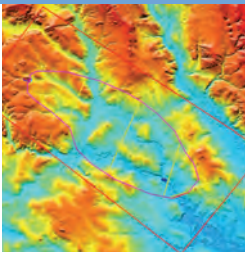




MSc Environmental Consultancy

Placement Case Studies Volume 1



edited by *Duncan Bayliss*



University of the
West of England

bettertogether

MSc Environmental Consultancy Placement Case Studies

Volume 1

Introduction

This is one of a linked pair of publications which show case the excellent work done by MSc Environmental Consultancy students in placements and on research projects:

MSc Environmental Consultancy Placement case studies Volume 1

MSc Environmental Consultancy Research project summaries Volume 1

Students undertaking the MSc Environmental Consultancy come from a wide range of backgrounds, some straight from a first degree, others after a period of work in another field. During the course they undertake a 3 month work placement and also a research project. Over a number of years it has become apparent that these are especially valuable parts of the course for the students. The quality of placement opportunities has been very high with students undertaking placements in an interesting range of public and private sector organisations. Students and the Department of Geography and Environmental Management, which hosts the Masters programme, are grateful for opportunities those organisations have provided and students are grateful for what they have been able to gain from their experience of working with them. Former students have frequently said that the placement was the most valuable part of the course and it has often been an invaluable part in securing relevant employment after their study. They have also commented on how the intensely practical study undertaken in UWE prepared them effectively for those placements. Of course the learning curve on a placement is often very steep. Students typically find themselves joining in with projects and work for clients that is in progress. Often they are part of a team working on a related set of projects, but still have clearly identifiable projects or tasks for which they are responsible. However, a recurring theme is that capable committed students are rapidly given a lot of responsibility and rise to the challenge.

Similarly students on the MSc Environmental Consultancy have undertaken an interesting and diverse range of research projects. Sometimes they have used the research project as an opportunity to explore in greater depth an issue that is relevant to consultancy practice and for some it has also helped secure employment after the course. Others have pursued interests that they have enjoyed following for their own sake and for some this has led on to signing up for a research degree (e.g. a PhD).

These two publications, MSc Environmental Consultancy Placement case studies Volume 1 and MSc Environmental Consultancy Research project summaries Volume 1 are intended to open a window on the really interesting range of placements and research projects recent students have completed. It is intended both as a record of what our students have achieved and also as a helpful insight for prospective students thinking of enrolling in the MSc Environmental Consultancy and for prospective placement providers to see what previous students have done.

Above all it is worth emphasising that the title of a degree can only capture part of what it is about, whereas spending some time finding out what students have actually done and how they have then used that study and placement work to find employment and further their careers allows a much richer understanding of the opportunities that the MSc provides. Since the MSc Environmental Consultancy started we have been pleasantly surprised at the variety of placements students have found and the diversity of work they have gone on to and we are delighted that this course has acted very effectively as a bridge between previous study (and work experience) and a rewarding range of careers. Often when applying for jobs students find that employers want some previous experience in the field and a placement can provide that vital element. Many employers also want to know that students they take on are able to tackle complex problems in a defined timescale with a high degree of autonomy and many research project projects demonstrate exactly those skills.

Career destinations of former students have included, for example, the following roles:

- EIA co-ordinator. Environmental impact assessments are complex processes involving many technical experts and often many sub-contractors. An EIA co-ordinator plays a vital role in commissioning, coordinating contributions and then compiling the Environmental Statement for submission to the relevant planning authority
- Technical roles in environmental consultancies, in specialisms such as contaminated land surveys, ecological surveys, bat surveys
- Energy manager in the public sector. e.g. Undertaking energy surveys and behavioural change work across an NHS trust to improve energy efficiency.
- Environmental business advisor to SMEs in the South West
- Renewable energy projects community liaison officer, working with planned wind farm projects
- BREEAM assessor and Code for Sustainable home assessor, assessing the environmental performance of proposed buildings and assisting with improving their performance
- Waste manager for a packaging company
- Environmental transport logistics officer for a major international deliveries business, seeking to reduce the environmental impact of their operations
- Implementing Environmental management Systems for SMEs

Copyright notice and terms of publication and dissemination

This Yearbook is published electronically by the Department of Geography and Environmental Management at UWE, Bristol to inform prospective students and potential placement providers of the types of work placements and research projects former students have undertaken. It also acts as a record of the achievements of students on the MSc Environmental Consultancy.

You may, free of charge, download, read and forward this document in its entirety without modification to other individual interested persons with a legitimate interest in the MSc Environmental Consultancy at UWE, but must respect copyright. You may not post it on a website, Linked-In page, Facebook page or other means of publication, but you may post a link to where the document may be found.

The copyright for each individual summary remains with the student authors. The copyright for the document as a whole is held by the Department of Geography and Environmental Management at UWE and Duncan Bayliss as editor. Do not reproduce in whole, or in part, by electronic or other means, any part of this document, or host it on a web site or any other means of dissemination without the express written permission of the editor and where he deems appropriate, the express permission of the original student author(s). Student contributions to this document were commissioned by the Department of Geography and Environmental Management and are subject to a publication agreement that includes safeguards for the student authors, the Department of Geography and Environmental Management and placement providers. The student's summaries represent significant hard work on placements and research projects of which they are justly proud. Please respect their effort and ownership of their work. Thank you for your co-operation.

Acknowledgements

Desk Top Publishing by Chris Wade, Graphics Technician, FET, UWE.

Enquiries

Enquiries about the MSc Environmental Consultancy should be directed to the Admissions Office.

The Admissions Office deals with enquiries and applications for all full-time postgraduate programmes.

