progress against the targets, and will regularly review the projects and measure savings to ensure that the reduction is achieved. The document has been updated to include data from the current academic year (2017/18) so far.

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 significant 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

The UK Climate Change Act 2008 set legally binding targets for a reduction in greenhouse gas emissions of 80% by 2050 and at least 34% by 2020 against a 1990 baseline. Further targets have also been set right up to 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. These were originally set to be reviewed in 2012, but have remained the same.

HEFCE required all higher education institutions to set their own targets for carbon emissions in 2020 against a 2005 baseline, and capital funding is dependent on the adoption of a carbon management plan. The HEFCE approach under the Capital Investment Framework 2 was to consider carbon reductions made and processes for managing emissions. Now that HEFCE has closed and the regulatory administration passed to the Office for Students, it remains to be confirmed what the future position will be.

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.

CRC – London Business School is a participant in the Carbon Reduction Commitment Energy Efficiency Scheme, which requires monitoring and reporting of energy usage and the purchase of carbon allowances to cover emissions every year from 2012. This scheme will not continue in present form past 2019. The reporting framework that is due to replace it is yet to be announced; however, Government are currently responding to a consultation regarding ‘Streamlined Energy & Carbon Reporting’.

DECs – Display Energy Certificates are required for all public buildings with a footprint larger than 1,000m². 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. DECs 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 likely to lower the organisation’s footprint on any per capita 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 Beyond Grey Pinstripes international business school ranking and the People and Planet Green League of Britain’s universities.
Many commentators believe that energy prices are likely to increase up to 2020. As such, the School will, as will many other organisations, 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. 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

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. The policy includes the following areas of activity:

- Procurement
- Energy and emissions
- Waste and recycling
- Water
- Construction
- Community

The Policy is available to view on the School website and the internal portal.

2.4 - Strategy and Targets

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

- The expansion of the degree and executive education programme portfolios
- The development of the School’s reputation as a research-led institution with a world-wide impact through the development of the research capacity and capabilities of its faculty

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.

There is a Sustainability Initiative in order to support the sustainability policy. The initiative has recently been set up, and will concentrate on the following five key themes, with the following objectives:

- Energy and emissions - to reduce energy related carbon emissions by 7% YOY in order to achieve a 43% absolute reduction by 2020/21.
• Waste and recycling – to increase the recycling rate against non-recycling rate to 53.25%/46.75% during the 2017/18 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 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 absolute 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.

Also integrated into the plan are objectives for scope 3 emissions, though the targets for these will be set individually and progress may not be measured until data collection and recording procedures have been set up. 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.

London Business School operates from teaching and accommodation facilities in the Sainsbury 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 new Sammy Ofer Centre building from the start of the 2017/18 academic year. Other student and support services are located in several satellite buildings within a quarter mile radius of the main campus, which are increasing in number as the School grows. 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.

3.2 - Baseline

SQW Consulting were 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 future performance will be based is a 3,822.05 tonnes of carbon dioxide (tCO₂) carbon footprint. The forecast carbon emissions for the 2017/18 year are 3,543tCO₂, this is a reduction of 8.9%. From 2005 to 2016/17 there was an overall decrease of 30.4% in the School’s carbon emissions. This is equivalent to a 2.75% reduction year on year, although in reality there was an increase in carbon emissions from 2007 - 2011, primarily due to building expansion and an increase in the use of electricity (which emits more carbon per kWh than gas) over gas. Significant increases in gas and renewables generation and subsequent decreases in coal generation have resulted in an improved carbon content of supplied electricity; 2017 CO2e factors decreased 14.8% on the previous year.
### Year | Gas (kWh) | Electricity (kWh) | Gas conversion (tCO₂/kWh) | Electricity conversion (tCO₂/kWh) | Gas emissions (tCO₂) | Electricity emissions (tCO₂) | Total emissions (tCO₂)
--- | --- | --- | --- | --- | --- | --- | ---
2005/06 | 5,357,825 | 6,034,122 | 0.00018366 | 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 | 0.00045885 | 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

**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 ground floor seminar rooms, 2-4 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
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)](image)

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

![LBS - Energy Carbon Emissions (tCO₂/yr)](image)

**Figure 3 - Energy use (tCO₂e) 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:

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 has now 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 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 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.

