

CIBSE
ENGINEERING PRACTICE REPORT



July 2014



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1. Introduction

I have always been enthused by building services. As a student, I had several summers of work experience at 'As-salaam Building Services', a mechanical contractor, where I gained invaluable experience of services through assisting in several domestic installations.

After completing a Masters in Mechanical Engineering in 2008, I joined Focus FM, a building services M&E consultancy, with clients primarily in the commercial office and education sectors.

I initially joined the Energy and Sustainability Department as a Graduate Energy Consultant, and was promoted to Energy Consultant in 2010. My role included undertaking energy audits, reporting on utility consumption, undertaking sustainable technology feasibility studies and gathering data for the production of Energy Performance Certificates (EPCs).

The foundation of my non-domestic building services understanding was gained in these initial years, through a combination of site surveys, research and attending courses.

I became a CIBSE accredited Energy Assessor in 2013 and continue to assist the Energy Department.

In 2012, I transferred across to the Focus FM Project Department, where I currently work as a Senior Project Engineer. The Project Department offers a wide range of services including project management of plant replacements, commercial office fit-outs, feasibility studies, license to alters and technical advisory.

My current role includes leading mechanical services designs, preparing specifications, tendering projects, managing projects, preparing feasibility studies and working as a technical advisor.

Experiences in both the Energy and Project Departments have developed my technical, commercial and interpersonal skills, allowing me to fulfil my current role.

2. Summary of Key Projects

Project	Client	Description
90 High Holborn Jun 09 - Jun 12	JLL	Commercial office building – environmental and energy management consultancy
Ealing Schools Apr 10 - Jun 10	London Borough of Ealing	5 no. new build secondary schools - utility and sustainability reports
6 Duke Street Mar 11 - Jun 11	GVA	Commercial office building - chiller plant replacement feasibility study
Isaac Newton Academy Jun 11 - Jun 14	London Borough of Redbridge	New build secondary school - technical advisory role
20 Kirby Street Mar 12 - Mar 13	Optic	Commercial office building - boiler plant replacement feasibility study and project management.
The Corner Building Jan 13 - June 13	JLL	Commercial office building – technical advisory role
Eskan Court Jan 13 - June 13	JLL	Commercial office building – chiller plant replacement project management
Nations House Mar 13 - Present	Selfridges	Commercial office building - CAT B office fit-out lead engineer
New Brook Buildings May 13 - Jul 13	JLL	Commercial office building - technical advisory role
City Hall Sep 13 - Nov 13	JLL	Commercial office building - Energy Performance Certificate (EPC) production
55 Gracechurch Street Sep 13 - Present	JLL	Commercial office building - boiler plant replacement project management