Telephone: +44 (0)117 32 83333

Fax: +44 (0)117 32 82810

E-mail: admissions@uwe.ac.uk

Contact address:

Admissions Office
University of the West of England
Frenchay Campus
Bristol, BS16 1QY
UK

MSc Environmental Consultancy Placement

case studies Volume 1

Contents

Placement	Student	Page
Greengage Environmental LLP	James Bumphrey	1
RSK	Duncan White	5
Department for Transport	Patricia Allen	9
Carbon Leapfrog	Adam Withers	16
b:ssec	Zeta Watkins	20
Capita	Stephanie Jones	24
South Gloucester Council	Ian Brooks	27

James Bumphrey



Placement Role: Graduate Ecological Consultant

Placement Organisation: Greengage Environmental LLP

Current Role: Ecological Consultant, Greengage Environmental LLP

Abstract

My passion for ecology led me to a 6 month placement with Greengage, a London based multi-disciplinary environmental consultancy, where I was employed as a Graduate Ecological Consultant. My main roles were to provide support on ecology surveys such as Phase 1, Reptile and Bat surveys, and to write the reports to accompany those surveys. In addition to support on ecology I also worked on Environmental Impact Assessment projects and more specifically the preparation of the Environmental Statement for a football stadium. After my placement completed I was offered a full time contract.

Summary

Whilst I have a broad interest in the environmental sector my real passion and interest lies in the field of ecology. It was this passion that led me to study Environmental Sciences for my undergraduate degree and subsequently Environmental Consultancy at UWE. Consequently, I was determined to gain a placement with an ecological focus and was therefore thrilled to be offered a role with Greengage, a small London based environmental consultancy, as a Graduate Ecological Consultant. The placement was initially 6 months with possibility of an extension depending on performance and the level of work available.

Although brought in primarily to support with ecology surveys much of the work I initially undertook was related to Environmental Impact Assessment (EIA) and more specifically the preparation of an Environmental Statement (ES) for a new football stadium in West London. Initially my role was more admin based, assisting different members of the team with a range of tasks such as researching policy, liaising with sub-consultants and editing of draft chapters. As I spent more time working on the project I was tasked with writing a number of the chapters of the ES. The most interesting of which, owing to the sites location in an area of significant development activity, was the cumulative impacts chapter which covered the impact of the proposed development in the context other schemes in the local area.

When the survey season did eventually arrive, more and more of my time was devoted to ecology work. The majority of the ecology work consisted of either Phase 1 habitat surveys or BREEAM (Building Research Establishment Environmental Assessment Methodology) and CSH (Code for sustainable homes) Ecology Surveys. These projects consisted of a site walkover to determine the habitats present and potential for these habitats to support protected species on-site. The results of these surveys were then written up into a report which would often either be submitted with

planning applications or act as documentary evidence for BREEAM and CSH assessments. To begin with I attended surveys with a more senior member of staff and I would shadow them as they completed the survey. However, as I moved through my placement I began to undertake the surveys for more simple sites myself and would draft the associated reports with less and less input from other members of the team.

In addition to these more general surveys I also assisted with specific protected species surveys. One of the major projects I was involved was a large scale reptile relocation exercise. This consisted of moving a population of common lizard (*Zootoca vivipara*), slow worm (*Anguis fragilis*) and grass snake (*Natrix natrix*) from one part of the site to another area outside of the development footprint. To ensure this receptor area could support an increased population of reptiles it was necessary to enhance the habitat. This was primarily achieved through the incorporation of log piles in addition to a number of specially built reptile hibernacula. These hibernacula were constructed to act as refuges for the relocated reptiles and as well as invertebrates, providing habitat, shelter and places to bask. The hibernacula were constructed from mixture of materials including logs, rocks, pipes, iron sheeting, broken pots.

(Photo 1) ***Common lizard using reptile hibernacula***



Photo taken by Morgan Taylor of Greengage

(Photo 2) ***Grass snake being relocated***



Photo taken by James Bumphrey of Greengage

An additional relocation exercise on the same site involved an interesting mollusc called the roman snail (*Helix pomatia*). *Helix pomatia* gained protection under the Wildlife and Countryside Act 1981 only relatively recently, primarily as a result of an increasing trend in collection of large numbers by amateur cooks and for commercial use in restaurants. Again a population of these snails was located within the footprint of the proposed development. Greengage therefore gained a licence from Natural England to move the snails to another part of the site. I was named on the licence meaning I was legally allowed handle the snails.

In addition to reptile and snail relocation works I also undertook numerous bat surveys during my placement. In the height of summer, some surveys ended as late as 11.30pm and started as early as 03.00am! These surveys were completed on a wide range of sites, from medieval palaces out in the countryside to central London housing estates. Although one may have expected activity to be significantly greater outside of the city, on one of my very first surveys, I recorded a bat foraging over an old fridge-freezer located outside a burnt out flat in south London. Even with the late nights and early mornings, the range of sites and the opportunity to travel, whilst undertaking the bat surveys, was something I really enjoyed.

(Photo 3) Reptile hibernacula



Photo taken by James Bumphrey

(Photo 4) Reptile fencing



Photo taken by James Bumphrey

Being a London based consultancy a considerable proportion of Greengages work involves integrating ecology in the urban form. One of the most popular methods by which this is achieved is through the incorporation of living roofs. Indeed many local authorities in London make it a requirement for developments to incorporate these systems. Greengage's role in this process is to write living roof management plans. During my placement I myself wrote a number of these plans which detailed the roof build up and plant species mix. Additionally, where the roofs were large enough, other features were designed in to them and this included log piles, rocks, rope coils and sandy piles which aimed to increase the range of micro-habitats across the roof.

A year and a half after starting my placement I am still working for Greengage! When my six months was up I was offered a permanent contract. Whilst being retained after the placement is no guarantee, if a business has invested time and money in a student and their performance is good, then there is a realistic chance they will look to offer them a job if it fits their business needs. Therefore, for me the placement was the most important part of the MSc and I have seen first-hand, having subsequently interviewed graduate candidates, that experience in a consultancy environment is something highly valued by prospective employers. My role at Greengage has developed from very much a supportive role in the beginning to leading and managing entire projects, starting from receiving a fee proposal request, to undertaking the survey, producing report and sending out final invoices. I have now led on many Phase 1, BREEAM/CSH Ecology, Reptile and Bat Surveys. Furthermore, I am also currently developing my involvement with EIA and am currently act as day to day project manager on a number of these projects. Without the MSc I do not believe that any of this would have been possible.