The previous and forecast performance against the target is shown in the graph below.
Figure 4 – Forecast emissions based on the actions in the implementation plan and planned expansion
4 - Emissions Reduction Targets

London Business School has set a target of 43% reduction in scope 1 and 2 carbon emissions by 2020 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. These savings are broadly broken down as follows:

- By 2016/17, a 32.2% reduction in carbon emissions/m² had been achieved.
- The addition of the Sammy Ofer Centre for the start of the 2017/18 year meant that the forecast carbon emissions/m² for the current year are set to reduce by 30.6% compared to the baseyear – 1.6% increase on the previous year.
- Current forecast reduction in carbon emissions/m² by 2020/21 is 39.3% on the 2005 baseline.

This will be achieved through following the implantation plan, which sets out projects along a timeline to 2020.

4.1 - Milestones

In order to track interim progress against the 2020 target, milestones have been 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:

<table>
<thead>
<tr>
<th>Year</th>
<th>London Business School Target Reduction on 2005 Emissions (%)</th>
<th>HEFCE Sector Target Reduction on 2005 Emissions (%)</th>
<th>LBS Target Total Annual Carbon Emissions/m² (tCO₂e/m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005-06</td>
<td>0%</td>
<td>0%</td>
<td>0.1249</td>
</tr>
<tr>
<td>2009-10</td>
<td>7.6%</td>
<td>0%</td>
<td>0.1155</td>
</tr>
<tr>
<td>2012-13</td>
<td>12%</td>
<td>12%</td>
<td>0.1010</td>
</tr>
<tr>
<td>2017-18</td>
<td>29%</td>
<td>29%</td>
<td>0.0887</td>
</tr>
<tr>
<td>2020-21</td>
<td>43%</td>
<td>43%</td>
<td>0.0712</td>
</tr>
</tbody>
</table>

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 is forecast to be 30.6% down on the baseyear, which will surpass the milestone target for this year, as long as there is not an increase in the energy use over the next few months.
5 - Implementation Plan

The implementation plan contains details of projects that will be carried out in order to work towards achieving 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.
<table>
<thead>
<tr>
<th>Project</th>
<th>Year</th>
<th>Project Costs (£)</th>
<th>Annual Project Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>(kWh)</td>
</tr>
<tr>
<td>EN1 - Implement automatic monitoring and targeting (aM&amp;T) on sub &amp; fiscal meters</td>
<td>2017/18</td>
<td>£TBC</td>
<td>128,002</td>
</tr>
<tr>
<td>EN2 - Upgrade BMS system across the whole portfolio</td>
<td>2015-2017/18</td>
<td>£130,000</td>
<td>172,584</td>
</tr>
<tr>
<td>EN3 - Replace lamps in Taunton stairwells with LEDs</td>
<td>2018/19</td>
<td>£38,000</td>
<td>22,714</td>
</tr>
<tr>
<td>EN4 - Improve type and control of lighting across estate</td>
<td>2014-21</td>
<td>£87,500</td>
<td>145,600</td>
</tr>
<tr>
<td>EN5 - Replace AHU fan motors with direct driven fans with EC motors and VSDs</td>
<td>2018/19</td>
<td>£113,787</td>
<td>162,408</td>
</tr>
<tr>
<td>EN6 - Consider Sussex Place AHU replacement project</td>
<td>2018/19</td>
<td>£TBC</td>
<td>227,813</td>
</tr>
<tr>
<td>EN7 - Add BMS lighting control for Lecture Theatres</td>
<td>2018/19</td>
<td>£38,280</td>
<td>22,943</td>
</tr>
<tr>
<td>EN8 - Link various VTV/VRF units to central controllers and link back to BMS</td>
<td>2018/19</td>
<td>£81,546</td>
<td>62,370</td>
</tr>
<tr>
<td>EN9 - Install VSDs onto unregulated pump sets</td>
<td>2018/19</td>
<td>£42,240</td>
<td>34,474</td>
</tr>
<tr>
<td>EN10 - Schoolwide PC upgrade</td>
<td>2016-20</td>
<td>£TBC</td>
<td>229,056</td>
</tr>
<tr>
<td>EN11 - Implement a DSR programme on site at SOC</td>
<td>2018/19</td>
<td>£6,000</td>
<td>20,000</td>
</tr>
<tr>
<td>EN12 - Undertake optimisation of HVAC plant via BMS at the SOC</td>
<td>2018</td>
<td>£15,000</td>
<td>150,000</td>
</tr>
<tr>
<td>EN13 - Window replacements at Main Campus</td>
<td>2020</td>
<td>£TBC</td>
<td>TBC</td>
</tr>
<tr>
<td>EN14 - On site generation</td>
<td>2019</td>
<td>£TBC</td>
<td>TBC</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td>£552,353</td>
<td>1,377,964</td>
</tr>
</tbody>
</table>