3. CIBSE Competency Objectives

3.1 Objective A

CIBSE Objective	Career Episode
<p>A1</p> <p>Maintain and extend a sound theoretical approach in enabling the introduction and exploitation of new and advancing technology and other relevant developments</p>	<p>6 Duke Street - Chiller Plant Replacement Feasibility Study - Lead Engineer</p> <p>As lead engineer, my role was to investigate and report back to the client (GVA) on energy efficient alternatives to the existing chilled water system.</p> <p>The original plant consisted of water cooled chillers, dry air coolers and an ice storage system. The heating plant was also failing and was to be considered as part of the overall replacement.</p> <p>Some of the more efficient alternatives I reviewed were;</p> <ol style="list-style-type: none"> Water cooled chillers with open cooling towers Variable Refrigerant Volume (VRV) system with heat recovery Combined Cooling, Heating and Power (CCHP). <p>Prior to the project, I had not been exposed to all the technologies and so to analyse their feasibility, I:</p> <ol style="list-style-type: none"> Researched technologies using manufacture literature including Evapco (cooling towers), Daikin (VRV) and EnerG (CHP). Consulted colleagues who had experience installing these technologies. I was pointed in the direction of Good Practice Guide 388 and CIBSE Guide F for example, which gave me a good understanding of CHP theory and application. To further understand CCHP, I contacted a supplier (EnerG) and arranged for them to visit site and provide a CPD seminar to discuss absorption chillers and tri-generation. Undertook SBEM calculations to evaluate the carbon and cost saving of each technology. This allowed me to calculate payback periods, a key driver for the client. <p>I undertook a life cycle cost analysis for each option, referring to CIBSE Guide M for indicative lifespan. Due to several site constraints, I eventually recommended the installation of water cooled chillers with dry air coolers, but without the ice bank.</p> <p>City Hall - Energy Performance Certificate - Energy Assessor</p> <p>I came across a bespoke system whilst preparing the EPC for City Hall. Cooling to the building was provided by bore hole cooling technology, pumping cool water from the River Thames into AHU cooling coils separated via a heat exchanger.</p> <p>In order to model this accurately in SBEM, I researched the technology further and made assumptions on the expected loads by referring to CIBSE Guide F. I also verified my methodology with Pavlos Konstantinidis at the CIBSE Energy Assessor helpdesk.</p>
<p>A2</p> <p>Engage in the _____</p>	<p>Utility and Sustainability Reports - 5 no. New Build Schools, Ealing</p> <p>My role was to undertake concept designs for the sustainable energy</p>

<p>creative and innovative development of engineering technology and continuous improvement systems</p>	<p>installation at five new build secondary schools in Ealing. As lead engineer, I was reporting back to the client (London Borough of Ealing) on how their requirement of 20% carbon reduction from the use of Low or Zero Carbon (LZC) technologies could be achieved.</p> <p>The technologies I reviewed were;</p> <ul style="list-style-type: none"> a) Biomass Boilers b) Photovoltaic (PV) c) Combined Heat and Power (CHP) d) Wind Energy e) Solar Thermal <p>I worked closely with the project architect (Footprint) to determine spatial constraints and calculate approximate energy consumption. I also liaised with Ealing, as they had certain preferences (for example, they did not prefer biomass boilers due to previous adverse experience with delivery and maintenance).</p> <p>Other key considerations were:</p> <ul style="list-style-type: none"> a) Longevity and robustness b) Suitability of the technology - established by calculating (using BSRIA rule of thumbs) expected heating, cooling and electrical loads c) Ease of operation <p>I contacted manufacturers to calculate efficiencies and payback periods. I also checked my calculations against typical guidance provided in CIBSE Guide F.</p> <p>I created a spreadsheet for each technology, which calculates the size of plant required when inputting the carbon reduction required. This is now used in the company on similar projects.</p> <p>The solution for the majority of schools was a combination of PV cells and micro CHP.</p> <p>In completed schools, such as Isaac Newton Academy where CHP was installed, I have been responsible for verifying the energy savings in 'actual' operation. I have been able to use this to predict energy savings in other projects.</p>
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3.2 **Objective B**