Duncan White

Placement organisation: Geo-environmental engineer

at Structural Soils Limited

Current Role: Environmental Consultant RSK



Abstract

This summary introduces my experience as a mature student. I saw the placement aspect of the course a key selling point. My placement with Structural Soils as a geo-environmental engineer is outlined in terms of office and site based work as well the development of consultancy skills. I wanted initially to work in EIA but found the direct route to such a post was difficult, so I used the opportunity afforded by this placement to gain relevant experience and make contacts before finally securing the job I wanted.

Summary

The work placement aspect of the MSc was one of the key selling points of the course from my perspective, as I knew the value of being able to demonstrate to prospective employees that I had gained some practical experience. I had come to UWE as a mature student and was looking to become an environmental consultant having worked for many years in completely unrelated industries. My problem, as I saw it was that I hadn't made up my mind as to which aspect of the industry to focus on in building a new career. My placement was as a geo-environmental engineer with Structural Soils, a site investigation company in Bristol. I was attracted to working for this company because it formed part of the larger RSK group, who undertake a wide range of environmental consultancy work, and as such I anticipated that there may be opportunities within the company for a wider variety of roles than at a purely specialist organisation.

Structural Soils are a site investigation company, whose purpose is to drill or excavate soils or rock to determine its contaminative status or strength for engineering purposes. During my placement I was involved in many of the activities required throughout the life cycle of a typical project. Preparatory tasks included writing tenders to win the work and making preparations for site work, such as writing health and safety documentation and checking and loading equipment.

The site work itself involved helping to supervise the drillers and machine operators and learning how to use the various pieces of site equipment, as well as taking soil and water samples for analysis. Often testing of gas levels in boreholes and taking water samples was

done over a number of repeat visits to site to gain a broader understanding of the conditions on, or under, the site over time.



Two photos above show Duncan White on Site in Bristol (copyright Duncan White)



Photo shows Structural Soils drilling rig and Landrover on the Olympics site. (copyright Duncan White)

After the site investigation had been completed, tests were scheduled and samples were sent to the lab. Test results were analysed and results were reported and sent to the client, along with the invoices. Dependant on the type of project and the needs to the client, a report would often require a desk study of available historic and environmental mapping. This exercise served as a useful tool in bringing the findings of the site investigation into the context of local environmental designations or historical use of the site.

Many of the employees within Structural Soils were engineering geologists and as a Geographer with a generalist's background I found much of the terms used to describe rock and soil types were alien to me. This made for an interesting placement, with a very steep learning curve. Tasks that were appointed to me often led to many more questions as well as detailed internet searches. Personally I found that having the expectation to deliver a piece of work in a time constrained working environment was much more conducive to self learning than within the atmosphere of the University.

Whilst I was on the placement, my supervisor, Duncan Bayliss, was mindful of the advantages of my gaining as much knowledge about the working practices of being a

consultant as possible. As such, although my placement was unpaid, I was required to keep a record of hours that I spent on each project, in anticipation of chargeability to clients.

The knowledge and experience I gained on my placement provided me with the ability to be able to converse with any prospective employers, if not expertly but certainly with more degree of assurance about practices within contaminated land, and environmental consultancy in general than if the course had been a purely taught course. My placement was a perfect starting point for anybody wanting to progress in the field of contaminated land.

I started my time at UWE with an open mind about which area of consultancy I wanted to specialise in, but as I progressed through the course I was drawn more to a project management role within EIA, which I felt suited a background in Geography. I suspect that this view was shared by many of the fellow students, particularly as the MSc Environmental Consultancy course covers a range of consultancy topics and students do not graduate with a defined technical specialism.

When attempting to secure a placement, initially I struggled to secure a place within an EIA consultancy. The economic climate at the time was one of the reasons. Many companies were experiencing a period of contraction rather than a time where they were looking to expand and recruit students. Another factor was the fact that although EIA practitioners are generalists, they are expected to have a working level of knowledge for most of the disparate specialisms which constitute an EIA project. For this reason I adopted a strategy of trying to gain experience in one of the specialisms relevant to EIA, whilst keeping my eye open for opportunities to move into my more preferred role.

Contaminated land or work in the site investigation industry is one of the most established aspects of environmental consultancy and as such the knowledge of the terms of reference and practices I gained whilst on placement have stood me in good stead. My placement has been the cornerstone that I have built my career on. Once my placement was finished I was offered a permanent position within Structural Soils, in a continuation of my role during placement. After a year of undertaking site investigations, an opportunity to make a sideways move into a role within RSK's EIA department presented itself, and I have been working in this role ever since.

Patricia Allen

Placement organisation: The Department for Transport
April – June 2013

Current Role: Head of South West Local Growth Delivery Team
Department for Communities and Local Government

uk.linkedin.com/pub/tricia-allen/8b/407/974



Abstract

This placement took place at the Department for Transport, which is responsible for supporting the UK transport network, planning and investing in infrastructure and services that enable people and goods to reach their destinations. The Department employs over 18,000 staff, with an annual spend of approximately £13 billion. As ‘Head of Local Sustainable Travel’, I managed implementation of the Local Sustainable Transport Fund (‘the fund’), which provides £600 million for 96 bespoke projects across England during 2011-15. All projects are expected to generate local economic growth and cut transport-based carbon emissions.

Summary

This placement happened within my existing employment, having worked for the Department for Transport (‘the Department’) since 2008. My interest in this placement stemmed from an on-going professional interest in achieving carbon reduction goals through transport interventions. Since 2005, I have been employed to manage public funds invested in travel behaviour change programmes. For the Department, I was responsible for ensuring that public funds were invested wisely to achieve carbon reduction and economic growth objectives through diverse yet high value for money projects. The opportunity to reflect on how I achieved this role through this placement enriched my professional development by sharpening my analytical skills.