Table 3 - Summary of projects in the implementation plan
EN1 - Implement automatic monitoring and targeting (aM&T) on the sub-meters and main fiscal meters.

<table>
<thead>
<tr>
<th>Project Start Date</th>
<th>April 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Completion Date</td>
<td>Autumn 2018</td>
</tr>
<tr>
<td>Owner</td>
<td>Head of Estates Services</td>
</tr>
<tr>
<td>Support</td>
<td>Project Manager</td>
</tr>
<tr>
<td>Cost</td>
<td>£TBC</td>
</tr>
<tr>
<td>Funding stream</td>
<td>Annual improvements energy efficiency budget</td>
</tr>
<tr>
<td>Annual Savings</td>
<td>128,002kWh £8,937 35.0CO₂e</td>
</tr>
</tbody>
</table>

Details

The School has a high number of sub-meters in place across the main campus buildings and Taunton Centre. Currently the information is not in a form or coming through to software that makes it easy to use in order to better measure significant energy users or identify energy waste.

The priority now is to recommission the existing meters, and to direct the data from the sub-meters and main fiscal meters (in line with the School’s IT security measures) to reporting software that can be easily accessed and used, and can present energy data to all stakeholders.

This will provide information on energy saving initiatives undertaken within the School, and energy savings can be measured accurately.

Risks

The aM&T system itself will not save energy, but it will allow energy saving opportunities to be identified, and after implementation, measured through the collection of energy data. Further sub-metering could be used to increase departmental awareness and ownership of their energy use. Energy use could be reduced through transferring costs to departments or offering incentives to cut use.

There is therefore a risk that the stated savings will not be achieved – or if they are achieved initially, could reduce over time. It is key that processes are put in place that use the energy data regularly, and that reporting is updated to remain as interesting to stakeholders as possible.

Next Steps

- Survey hardware in order to identify scope of additional or replacements in order to recommission the system
- Specify the communication method in order to send meter data to the reporting software and clear with all LBS parties
- Carry out improvement works and add fiscal meters to the system
- Initiate energy reporting based on sub-meter results
EN2 - Upgrade BMS system across the whole portfolio.

<table>
<thead>
<tr>
<th>Project Start Date</th>
<th>Project Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 2015</td>
<td>Summer 2018</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Owner</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head of Estates Services</td>
<td>Project Manager</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cost</th>
<th>Funding stream</th>
</tr>
</thead>
<tbody>
<tr>
<td>£130,000 over two years</td>
<td>Annual BMS budget</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Annual Savings</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>43,146 kWh/year</td>
<td>£4,733/year</td>
</tr>
<tr>
<td></td>
<td>15.1tCO₂e/year</td>
</tr>
</tbody>
</table>

Details

The buildings were originally run through different Building Management Systems. After a period of review, the building management systems across the buildings are being upgraded and will be aligned so that the systems match, are maintained by the same contractor, and a consistent approach can be taken with the building strategies. Savings will come from the following improvements:

- The original Satchwell BAS2800+ control system was obsolete. The original software did not control the plant to provide optimum performance. The BMS has recently been upgraded to a Trend 963 system.
- A Trend system is being used due to the versatility, product performance and support network, and will match with the new system in the Sammy Ofer Centre.
- The existing head end PC should be upgraded with the BMS as performance is poor.
- New graphic screens should be configured to give accurate representation of the plant and floor layouts. All partition layouts should be adjusted to reflect the current layout.
- Logging points should be set up to allow performance of all plant to be monitored against the associated setpoints. Graphs for local supervisor display should be configured accordingly.
- All time schedules should be reviewed to ensure they are in line with current building utilisation.
- Any new software configured as part of an upgrade should include all applicable energy efficient software routines, to include optimum start/stop routines, compensated setpoints, ambient temperature inhibit.

The upgrade in the Taunton Centre is complete, the SOC has a Trend system and the systems at the main campus buildings are also Trend, with the exception of some of the plant.

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

- Undertake a detailed BMS survey - complete
- Schedule automated improvements and obtain quotations from BMS provider - complete
- Review manual settings and develop a schedule for regular fine tuning, using trend analysis on an ongoing basis.
- Monitor savings via a M&T system
EN3 - Replace lamps in Taunton stairwells with LEDs

<table>
<thead>
<tr>
<th>Project Start Date</th>
<th>Autumn 2018</th>
<th>Project Completion Date</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner</td>
<td>Head of Estates Services</td>
<td>Support</td>
<td>Project Manager</td>
</tr>
<tr>
<td>Total Cost</td>
<td>£38,000</td>
<td>Funding stream</td>
<td>Estates budget</td>
</tr>
<tr>
<td>Annual Savings</td>
<td>22,714kWh</td>
<td>£2,492</td>
<td>7.9 tCO₂e</td>
</tr>
</tbody>
</table>

**Project Details**

The next area where the lighting is due to be replaced is the Taunton Centre. Although the building function may be changing over the coming years, areas such as the escape staircases that will not be affected by changes will be targeted for lamp replacements. The savings are based on 200 lamps being swapped out for LED equivalents.

**Risks**

Ensure lighting levels are adequate for lighting the stairwells to the required level.

**Next steps**

- Continue to identify other areas for lighting improvements
EN4 – Improve type and control of lighting across estate

<table>
<thead>
<tr>
<th>Project Start Date</th>
<th>September 2014</th>
<th>Project Completion Date</th>
<th>July 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner</td>
<td>Head of Estates Services</td>
<td>Support</td>
<td>Project Manager</td>
</tr>
<tr>
<td>Total Cost</td>
<td>£6,000/year</td>
<td>Funding stream</td>
<td>Estates budget</td>
</tr>
<tr>
<td>Annual Savings</td>
<td>20,800kWh/year</td>
<td>£2,427</td>
<td>7.3 tCO₂e</td>
</tr>
</tbody>
</table>

**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.

Further lighting improvements are planned over the next few years. The above project savings and costs are based on replacing 200 lamps every year throughout the estate.

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.

The next area where the lighting is due to be replaced is the Taunton Centre. This is covered within one of the other specific recommendations. This project is based on longer term lighting swap outs that have not yet been fully specified.

**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
**ENS - Replace AHU fan motors with direct driven fans with EC motors and VSDs**

<table>
<thead>
<tr>
<th>Project Start Date</th>
<th>Autumn 2018</th>
<th>Project Completion Date</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner</td>
<td>Head of Estates Services</td>
<td>Support</td>
<td>Project Manager</td>
</tr>
<tr>
<td>Cost</td>
<td>£113,787</td>
<td>Funding stream</td>
<td>Estates budget</td>
</tr>
<tr>
<td>Annual Savings</td>
<td>162,408kWh</td>
<td></td>
<td>£15,919 56.7tCO₂e</td>
</tr>
</tbody>
</table>

**Project Details**

This project would form part of a full AHU refurbishment, for which further detailed scoping is required.