CIBSE Objective	Career Episode
<p>B1</p> <p>Identify potential projects and opportunities.</p>	<p>During my time with Focus FM, I have identified several areas where I felt the business could progress further. The majority of these have stemmed from working closely with and understanding the requirements of my clients, including building surveyors, building managers and tenants. Some of the products which I have significantly developed:</p> <ul style="list-style-type: none"> a) Energy Audits b) Utility and Sustainability Reports c) Technical Advisory Roles (particularly in the Education Sector) d) Heating and Cooling Reviews <p>I have recently been the primary client interface to Gardiner and Theobald (client) to whom I have proposed technical advisory roles on several new build schools in Redbridge and Lambeth. During this time, I have met with the client, understood their needs and transferred these into fee proposals. This has resulted in winning approximately £100k worth of instructions.</p> <p>For example, whilst undertaking a Utility Adequacy Report at Paxton Primary School for London Borough of Lambeth, I identified an opportunity to project manage an additional element of works that was not within our original scope i.e. a substation diversion. My client was not aware that we offered this service, but as I was aware of the skill set within the projects team, I discussed it further and my proposal to manage the works was accepted.</p> <p>Another example is my involvement with Isaac Newton Primary School for London Borough of Redbridge. My original scope included a brief review of the Contractor Proposals and snagging of the final installation. However, I identified several significant project risks, including lack of co-ordinated drawings, missing sub-contractors and an unrealistic programme. I proposed a more involved technical advisory role to the client and we were subsequently instructed for these works.</p> <p>I am also a member of the website development team representing the projects department and have assisted in producing case studies and marketing material for our services.</p>
<p>B2</p> <p>Conduct appropriate research, and undertake design and development of engineering solutions.</p>	<p>The Corner Building - Commercial Office Building - Technical Advisor</p> <p>As part of a heating and cooling review at The Corner Building, I was required to undertake several investigations to a tenant floor. The area, served by under floor 4 pipe Fan Coil Units (FCUs), was reported as being too warm in summer and too cold in winter. After verifying tenant complaints, I set up a plan of action which was split into 3 steps, to identify and resolve the issues:</p> <ul style="list-style-type: none"> a) Installation Review: I initially undertook a review of the plant capacity by modelling the space in Hevacomp, calculating the heating and cooling loads and comparing to the installed FCU capacity. My calculations suggested there was sufficient installed capacity.

	<p>b) Validations and Investigations: I employed a commissioning specialist (Hydrocomm) to validate the chilled water (CHW) and Low Temperature Hot Water (LTHW) flow rates and temperatures onto the floor. Upon checking against design requirements, I found there was low flow on both circuits.</p> <p>This led me to suggest the quality of the water in both circuits were sampled and that they were checked for blockages. I compared the laboratory sample results against guidance in BSRIA BG29/2012 (Pre-Commissioning Cleaning of Pipework Systems). High levels of pseudomonas were detected and FCU flexible connections were found to be blocked in several cases.</p> <p>I also undertook air flow validations at the supply air diffusers, which were down to around 70% of design in some cases. I undertook pressure drop calculations which indicated inadequately sized ductwork in these areas.</p> <p>c) Remedial Works: Due to the poor water quality, I instructed a full clean and flush of both circuits to BSRIA guidance. Both the LTHW and CHW achieved design upon retesting.</p> <p>I also calculated more appropriate duct work sizes (based on available static pressure from FCUs), prepared a specification and prepared drawings indicating the new ductwork required. I obtained costs from two contractors and once approved by the client, instructed Integral (contractor) to undertake the remedial works. All supply air diffusers achieved 100% design duty upon retesting.</p>
<p>B3</p> <p>Implement design solutions, and evaluate their effectiveness</p>	<p>Nations House - CAT B fit-out - MEP Lead Engineer</p> <p>As lead engineer, I was responsible for preparing the Mechanical Electrical and Public Health (MEP) specification for the 8th Floor fit-out, group executive headquarters for Selfridges (client).</p> <p>I worked primarily on the mechanical and public health design and managed an electrical engineer for the electrical design. The specification included design of FCUs, chilled water, LTHW, ventilation, domestic water and drainage services.</p> <p>I attended weekly meetings where I explained design concepts to the client and separate design co-ordination meetings where I explained design constraints to the architect (Gensler).</p> <p>I prepared detailed sections, considering building structure, architectural requirements and other services.</p> <p>The design co-ordination was challenging as Gensler wanted shallow ceiling voids and some perimeter FCUs. To facilitate this, I selected slimline FCUs from Diffusion (manufacturer) and also designed for shallow rectangular ductwork in the ceiling void. To select appropriate FCUs, I modelled the space in Hevacomp based on specific design criteria set out by Selfridges. I checked the proposed FCUs against available CHW and LTHW flow onto the floor.</p> <p>Using CIBSE Guide A and drawing on previous adverse experiences with low</p>