Initially, I negotiated a learning agreement with my supervisor, Professor Graham Parkhurst, Director of UWE’s Centre for Transport and Society (see Table 1). This identified five tasks as the focus for critical analysis and reflection. My work on Spending Round 2013 (task 5) was prioritised for an in-depth study, given its significance both for the programme and my personal learning and development.

Table 1 - Learning Agreement overview

Task title	Task description	Timeframe	Learning goals
(1) Annual Report production	Publish the first annual report for the Local Sustainable Transport Fund, covering activity during 2011/12.	January – June 2013	<ul style="list-style-type: none"> • How to communicate activity through the fund in an accessible and appropriate way; • Understand the stages involved in taking a communications resource concept from inception to publication; • How to guide and provide effective feedback to colleagues working on the same project.
(2) Grant payments system changes	Explore possibilities for changing the grant payments system for local authorities, and lead a change management process if agreement is achieved.	December 2012 – June 2013	<ul style="list-style-type: none"> • The feasibility of effecting process changes regarding financial management; • Internal clearance processes for new approaches, and how to navigate them successfully.
(3) Staff management	Manage a new staff person's induction to the team, and manage the team through the annual performance appraisal and objective setting process.	February – June 2013	<ul style="list-style-type: none"> • People management skills; • Designing integrated work programmes; • Performance management and continual improvement.
(4) New funding streams support	Provide expert advice and support for the delivery of the assessment and decision-making process for two new funding streams for cycling cities and National Parks, valued at £42 million for 2013-2015.	March – June 2013	<ul style="list-style-type: none"> • Mentoring and skills exchange; • Developing expertise in managing and participating in a competitive bidding process for cycling.
(5) Spending Round	Assist with input to the Spending Round process for 2015/16, with the goal of securing future funding for investment in local sustainable transport.	March – June 2013	<ul style="list-style-type: none"> • Spending Round process skills and experience; • Communication, negotiation and persuasion skills; • How to make the case for local sustainable transport investment.

As a result of managing these tasks to a professional standard, I delivered the following outputs:

1. Web publication of an Annual Report for the fund covering 2011/12 (Department for Transport, 2013). This report describes the processes leading to investment decisions, and the deliverables resulting from government funding, increasing transparency and accountability for public investment decisions (see Figure 1).



Figure 1 - Local Sustainable Transport Fund Annual Report 2011/12 (Dept for Transport, 2013)

2. A fundamental change in payment systems for the vast majority of projects receiving grants from the fund. The change process was universally popular and straightforward to understand and implement, resulting in simpler grant management systems and processes for both the Department and local councils.
3. An induction programme for a new staff person, who quickly became competent and high-performing; performance review reports for 2012/13; performance management objectives for 2013/14, enabling everyone to focus on integrated objectives and a common purpose; and an updated 'roles and responsibilities' schedule and risk register for the year, ensuring team agreement and ownership.
4. Rigorous assessment of cycling funding bids, enabling Ministerial decision-making to allocate funding for high value for money cycling projects that contribute to local economic growth, carbon reduction and physical health benefits.
5. Further investment for local sustainable transport delivery for 2015/16, through £100 million capital investment via the Single Local Growth Fund (see Figure 3) (HM Treasury, 2013), and £78.5 million revenue investment from the Department.

	£ million
	2015-16
Local Authority Transport Majors	819
Local Sustainable Transport Fund	100
Integrated Transport Block	200
Further Education capital	330
ESF skills match funding	170
New Homes Bonus	400
Total	2,019
Of which, capital	1,449

Figure 2 - Spending Round announcement: page 60, 'Investing in Britain's future' (HM Treasury, 2013)

In Focus – An Analysis of Spending Round 2013

Spending Rounds (also called Spending Reviews) are the processes by which Treasury allocates future government funding. An incoming government holds a Spending Round shortly after being elected, to align funding to policies they intend to implement. The existing coalition government announced Spending Review budgets for 2011-15 in October 2010 (Inside Government, 2010). Since these budgets expire weeks before the next General Election, the Chancellor announced a Spending Round purely for 2015/16 in early 2013, which was commissioned by HM Treasury on 28 March 2013 (Inside Government, 2013b).

As an official contributing to this Spending Round, I completed templates covering financial and evidence information for future investment in local sustainable transport, including information on different financial scenarios and the risks associated with each. These templates were rigorously tested by senior officials before submission to Ministers, and subsequently refined before submission to HM Treasury by 29 April. Treasury officials then interrogated these templates and sought clarification in preparation for the Chancellor's consideration and decision-making by 26 June.

The case for sustainable transport was built on the following three assertions:

1. Investment in sustainable transport frequently demonstrates very high value for money (Sloman *et al.*, 2010);
2. Sustainable transport delivery contributes towards realising several government-wide policy goals, such as local economic growth, carbon reduction, physical activity, safety, environmental benefits, and social well-being (Department for Transport, 2011); and
3. Previous sustainable transport projects have been universally popular, and central government investment has unlocked significant levels of other investment as a result (Department for Transport, 2013).

Evidence supporting these assertions was provided from several sources, including monitoring and evaluation research commissioned by the Department for previous sustainable transport programmes (Sloman *et al.*, 2010); and sectoral analysis research (Cairns *et al.*, 2004). The 'ROAMEF' model from HM Treasury's Green Book (HM Treasury, 2011) formed the basis for illustrating that monitoring and evaluation are essential to policy formation (see Figure 4).