A survey is being booked in order to scope and cost the project.

**Risks**

- 

**Next steps**

- Carry out detailed scoping of AHU refurbishment project.
### EN6 - Consider Sussex Place AHU asset replacement project

<table>
<thead>
<tr>
<th><strong>Project Start Date</strong></th>
<th>Autumn 2018</th>
<th><strong>Project Completion Date</strong></th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Owner</strong></td>
<td>Head of Estates Services</td>
<td><strong>Support</strong></td>
<td>Project Manager</td>
</tr>
<tr>
<td><strong>Cost</strong></td>
<td>£TBC</td>
<td><strong>Funding stream</strong></td>
<td>Estates budget</td>
</tr>
<tr>
<td><strong>Annual Savings</strong></td>
<td>227,813kWh</td>
<td></td>
<td>£3,214</td>
</tr>
</tbody>
</table>

**Project Details**

This project would form part of a full AHU refurbishment, for which further detailed scoping is required.

A survey is being booked in order to scope and cost the project.

**Risks**

- 

**Next steps**

- Carry out detailed scoping of AHU refurbishment project.
### EN7 - Add BMS lighting control for Lecture Theatres

<table>
<thead>
<tr>
<th>Project Start Date</th>
<th>January 2019</th>
<th>Project Completion Date</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner</td>
<td>Head of Estates Services</td>
<td>Support</td>
<td>Project Manager</td>
</tr>
<tr>
<td>Cost</td>
<td>£38,280</td>
<td>Funding stream</td>
<td>Estates budget</td>
</tr>
<tr>
<td>Annual Savings</td>
<td>22,943kWh</td>
<td></td>
<td>£2,516</td>
</tr>
</tbody>
</table>

**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.

**Risks**

- 

**Next steps**

- Carry out detailed scoping of current and required lighting controls in lecture theatres.
Within the School there are a number of VRV/VRF units in order to provide local comfort cooling, which are not part of the central cooling system. They are therefore controlled locally.

It is possible to link these all back to the central building management system, so that the scheduling and set points for each unit can be controlled as part of the overall building strategy rather than according to the preference of the user. It would be possible to give a level of local control, but have the unit revert to central control after a set period of time.

**Next steps**

- Carry out detailed scoping of range and number of VRV/VRF units around the School.
## EN9 - Install VSDs onto unregulated pump sets

<table>
<thead>
<tr>
<th>Project Start Date</th>
<th>Summer 2019</th>
<th>Project Completion Date</th>
<th>Christmas 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner</td>
<td>Head of Estates Services</td>
<td>Support</td>
<td>Project Manager</td>
</tr>
<tr>
<td>Cost</td>
<td>£42,240</td>
<td>Funding stream</td>
<td>Estates budget</td>
</tr>
<tr>
<td>Annual Savings</td>
<td>34,474kWh</td>
<td>£3,379</td>
<td>12.0tCO₂e</td>
</tr>
</tbody>
</table>

### Project Details

There are pump sets around the School campus that currently run at a fixed speed, regardless of demand. A variable speed drive can be installed onto these in order to vary the run speed to match the demand. This will result in energy savings.

### Risks
- In some cases existing motors may not be

### Next steps
- Carry out detailed scoping of current unregulated pump sets.
## EN10 - Schoolwide PC Upgrade

<table>
<thead>
<tr>
<th>Project Start Date</th>
<th>Project Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer 2016</td>
<td>July 2020</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Owner</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head of Estates</td>
<td>Project Manager</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cost</th>
<th>Funding stream</th>
</tr>
</thead>
<tbody>
<tr>
<td>£TBC</td>
<td>Estates budget</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Annual Savings</th>
<th>Annual Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>229,056kWh</td>
<td>£24,859</td>
</tr>
<tr>
<td>81.3tCO₂e</td>
<td></td>
</tr>
</tbody>
</table>

### Project Details

London Business School has been undertaking a schoolwide PC upgrade strategy, which is currently 30% complete. 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.