	<p>off-coil temperatures from perimeter FCUs, I designed for off-coil temperatures of a minimum of 14°C. I liaised with both Diffusion and MAP (diffuser manufacturer) to ensure a practicable solution with regards to air distribution and noise in accordance with CIBSE Guide A.</p> <p>I was able to convey the design intent to the tendering contractors. Upon completion of the works (by BWI), I inspected and snagged the installation quality against our specification.</p> <p>I also witnessed commissioning to check the installation against the design requirements, in terms of flow rates, temperatures and acoustics.</p>
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3.3

Objective C

CIBSE Objective	Career Episode
<p>C1</p> <p>Plan for effective project implementation.</p>	<p>20 Kirby Street - Boiler Plant Replacement - Project Manager</p> <p>I was the project manager for the boiler plant replacement at 20 Kirby Street. I've project managed several similar plant replacement projects (including chillers, boilers, AHUs, controls etc.). Focus FM offer project management from concept design, tender, tender analysis, site project management, handover and end of defects.</p> <p>The boiler plant was over 40 years old, and I was instructed by the landlord and client (Optic) to manage the replacement.</p> <p>Prior to preparing a replacement specification, I noted several project risks. To avoid proceeding with these risks, I recommended and then undertook a feasibility study, of which some key findings were:</p> <ul style="list-style-type: none"> a) Boiler plant room had unidentified asbestos b) Existing boilers were oil fired, the client wanted gas fired c) Inadequate plant room ventilation <p>The study allowed me to identify and mitigate several risk items and I was able to initiate works with long lead in periods, such as the National Grid gas application and instructing a pre-demolition asbestos survey. By referring to Spon's M&E Pricing Guide and previous projects, I was able to provide an accurate project budget to Optic.</p> <p>I set up project milestones and timeframes and reported progress to the client through emails and meetings.</p> <p>I issued the tender documentation, which included the MEP specification, terms of the contract, programme and an itemised cost schedule. I met the contractors onsite to talk them through the specification, constraints and clarify any ambiguities.</p> <p>From each tenderer, I requested company profiles and CVs of the project managers and sub-contractors. I also requested method statements for specific risk items, such as the asbestos removal, removal of oil tanks and the installation of the new gas supply.</p> <p>I interviewed, with the client, the lowest two contractors and we separately scored their submissions on tender detail, programme, previous works, and sub contractors. We eventually appointed the works to Team Q.</p>
<p>C2</p> <p>Plan, budget, organise, direct and control tasks, people and resources.</p>	<p>20 Kirby Street - Boiler Plant Replacement - Project Manager</p> <p>For continuity, I have referred to the example of the 20 Kirby Street boiler plant replacement.</p> <p>Upon receiving the tenders by the deadline, I undertook the following;</p> <ul style="list-style-type: none"> a) Compared the completed tender cost schedules from each contractor, checking for accuracy and obvious anomalies. b) Checked each tender return for qualifications and assumptions. For example, one contractor (H&S) made the assumption that all works could be undertaken during working hours, which was not possible