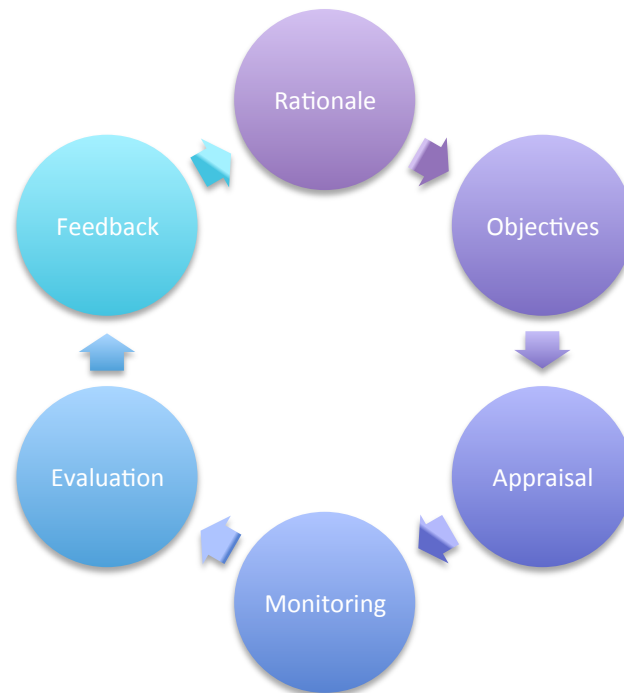


Figure 3 - ROAMEF model (HM Treasury, 2011)

Five evidence and analytical gaps became clear during the Spending Round process, which have since become Departmental research priorities to overcome potential obstacles for future funding cases. These gaps concerned:

1. Demonstrating economic growth benefits;
2. Developing robust monitoring and evaluation outputs from previous and current investment programmes;
3. Calculating trustworthy benefit-cost ratios for cycling programmes;
4. Assessing the appropriate balance of revenue and capital investment for effective local sustainable transport projects (including cycling); and
5. Communicating investment outputs in a tangible way.

Research commissioned by the Department since completion of this placement will directly address the above evidence gaps. Research findings will be available in time for the next Spending Review, anticipated for after the May 2015 General Election. The Technical Report produced for this placement became a valuable source document in making the case to finance these research proposals. Work completed during this placement directly addressed the final evidence gap (see Figure 5).



Aerial view of Stratford Parkway Station, Stratford-upon-Avon, Warwickshire

Stratford Parkway Station, Bishopton, was formally opened on 14 June 2013 (services started on Sunday 19 May). The scheme is supported by a package of service improvements, including enhanced off-peak, evening and weekend train services, ‘Smarter Choices’ measures and ‘Station Travel Plan’ infrastructure investment.

OneLink Employment Bus, Crewe, Cheshire East

Crewe’s OneLink employment bus links areas of deprivation with key employment hubs. The bus also serves a popular business park in an attempt to address the park’s congestion and parking issues.



Torquay Ferry Pontoon, Torbay, Devon

Currently under development, the Torbay commuter ferry will link the towns of Brixham and Torquay. This new transport option will address serious peak-time congestion problems by encouraging commuters to consider travelling by boat instead of car.

Lewes Road Sustainable Transport Corridor, Brighton & Hove

The Lewes Road sustainable transport corridor provides a safe, partially segregated cycleway along the Lewes Road, and a bus lane with improved bus stops.

The aim is to address congestion issues by encouraging more active forms of commuting within the area.



Figure 4 - Illustrations of sustainable transport investment

Conclusion

This placement provided me with a valuable opportunity to critically appraise my work, encouraging a meta-analysis not normally required as part of learning and development. The Spending Round analysis enabled me to successfully articulate evidence gaps for research funding subsequent to this placement, and also provided me with a rich insight into political and financial decision-making at the highest level in government. The discipline and critical thinking required for this placement has since enabled me to secure a promotion within the civil service, with the Department for Communities and Local Government. In my new role, I am managing a major investment programme across the South West of England for sustainable economic regeneration. This covers a diverse portfolio, including renewable energy, innovative research, and business start-up projects.

References

Cairns, S., Sloman, L., Newson, C., Anable, J., Kirkbride, A. and Goodwin, P. (2004) *Smarter Choices – Changing the Way We Travel*. Final report of the research project for the Department for Transport: 'The influence of soft factor interventions on travel demand' [online]. Available from: <http://webarchive.nationalarchives.gov.uk/20100304134509/http://www.dft.gov.uk/pgr/sustainable/smarterchoices/ctwwt/chapter1introduction.pdf> [Accessed 22 June 2013].

Department for Transport (2011) *Creating Growth, Cutting Carbon – Making Sustainable Local Transport Happen* [online]. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/3890/making-sustainable-local-transport-happen-whitepaper.pdf [Accessed 22 June 2013].

Department for Transport (2013) *Local Sustainable Transport Fund Annual Report 2011/12* [online]. Available from: <https://www.gov.uk/government/publications/local-sustainable-transport-fund-annual-report-2011-to-2012> [Accessed 5 June 2013].

HM Treasury (2011) *The Green Book: Appraisal and Evaluation in Central Government* [online]. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/179349/green_book_complete.pdf.pdf [Accessed 22 June 2013].

HM Treasury (2013) *Investing in Britain's future* [online]. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/209279/PU1524_UK_new_template.pdf [Accessed 21 July 2013].

Inside Government (2013b) *What is the Spending Round?* [online]. Available from: <https://www.gov.uk/government/news/what-is-the-spending-round> [Accessed 22 June 2013].

Sloman, L., Cairns, S., Newson, C., Anable, J., Pridmore, A. and Goodwin, P. (2010) *The Effects of Smarter Choice Programmes in the Sustainable Travel Towns: Research Report to the Department for Transport* [online]. Available from: <https://www.gov.uk/government/publications/the-effects-of-smarter-choice-programmes-in-the-sustainable-travel-towns-full-report> [Accessed 22 June 2013].

Adam Withers



Placement organisation: Carbon Leapfrog

Current Role: Associate Project Planner for AEE Renewables

Abstract

One of the most appealing aspects of the MSc Environmental Consultancy was the opportunity to do a placement. I wanted to work with community groups and to develop my skills in a number of areas. I undertook a placement with Carbon leapfrog and this has been a key element in gaining my present employment with AEE Renewables.

Summary

One of the most appealing aspects of the MSc Environmental Consultancy course was the opportunity to gain work experience in an exciting, developing sector. The course provides a plethora of contacts that have previously taken students from the course. This was obviously a great prospect and probably the most important part of the course. The calibre of employers, who have a good connection with the university and in particular the course, is impressed me. The usual method of submitting a CV to an organisation and hoping for a response did not apply here; I received considered responses.