### 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.
Once the advanced optimisation work has been completed, it would be possible to make further savings at the SOC by implementing an active Demand Side Response (DSR) programme.

In simple terms, DSR is about using the minimum amount of energy at the most expensive times and transferring the consumption to the cheaper time periods.

Savings are achieved through 5 key areas:

1. Reducing the amount of energy/load used during expensive ‘Distribution Use of System’ (DUOS) charging periods.
2. Reducing the amount of energy/load used during ‘TRIAD’ periods.
3. Reducing each building’s Maximum Demand.
4. Reducing the amount of energy used during the most expensive energy purchase periods (Arbitrage).
5. Improved commodity unit price (at next contract fix), due to more attractive energy profile being available to the selected electricity supplier.

This project would provide savings of £6,000 per annum for an investment of £3,000 providing an ROI of 0.5 years.

**Risks**
None, as all settings could be reversed if any issues encountered.

**Next steps**
- Identify areas/plant for DuoS and Triad reductions
- Discuss and agree changes
- Implement, test and commission changes
- Provide ongoing monitoring of user comfort and verification of savings
The SOC has been fitted out with a Trend 963 BMS. The building has now been handed over from the principal contractor and therefore there exists an opportunity to undertake an optimisation exercise on all of the HVAC plant that is connected to the BMS. A lot of the technology needed to implement this step has already been installed on the fit out, therefore this is a low cost opportunity to achieve a high level of energy performance.

Recommended modifications include, but are not limited to;

- Review general plant operating times & optimum start/stop settings
- Free cooling strategy on AHUs
- Overnight purge during cheap rate electricity
- Move to demand led control for meeting & function rooms
- Optimisation of deadbands
- Re-commission heat reclaim on AHUs 5, 6 & 7
- Seasonally drift setpoints (heating/cooling) marginally throughout each season
- Implement a global setpoint for Mitsubishi a/c units & optimise fan speeds/deadbands

This project would provide savings of £15,000 per annum for an investment of £25,000 providing an ROI of 1.7 years.

**Risks**

None, as all settings could be reversed if any issues encountered.
EN13 - Window replacements at Main Campus

<table>
<thead>
<tr>
<th>Project Start Date</th>
<th>2020</th>
<th>Project Completion Date</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner</td>
<td>Head of Estates Services</td>
<td>Support</td>
<td>Project Manager</td>
</tr>
<tr>
<td>Total Cost</td>
<td>£TBC</td>
<td>Funding stream</td>
<td>£TBC</td>
</tr>
<tr>
<td>Annual Savings</td>
<td>TBC kWh</td>
<td>£TBC</td>
<td>TBC tCO₂e</td>
</tr>
</tbody>
</table>

**Project Details**

The windows to the rear of the Regents Park façade are not listed, and are metal-framed and single glazed.

Replacing these will improve the quality and look of the windows both internally and externally, and will result in energy savings from the reduced heating load.

**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.
### EN14 - On-site generation

<table>
<thead>
<tr>
<th>Project Start Date</th>
<th>2019</th>
<th>Project Completion Date</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner</td>
<td>Head of Estates Services</td>
<td>Support</td>
<td>Project Manager</td>
</tr>
<tr>
<td>Total Cost</td>
<td>£TBC</td>
<td>Funding stream</td>
<td>£TBC</td>
</tr>
<tr>
<td>Annual Savings</td>
<td>TBC kWh</td>
<td>£TBC</td>
<td>TBC tCO₂e</td>
</tr>
</tbody>
</table>

#### Project Details

Following from the installation of PV cells onto the Sammy Ofer Centre, the School has scope to expand on-site renewable or non-renewable generation.

This could include an extension to the SOC PV cells, installation of PV cells onto other buildings, installation of CHP plant or addition of micro gas turbine engines.

The options need to be explored in order to commit to the most appropriate technology or technologies.