	<p>nor specification compliant.</p> <ul style="list-style-type: none"> c) Liaised with contractors on low/high costs or where their assumptions were not acceptable. For example, Team Q misunderstood their scope for National Grid liaison and had to increase their costs for that item. d) Confirmed that contractors had agreed to terms of the contract (JCT Minor Works with standard amendments) e) Undertook an internal review f) Issued the tender analysis report, complete with recommendations to the client (Team Q were eventually instructed after interviews) <p>I set out in a pre-start meeting with Team Q, the expected process of technical submissions, project variations and progress reports.</p> <p>Team Q identified some additional works through their validation, such as the need to flush the entire LTHW system due to poor water quality. Upon verifying the requirement for the works, I explained the need to do this to the client i.e. to ensure the boiler warranty was valid. I instructed the project variation funded from a provisional sum that I had allocated for this item. I also managed a general contingency sum for unforeseen works.</p> <p>In order to manage quality and compliance, I ensured Team Q issued technical submissions, which could only be progressed on my status approval.</p> <p>The requirement for flushing had originally not been accounted for in the programme. However, as I had a programme contingency of 2 weeks, the client's PC date was unaffected.</p> <p>Upon completion of the works, I undertook a snagging exercise to ensure the installation was specification compliant. I also requested a full set of O&Ms and specifically checked for statutory certificates such as building control approval, fire officer approval and gas safe certificates.</p>
<p>C3</p> <p>Lead teams and develop staff to meet changing technical and managerial needs.</p>	<p>Nations House - CAT B fit-out - MEP Lead Engineer</p> <p>I was the MEP lead engineer for a CAT B fit-out on the 8th Floor at Nations House, group executive headquarters for Selfridges (client). My role included preparing the MEP design specification, drawings, tender analysis and overseeing the installation to handover.</p> <p>The project was successful and we have since been instructed to manage the CAT B fit-outs on floors 4 to 7.</p> <p>As lead engineer, it was my responsibility to:</p> <ul style="list-style-type: none"> a) Manage the electrical engineer working on the project b) Manage the CAD drafter (CADRight) c) Manage a graduate mechanical engineer d) Liaise with the architect (Gensler) and client e) Liaise with manufacturers <p>For this project, I appointed a new CAD company after evaluating the performance of the company we had previously used on similar jobs. Although the proposed was more expensive, I felt they delivered higher quality. I put my case forward to my director which was accepted.</p>

	<p>On phase 2 of the project, a graduate engineer, Colm Dowling, joined the team. I identified where he could be most useful in this project and then trained him in the use of Hevacomp, pipework and ductwork sizing. I set up a Hevacomp inputs checklist for Colm to use as a guide and I closely monitored his work to ensure quality was being maintained.</p> <p>To ensure I was managing the project effectively, I held weekly internal design meetings to track progress and set interim targets. This ensured we kept to what was a very challenging programme.</p> <p>I also closely followed and ensured my team were following the company's QA procedures in terms of internal reviews, key correspondence via email and use of correct templates.</p>
<p>C4</p> <p>Bring about continuous improvement through quality management.</p>	<p>Prior to an ISO 9001 (Quality Management) audit in 2013, I was responsible for ensuring the Projects Department at Focus FM were adhering to the companies QA procedures. My role was to ensure all relevant documentation had been saved on the central server including:</p> <ol style="list-style-type: none"> a) Project review forms b) Correspondence on a project c) Correct templates d) All revisions of a report <p>I completed a checklist identifying missing documentation and issued to the relevant project engineer to action.</p> <p>On all projects I work on, I am responsible for adhering to an internal QA procedure (as set out by Focus FM), which includes:</p> <ol style="list-style-type: none"> a) Using the correct project templates and formats b) Ensuring correct technical contents c) Pre, mid and post project reviews d) Issuing client review / feedback forms <p>I also consult with and present to my colleagues to ensure that both the team and I are following the correct procedures. For example I have recently undertaken the following presentations to colleagues;</p> <ol style="list-style-type: none"> 1. New Brook Buildings – Heating and Cooling Report – I presented the issues I encountered and how I resolved them in a cost efficient manner. 2. Chiller Selection – I presented the procedure of selecting the appropriate chiller for various applications. <p>I also assist in ensuring my team are technically up to date by organising in house CPD courses:</p> <ol style="list-style-type: none"> 1. CHP - Undertaken by EnerG. 2. Pumps - Undertaken by Armstrong 3. Underfloor Air Systems - Undertaken by AET <p>I have also created and developed the Focus FM QA checklists for EPC site surveys and modelling. The site survey checklist details all data entry points that require a surveyor to identify onsite. The modelling checklist identifies a set of checks to be undertaken prior to lodging an EPC. These checklists are saved for future audit purposes.</p>