For me, I wanted to gain some experience working with community groups. Carbon Leapfrog specialised in assisting community energy groups with planning, finance and legal matters. They had a number of experts who were able to offer support to communities, and also help with the financial issues. I particularly liked the idea of being exposed to many clients and assisting on a number of renewable projects; learning first hand the issues faced by these sorts of groups. The projects covered an array of different technologies and all had unique setups and characters. Having this exposure has been incredibly useful for my current work. I have even combined some of the contacts gained from the placement with my current projects.

I approached Carbon Leapfrog emphasising my desire to work with communities and suggested a number of ways in which I could be of assistance. One of the key attributes that appealed to Carbon Leapfrog was my module in Environmental Impact Assessments. They believed this background knowledge could have some useful applications within their business.

The first task of the placement was to travel to Carbon Leapfrog's London Office and come to an agreement on what the placement would involve. The actual terms of the placement had been left

fairly open until this point. This required me to think on my feet and confirm to the placement supervisor what level of work would be suitable. This also required some pre-meeting ideas so that I showed at an early stage that I had already put some thought into the project. We decided that a renewables planning guide could be very useful to the company and would hopefully become important to their clients as the first port of call for renewable planning information. A big benefit of this placement was the agreement I could be based from home, and travel up to the head office in London once a week.

My placement with Carbon Leapfrog agreed to research and create a document that explained the planning process for medium-large scale community renewable energy projects. This involved research into wind, solar, hydro anaerobic and biomass energy schemes, presenting information on lead times, feasibility studies and statutory consultees to name a few. I had 10 weeks to complete several planning guidance documents and a report. Arrangements for the final week of the placement were made involving a presentation to the supervisor, the CEO and the visiting tutor from UWE, with deliverance of several planning process guidance documents and a report.

This work involved high levels of independent research into the planning sector bringing together copious and often conflicting pieces of information into one concise working document which would be published on an online learning facility used by the company's clients. The work also involved talking with professionals and members of the public to utilise their knowledge and experience.

The main bulk of the placement was spent doing independent research using the internet to understand the planning process. This also presented one of the main challenges of the project in

THE RENEWABLE PLANNING PROCESS GUIDE

This document is aimed to give you an overview of what to expect from your renewable development. The guide looks to identify the key aspects of the planning application process, with reference to lead times, statutory consultees, legislation etc. It is important to understand the rigorous and lengthy process you are about to undertake from the start, and this guide along with supporting documents found in the 'Links' section will help you plan your application more effectively.

This document is the core guide to community/individual based projects indicating the basic information for any renewable project. Along with this will be supporting documents for different types of renewable energy, which will look more closely at the obstacles and specific requirements for each technology.

The planning application for any renewable technology can be time consuming and a long term venture. Many developments will come across unprecedented dilemmas and issues that they have not mitigated for, however this document will aim to provide a succinct and concise overview of where your project should be heading.



Figure 1 Community Guidance Document

organising my time effectively between researching several different technologies. By using Gantt Chart systems to allocate my time effectively, I have discovered a successful time management tool which I still use today in my job.

Researching information via the web is becoming an ever increasingly integral role in modern day jobs. Being able to research online within a timescale requires more acumen than just 'Googling'. As many of the documents were similar in content, I developed a routine for finding key information. For example, lead times on renewable projects were something I found through a useful information page on the Planning Portal. By sourcing and referencing this data I was able to return to the same place quickly when working on other documents. I learnt that filing and organising your information enabled the editing process of the placement to go much smoother. Again, this is a process I have incorporated into my current work, by being able to recall where you gathered information, helps with the credibility of work, which is released to fellow colleagues and the public. It also helped me to really understand the importance of avoiding 'plagiarism' and respecting 'ownership of knowledge' in the workplace. Because the documents I created were for Carbon Leapfrog and being published in the public domain, I had to learn at the very start of the research what I could and could not include. Even though my role with the company was temporary, I had a large responsibility to double check my work, reference everything, and provide information on all my sources.

Working with the community is something I enjoy and at the time of looking for a placement was something I was keen to experience in my future career. This is the main reason I wanted to work with Carbon Leapfrog. I was particularly involved with a community group in the Thames Valley region setting up their own hydro project. I helped them in some difficulties in obtaining work



Figure 2 Community Guidance Document Pg.4

permits from the Environment Agency and was able to offer advice for the project. For many projects, the public and parish will not be won over, but it is important to inform people of planning intentions and provide a platform for anti-lobbyists to communicate with you. I highlight the importance of early consultation, to avoid problems arising at a later date. I learnt that communities were becoming increasingly more powerful in the planning sector under the Localism Act 2011 and that working with them in regular contact provides many benefits. My first job after the placement was as a project planner for a renewable energy company, with

one of my main responsibilities liaising with communities on various projects. Because of my experience within the Thames Valley, it was one of the main contributing factors to being successful in the job interview.

What began as a simple community guidance document quickly became a crucial document in terms of presentation for the company. As this was a public document I needed to ensure that people would want to read it. I achieved this by formatting the word documents slightly differently with a

number of pictorial representations. I have little experience as a graphic designer, so I kept things simple. I flipped to a landscape profile and included a pictorial representation of the lead times for a project running throughout the document. I optimized white space and included the 'Carbon Leapfrog' logo to make the documents look professional. This way I did not focus overly on presentation but did enough to produce a concise, professional looking, and interesting document.