#### Risks

There is a performance risk with on-site generation that it does not operate as designed. This is minimal with more mature technologies such as PV (although an inflated output is likely to be quoted by some installers and suppliers). There is also a regulatory risk that the regulatory framework surrounding on-site generation will change in future. Although operating projects should be protected from these changes once in place, it could impact the feasibility during the planning process.

#### Next steps

- Assess feasibility of different on-site generation options
5.1 - Financing

The costs of each project are set out in the implementation plan and are summarised in the timeline. The overall cost and saving summary for the duration of the plan is below in table 4.

Savings from projects carried out in one year are added the year after. This means that there is some flexibility as to the exact date that the savings start - so savings for any given year are conservative, as they will be impacted to some extent by projects being completed during that year.

<table>
<thead>
<tr>
<th>Year</th>
<th>Project Costs (£)</th>
<th>Project Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(£)</td>
<td>(£)</td>
</tr>
<tr>
<td>2017 - 18</td>
<td>£56,000</td>
<td>12,424</td>
</tr>
<tr>
<td></td>
<td></td>
<td>115,484</td>
</tr>
<tr>
<td>2018 - 19</td>
<td>£340,853</td>
<td>61,506</td>
</tr>
<tr>
<td></td>
<td></td>
<td>775,060</td>
</tr>
<tr>
<td>2019 - 20</td>
<td>£6,000</td>
<td>7,691</td>
</tr>
<tr>
<td></td>
<td></td>
<td>72,338</td>
</tr>
<tr>
<td>2020 - 21</td>
<td>£6,000</td>
<td>7,691</td>
</tr>
<tr>
<td></td>
<td></td>
<td>72,338</td>
</tr>
<tr>
<td>Totals</td>
<td>£1,215,475</td>
<td>264,944</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1,035,220</td>
</tr>
<tr>
<td></td>
<td></td>
<td>314.1</td>
</tr>
</tbody>
</table>

Table 4 - Project costs and savings over the duration of the carbon management plan

(The totals in Table 4 (above) vary from those in Table 3 because a proportion of the savings in some of the projects have already been achieved).

5.2 - Sources of Financing

London Business School has identified 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.
- The boiler, chiller, Huntsworth Mews and data centre move projects are 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 this and last year.
- 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.
6 - Carbon Stakeholder Engagement

6.1 - Strategic Process

HEFCE recommends that the Carbon Hierarchy approach is used to reduce emissions in a socially responsible and cost effective way. This is made up of Reduce (energy/fuel demand), followed by Efficiency (of equipment and energy sources), Decarbonise (energy supplies), Befriend (local connections to increase capacity to carry out other actions) and Neutralise (energy supplies), whilst Monitoring results. The Befriend heading includes building partnerships both within the School and outside it in order to share knowledge, best practice and resources.