3.4

Objective D

CIBSE Objective	Career Episode
<p>D1</p> <p>Communicate in English with others at all levels.</p>	<p>Eskan Court - Chiller Plant Replacement - Project Manager</p> <p>I was the project manager for a chiller plant replacement at Eskan Court.</p> <p>After preparing a specification and tendering the works, I recommended the client (JLL) to instruct Europa for the project.</p> <p>Once Europa were instructed, I prepared and issued a pre-start meeting agenda and arranged a formal meeting between JLL, Europa, Capita (CDMC), Integral (building maintenance) and myself. I chaired the meeting, in which we discussed and agreed key project parameters, including:</p> <ol style="list-style-type: none"> 1. Communication - I prepared a project directory and set out lines of communication. This is included formal fortnightly client meetings, weekly reporting and detailed design meetings onsite with the contractor. I established that key conversations pertaining to the project were to be followed up by email. 2. Contract Details - I tabled the Contract Documentation 3. Site Constraints - We discussed site access, working hours, welfare facilities, hazards etc. 4. Programme <p>I prepared minutes for the meeting and issued to all, clearly identifying who was responsible for each action and when it was due.</p> <p>The Contract Documentation, which I had prepared, required approval from the client's solicitors. I liaised with them on finalising finer details, including level of professional indemnity insurance and extent of liquidated damages. This involved several lengthy email correspondences.</p> <p>To ensure the building tenants were fully aware of the project, I also issued a non-technical version of the project programme and scope, showing the key milestones only, and followed up with informal calls to answer any queries.</p>
<p>D2</p> <p>Present and discuss proposals.</p>	<p>New Brook Buildings - Commercial Office Building - Technical Advisor</p> <p>As lead technical advisor for this project, my role was to review and investigate heating and cooling issues and report back to the JLL building management team (client) and tenants.</p> <p>The key issues were that during summer, some areas were too warm and some areas were too cold and suffering from cold air draughts.</p> <p>After considering the issues, I submitted our fee proposal and proposed scope of works for the client's consideration, who were tendering the works. They had prepared an outline brief on what they were expecting, including CHW, LTHW and controls validations. In preparation of the submission, I:</p> <ol style="list-style-type: none"> a) Met with the client to fully understand their requirements and budget. b) Prepared a scope of works for, and obtained costs from, several sub-contractors. After reviewing competitive costs, I appointed

	<p>Hydrocomm (commissioning specialist) and Matrix (controls specialist).</p> <p>c) Prepared the proposal, detailing programme, scope inclusions, exclusions and any assumptions I had made.</p> <p>Further to the bid submittal, I met with and presented our proposal to the client and tenants, in an appropriate level of technical detail. Within my presentation I emphasised the process flow chart, which clearly identified their concerns, how we proposed to identify the causes and resolve them.</p> <p>I also discussed my proposed programme, a key driver for the tenant. A tenant (Blick Rothenberg) challenged the programme length and I explained that to minimise tenant disruptions, we had allowed for the majority of works to be undertaken out of normal working hours. I agreed to review their concerns and issued a slightly more compact programme by scheduling in more evening works.</p> <p>We were appointed the works, which I managed to successful completion.</p>
<p>D3</p> <p>Demonstrate personal and social skills.</p>	<p>New Brook Buildings - Commercial Office Building - Technical Advisor</p> <p>I have been involved in several similar projects where I am brought in when issues have been ongoing for some time and are not straightforward to resolve. Unfortunately, by the time we are appointed, tensions between tenants and building managers are usually high, as was the case during my works at New Brook Buildings.</p> <p>The landlord previously had several consultants trying to resolve the issues. I initially reviewed previous works, to ensure I was fully aware of the project history and any sensitivities.</p> <p>In an attempt to calm tensions, and to ensure expectations on both sides were managed, I:</p> <p>a) Met with the tenants and building manager to understand their concerns</p> <p>b) Prioritised the tenants concerns</p> <p>c) Prepared a clear, easy to follow, process flow chart of how we were addressing their concerns</p> <p>d) Updated tenants and the building manager weekly via a non-technical version of the report and programme tracker. I feel my strength in describing technical issues in an easy to understand format was fundamental in keeping the tenants engaged during the investigation and remedial works.</p> <p>During the works, setting up the project tracker allowed me to manage my sub-contractors, update tenants and meet interim targets.</p> <p>Once the remedial works were completed, the tenant's issues were generally resolved to their satisfaction.</p> <p>A successful aspect of this project was managing the tenant's expectations. For example, I identified that some areas would remain warm as a result of higher than design occupancy. This was outside our scope of works, which the tenants accepted and which helped reduce tensions.</p>