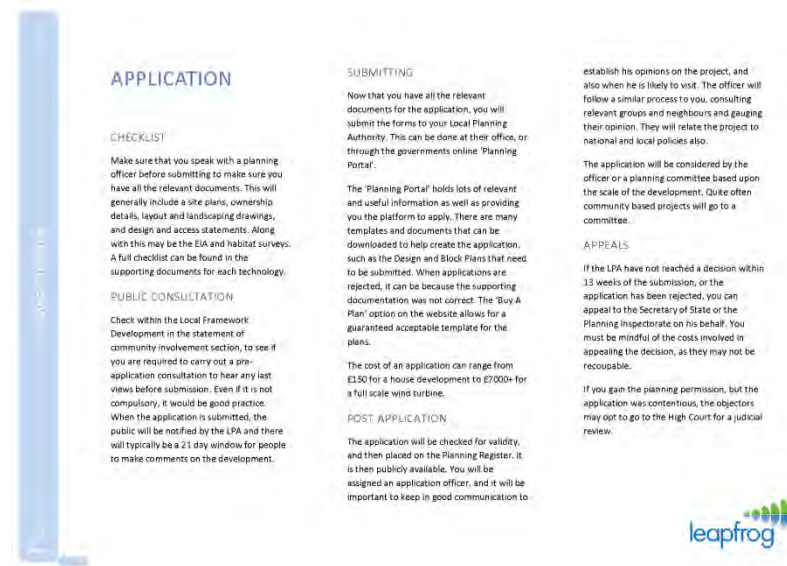


Figure 3 Community Guidance Document Pg.6

Throughout the placement the theme was presentation. I learnt about the importance of presentation verbally and on paper and how this can lead to more successful outcomes within the workplace. I realised that every job has different characters and therefore different ways of approaching the same task. I realised I needed to ensure in future work I identified how I should approach my audience early, in order to gain strong reliable relationships and a good

network of contacts. The final presentation involved me preparing a 10-minute PowerPoint overview of what I

had done, to be presented to the CEO, the workplace, and UWE visiting tutor. Developing my presentation skills has undoubtedly given my employers greater confidence in my abilities in my current role.

My placement also taught me the importance of time management and developing techniques to be quick and thorough during independent research. I took forward many techniques, which aided my research. The most important was the ability to plan effectively at the start of the project. Without the time management plans on my desktop and the initial structuring of the documents I would have needed much more time to achieve the final documents.

Without question this placement has had a significant impact on my career in the renewables sector. My current employer explained to me recently that the reason I got the job was my experience with Carbon Leapfrog, and working with community groups has proved an important factor in gaining full time employment. The placement notably improved my presentation, research, and communication skills, and gave me an incredibly useful contact for my current work. This is an essential component of the course that had a big impact on my future direction. I am now a project planner at AEE Renewables, working with communities to overcome the challenges of implementing solar farms in rural areas. There is a lot of cross over between both jobs and I certainly would not be in my current role without my time at Carbon Leapfrog.

Zeta Watkins



Placement organization: b:ssec (7 months)

Linkedin Profile

<http://uk.linkedin.com/pub/zeta-watkins/59/8b5/b9a/>

Abstract

I worked with b:ssec on a 7 month work placement as part the UWE MSc course requirement. Whilst working with them I was able to learn and develop the skills and knowledge that are essential to working within a successful consultancy. I spent a majority of the placement working on BREEAM assessments whilst also assisting with technical duties. Working with b:ssec for a further 7 months following the end of my placement I was able to further expand on my experience. I recently departed from b:ssec and am now working in London and about to begin training to become a BREEAM assessor – a job I wouldn't have considered without my time with b:ssec.

Summary

The professional practice element of UWE's MSc Environmental Consultancy course required a 48 days minimum work placement at an Environmental Consultancy company. This brief report will outline the experience that I had whilst working for b:ssec as a Junior Consultant.

During the taught element of the MSc course sustainability modules in which energy, renewables and carbon were the ones that interested me most. Following some research into potential career opportunities I decided that sustainability in businesses was an area I wanted to explore. I felt it was essential that my placement included my personal preferences in order for me to secure my ideal career path; see table 1.

Table 1: Personal Requirements for Professional Practice

Personal Requirements	Comments
To work for an SME	<ul style="list-style-type: none">• Felt I would have the chance to grow as an individual at a quicker pace in an SME than if I was in a larger corporation.• Enable a more direct learning experience.• Chance to get involved in more tasks/activities.
A sustainability focused company	<ul style="list-style-type: none">• Sustainability was the topic during my MSc that sparked the most passion and enthusiasm and therefore a company that specialised in sustainability were the types of companies that I was looking for.

To be able to commute with ease	<ul style="list-style-type: none"> Relocation for placement would have been difficult due to financial constraints; therefore a placement which could be easily accessible via a personal vehicle or public transport was the ideal choice.
Hands on approach	<ul style="list-style-type: none"> I was looking for a company that would allow me to experience everything possible. To experience the pressures and responsibilities of a consultancy.

Following an extensive search I managed to secure a 7 month work placement with b:ssec (*building services sustainability environmental consultancy*) who were able to meet almost all of my preferences for a placement. b:ssec are based in Wiltshire and are an established, well respected energy and carbon consultancy. They have worked with a range of clients such as the MoD, HM Prison Service, Asda and E-on but their biggest clients to date are Morrison's and Primark. Employed by b:ssec as a Junior Consultant for 7 months in March 2013 I was required to provide technical and administrative support to staff whilst developing the necessary transferable skills to work in a successful consultancy. With just 10 members of staff b:ssec are considered to be an SME. All their staff work remotely in their respective locations meeting just once a fortnight in the office. Despite being small in size b:ssec have a considerable client list and are inundated with work which is one of the main reasons they saw the need to appoint a junior within the company.

Working from home was an entirely new experience for me and made my placement experience incredibly different from others on my course. I created weekly to do lists and ensured I remained in close contact with other members of staff to ensure I remained on track and motivated. It's an experience that has greatly strengthened my communication skills and professionalism.