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.
<table>
<thead>
<tr>
<th>Name/Position</th>
<th>Interest</th>
<th>Specific Indicators</th>
<th>Method of Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governing Body</td>
<td>o Reputation of School</td>
<td>o Progress against carbon management plan and targets</td>
<td>o Progress summaries submitted to Governing Body meetings</td>
</tr>
<tr>
<td>Secretary</td>
<td>o Reputation of School, Compliance with legislation and HEFCE requirements</td>
<td>o Progress against carbon management plan and targets</td>
<td>o Progress summaries submitted to Governing Body and Health, Safety and Environment Committee meetings</td>
</tr>
<tr>
<td>Head of Estates Services</td>
<td>o Progress of current projects, Planning of upcoming projects, Budget planning, Compliance with legislation and HEFCE requirements</td>
<td>o Detailed progress against project timelines, Updated carbon management plan, Progress against carbon management plan and targets, Legislative updates</td>
<td>o Project timelines and notes, Provide progress reports to Estates Strategic Steering Committee, Amendments to carbon management plan</td>
</tr>
<tr>
<td>Deputy Secretary</td>
<td>o Compliance with legislation and HEFCE requirements, Progress of current projects, Planning of upcoming projects</td>
<td>o Detailed progress against project timelines, Progress against carbon management plan, Legislative updates, Updated carbon management plan</td>
<td>o Project timelines and notes, Provide progress summaries to relevant stakeholders, Amendments to carbon management plan</td>
</tr>
<tr>
<td>Project Manager</td>
<td>o Progress of current projects, Planning of upcoming projects, Resource allocation</td>
<td>o Detailed progress against project timelines, Updated action plan from carbon management plan</td>
<td>o Project timelines and notes, Provide regular updates to Head of Buildings Management.</td>
</tr>
<tr>
<td>Health, Safety and Environment Committee</td>
<td>o Progress of current projects, Factors that might affect the plan, Updating the plan</td>
<td>o Progress against carbon management plan and targets, Updated carbon management plan</td>
<td>o Progress summaries submitted to meetings, and the 6 monthly updates are signed off.</td>
</tr>
<tr>
<td>Identified Stakeholders</td>
<td>Interest in the Carbon Management Plan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>----------------------------------------</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 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 | - Working practices and environment  
- Awareness of promoted actions and practices  
- General carbon management  
- Progress against targets  
- Awareness actions  
- Specific information in service level agreements  
- The Carbon Management Plan is publicly available on School website |
| Suppliers and contractors | - Awareness of carbon policy  
- Specific School requirements  
- Signposting to sustainability policy, and carbon management plan  
- The Carbon Management Plan is publicly available on School website |
| Prospective students and employees | - Reputation of School  
- School attitude and commitment to carbon management  
- Signposting to sustainability policy, and carbon management plan  
- The Carbon Management Plan is publicly available on School website |
| Sustainability change management initiative | - Inputs into promoted actions and practices  
- Progress of current projects  
- Progress against carbon management plan and targets  
- 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 Portal intranet.
- The commitments outlined in the sustainability policy are communicated to all new starters, together with information on how to get involved in achieving the sustainability targets and a route for suggestions and ideas.

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.

<table>
<thead>
<tr>
<th>Specific Indicators</th>
<th>Communication Method</th>
<th>Responsibility</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Progress against carbon management plan and targets</td>
<td>Summary report – included within papers for meetings of the Governing Body and communicated to other relevant stakeholders. Also published on website and Portal.</td>
<td>Deputy Secretary</td>
<td>Six-monthly</td>
</tr>
<tr>
<td>Updates and amendments to carbon management plan</td>
<td>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.</td>
<td>Head of Estates Services &amp; Deputy Secretary</td>
<td>Six-monthly</td>
</tr>
<tr>
<td>General progress against plan</td>
<td>Inclusion onto agenda of the Health Safety and Environmental Committee</td>
<td>Head of Estates Services</td>
<td>Six-monthly</td>
</tr>
<tr>
<td>Awareness of actions</td>
<td>Information will vary – energy awareness material is more effective when methods and messages are regularly refreshed.</td>
<td>Deputy Secretary</td>
<td>Varying</td>
</tr>
</tbody>
</table>

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. Further development in this area is planned for next year, now that teaching has started in the Sammy Ofer building. 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 has introduced a cycle to work scheme for staff and faculty, 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 scope 1 and 2 emissions which are the focus of this carbon management plan. However, as part of a sustainable future, it is important that
positive and constructive relationships are built with others in the community, and opportunities may arise in the future to work with others in the community to reduce the carbon impact of the School and other community groups or organisations. Until then, outreach projects will continue to go ahead under the umbrella of general sustainability.

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 43% 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 is 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, it is likely that the estate will 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 will be 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 as appendices 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 Estates 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.
- Two weekly general progress and status updates to the Senior Management Team meetings.
- 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. It is not possible to adjust the baseline in order to take this into account, and so in order to meet the absolute reduction target, it is necessary to further increase the level of planned energy reduction across the campus. 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.

The School has identified a number of measures that will take place which will bring the School to an overall saving of 39.3% in carbon emissions/m² against the baseline. In order to ensure that the target is achieved, further projects have been added to the implementation plan. 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.