3.5

Objective E

CIBSE Objective	Career Episode
<p>E1</p> <p>Comply with relevant codes of conduct.</p>	<p>As part of my role as a Senior Project Engineer, I prepare design specifications for contractors to tender against. Therefore, as part of my research, I read relevant regulations, standards, guides and also attend training courses (both internal and external). For example, I have recently familiarised myself with BS 6644 and have attend the CIBSE course 'design of hot and cold water services' by Brian Whorlow.</p> <p>City Hall - Energy Performance Certificate - Energy Assessor</p> <p>As a CIBSE accredited Energy Assessor and Low Carbon Consultant, I am committed to abide by the CIBSE Certification Code of Professional Conduct. This code identifies my obligation to professionalism, standards, proper client and contractor liaison, transparency, QA and due regard to H&S onsite etc.</p> <p>By creating site survey and modelling QA checklists, and following company procedures, I am able to fulfil this obligation.</p> <p>I am also required to demonstrate I am up to date with standards, including Part L Regulations and the SBEM national calculation methodology.</p> <p>Isaac Newton Academy - New Build School - Technical Advisor</p> <p>As part of my role as lead technical advisor for new build school projects such as Isaac Newton Academy, I am required to thoroughly check, on behalf of the client (London Borough of Redbridge), that contractor bids are fully compliant with legislation and local authority requirements. For this role, I had to specifically familiarise myself with the building bulletin guidance and BREEAM requirements. To assist, I have compiled a spreadsheet detailing all the key requirements of various technical building bulletins such as BB101, BB93 and BB87.</p> <p>The Education Funding Agency (EFA) requirements are now more relevant for schools in the local authorities I work with, and I am in the process of compiling a similar spreadsheet.</p>
<p>E2</p> <p>Manage and apply safe systems of work.</p>	<p>I have a sound understanding of Health and Safety (H&S) in the following areas:</p> <p>a) H&S in the office:</p> <p>I have been given an H&S induction of my office, including knowledge of fire exits, meeting points and first aiders.</p> <p>b) H&S onsite:</p> <p>I have recently (December 2013) completed a Construction Skills (CSCS) Operatives course which clarified my H&S responsibilities when onsite. The course covered aspects such as PPE, risk analysis and working at heights.</p> <p>I have also undertaken an asbestos (UKATA) awareness training course.</p>

	<p>I have compiled a list of standard documents (including site H&S file and asbestos register) which I request from a building manager prior to visiting a site.</p> <p>c) H&S on projects I manage (2 areas):</p> <p>i. Designer's Risk - I have recently completed a Designers Risk Reduction Statement for Nations House CAT B fit out. This was to ensure my design had considered safe MEP installation and access.</p> <p>ii. Contractor's Risk - In managing projects that are notifiable to the Health and Safety Executive, I liaise with a CDM Coordinator. For example, for the Kirby Street boiler plant replacement, I appointed and liaised with the CDMC (DBK), to ensure they had the correct information to prepare an accurate pre-construction information pack. This included guidance on:</p> <ul style="list-style-type: none"> • Welfare facilities • Plant lifting • Asbestos • Other hazards <p>At Kirby Street, specific method statements were also required for asbestos removal and oil tank removal, which I reviewed with the CDMC. Once works started on site, I ensured Optic's (client) building specific permit to works and hot work permits were completed by Team Q.</p> <p>I've also attended a CDM training course (August 2013) to ensure I'm aware of what to identify on non-notifiable projects. To assist, I have created a checklist of all information required during the CDM process.</p>
<p>E3</p> <p>Undertake engineering activities in a way that contributes to sustainable development.</p>	<p>90 High Holborn - Environmental Consultancy - Energy Consultant</p> <p>During my works as an Energy Consultant, I undertook several energy audits. One example is at 90 High Holborn (a multi tenanted commercial office building), which started as an energy audit and then progressed to an environmental consultancy service.</p> <p>The objective of the energy audit was to identify inefficiencies in the plant and building operation and to make energy saving recommendations. I benchmarked actual annual utility consumption against expected usage (referencing CIBSE Guide F and ECG 19), and portrayed this as a carbon footprint comparison. I also produced a table of recommendations, split into short, medium and long term - each detailing capital costs and expected pay back periods. Some examples are detailed below;</p> <p>a) Short term: Optimise plant operation by adjusting run times and set points in accordance with design.</p> <p>b) Medium term: Installing water free urinals, PIR sensors, LED lighting, solar film etc.</p> <p>c) Long term: Installing CHP, heat recovery to AHUs, voltage optimisation etc.</p>

	<p>I monitored the carbon savings and reported the reductions back to the client (JLL) and tenants, who were so impressed with the results that they employed us for environmental consultancy services, which included:</p> <ol style="list-style-type: none"> a) Agreeing a building environmental policy with landlord and tenants b) Quarterly energy reporting on utility and carbon footprint c) Energy saving action presentations to each tenant. d) Implementation of medium term recommendations e) Energy week at the building, where I set up a stand in the building reception to raise awareness on energy saving initiatives. <p>In the property market, particularly with existing builds, I find that the key driver for sustainable changes are their commercial viability from reduced utility costs, Carbon Reduction Commitment (CRC) savings and feed in tariffs etc.</p>
<p>E4</p> <p>Carry out continuing professional development necessary to maintain and enhance competence in own area of practice</p>	<p>As a CIBSE accredited Energy Assessor, I keep my CPD up to date using the CIBSE online portal. I have surpassed the required minimum of 21 hours of structured learning per year.</p> <p>Furthermore, to fulfil my role as a Senior Project Engineer, I have undertaken specific training, to meet both my personal objectives and the objectives of the Projects Department. On a quarterly basis, I meet with my line manager to review my individual performance and track my progress against my individual development plan.</p> <p>As an example, I recently felt that both my team and I were not fully up to date with current legislation on domestic water system installations. I therefore undertook the CIBSE 'design of domestic hot and cold water systems' course. I presented the main points of the seminar to the team.</p> <p>I have also identified some non-technical aspects, such as time management, as an area I would like to develop further. To address this, I am booked onto a time management training course by Key Training Group, scheduled for 5th September 2014.</p> <p>In addition to structured CPD courses, I also read the monthly CIBSE journals and regularly access the CIBSE knowledge bank. I have also arranged manufacturer CPD courses for myself and the team, including:</p> <ol style="list-style-type: none"> a) CHP - Technical CPD- Undertaken by Ener-G. b) Pumps - Technical CPD - Undertaken by Armstrong c) Underfloor Air Systems - Technical CPD - Undertaken by AET <p>I also act as a mentor to a graduate mechanical engineer, Colm Dowling, who has recently joined the Projects Department. We have set up a 2 year plan, identifying fields he would like to develop further and CPD courses he should be attending to achieve this.</p>