For the first three months of my placement I was supervised by the technical director and carried out technical duties. These derived from a learning agreement drawn up prior to beginning the placement that proposed a range of tasks to be undertaken all of which varied in length, the technical capabilities required and offered differing challenges. Some examples of these follow:

- Creating company word document and presentation templates to be used by all staff for clients. These were revised several times throughout the placement to ensure they were current and worked effectively.
- Taking charge of the company website (updating with technical bulletins) and ensuring it was up to date whilst also managing their social media.
- Assisting with external and internal ISO 9001 and ISO 14001 audits.
- Interpreting large data sets ready for analysis e.g. obtaining data from the CRC (carbon reduction commitment) scorecards for specific sectors and companies and extracting relevant information.
- Planning and arranging 2 international business trips for the CEO of b:ssec to attend UKTI meetings so he could expand his business in Canada.
- Managing the changeover of the business phone line/internet provider.

These tasks were given to me as colleagues were often preoccupied with more pressing project work yet were still priority activities. This was actually extremely beneficial to me too as it allowed me to adapt to the way b:ssec work and to learn how their management systems run, whilst generally

getting an idea of how a consultancy runs. The 4 months that followed required me to work on numerous Morrison's retail projects under the supervision of b:ssec's in house BREEAM (Building Research Establishment Environmental Assessment Methodology), assessor. These included design stage and post construction BREEAM assessments of new build and refit retail developments. I would regularly review evidence submitted by contractors/architects/designers in order to demonstrate their compliance to the BREEAM credits. I was taught how to carry out assessments for both BREEAM 2008 and 2011, and was given guidance on how to use company trackers/assessment tools. These were used to ensure that projects were carried out to the highest level of accuracy and to allow for a precise review process. In addition we would meet every office day (once fortnightly) to discuss the status of all projects, this allowed us to talk through any issues we could have with specific projects and allow for solutions. During my time with b:ssec I was able to complete the write up assessments of 20+ projects and saw the complete submission of at least 8 of these.



Image: BREEAM meetings in the office.

In addition to the skills I needed to develop, my industry knowledge also needed to be improved. This was primarily achieved through meetings with staff, industry related conferences and access to articles/magazines that b:ssec are affiliated with. Following the completion of the MSc I was also able to become an IEMA (Institute of Environmental management and Assessment) graduate member. This has been useful, allowing access to a wide range of specific industry related articles, webinars, briefings etc., something I see as highly beneficial to my career.

My work placement with b:ssec was a huge success as they offered me a valuable insight into how an environmental consultancy operates and offered me support to improve my knowledge and technical skills. b:ssec continually gave me the chance to demonstrate and further improve my levels of responsibility, flexibility and reliability and for that I am grateful as these are key skills to have. b:ssec were able to offer me the chance to improve on my interpersonal skills and allowed me to develop the necessary transferable skills that would allow me to further develop in this industry. I

strongly benefited from the length of the placement as my extended time with b:ssec has really allowed me to flourish. Following the end of my placement with b:ssec I was offered permanent employment which I happily accepted and worked for them for a further 9 months, continuing to work on BREEAM projects. I recently left due to finding employment with a family run consultancy in North London as an environmental trainee. This company is very similar to b:ssec in their day to day activities but operate on a much bigger scale. They specialise in commercial and residential BREEAM assessments, Code for Sustainable Homes and energy audits. I am due to begin in July and will start my BREEAM assessor training in August 2014. This company were looking for an environmental trainee with prior experience as a junior in another consultancy, therefore my experience with b:ssec was one of the main reasons I got the job as my employers were impressed with the amount of skills I gained whilst working there.

Stephanie Jones

Current role: Graduate Flood Risk Officer at Devon County Council

Placement organisation: 3 month placement in the Flood Risk and Water Management Team at Capita (formerly Capita Symonds)

Capita is a multidisciplinary consultancy focusing on design, infrastructure and real estate, working on projects locally, nationally and internationally. Capita is a division of its parent company Capita Plc;



The flood risk and water management team have a number of specialist consultancy services and leading expertise. The type of projects undertaken includes flood risk assessments, surface water management plans and a variety of hydraulic modelling.

Abstract

My placement at Capita was within the Flood Risk and Water Management team and provided an opportunity to experience how an Environmental Consultancy operates. I was able to contribute to four different projects during the three month period, involving data analysis and both one and two dimensional hydraulic modelling. The main task during the placement was the reservoir inundation mapping, using TUFLOW modelling software. All of the different stages of the task developed my technical understanding and ability. As a result of the experience I gained, I now work as a graduate flood risk officer in a local authority and am using the skills I developed to help me perform effectively in my role.

Summary

I choose to undertake my placement at Capita due to the reputation of the flood risk and water management team. My research into the previous projects undertaken highlighted a wide range of clients and a variety of projects. I knew I would gain new and valuable skills throughout the placement, providing a strong foundation for my knowledge and technical ability for any future employment opportunities.

Throughout my placement I contributed to a number of different projects the team were working on. I had the opportunity to undertake hydraulic modelling using a number of different techniques and computer packages. One modelling technique I learnt is how to use a combination of one and two dimensional modelling. A potential flood protection strategy using embankment structures was created and by running the model I was able to see how successful it would be and identify if the vulnerable properties would be protected or not. The model adjustments were completed using MapInfo, a GIS package, as seen in Figure 1.

Figure 1. Embankment structures in hydraulic model [Source: Captia, 2013].

The main project I worked on was using two dimensional modelling software, TUFLOW, to do reservoir inundation mapping. I had never undertaken hydraulic modelling prior to my placement so this project was a steep learning curve but at the same time was a great opportunity to learn and develop skills relevant to the environmental consultancy industry. The results from all of the

hydraulic modelling provided information regarding the vulnerability of properties to flooding from a nearby reservoir if it was breached. The data and information will be used for emergency planning purposes as well as abiding to the Reservoirs Act 1975.

For each individual reservoir, four main stages were involved; data review checks, creation of the hydrology data, building and running the model and the quality assurance process. Figure 2 illustrates what the model looked like once it had been built. Each of the different features is a separate colour and has various functions. For example, the red outline around the outside of the model acts as the boundary where the simulated flow could travel through. If the water flowed in an unexpected direction or for a greater distance than anticipated the model 'glass-walled' and would need to be adjusted and run again.

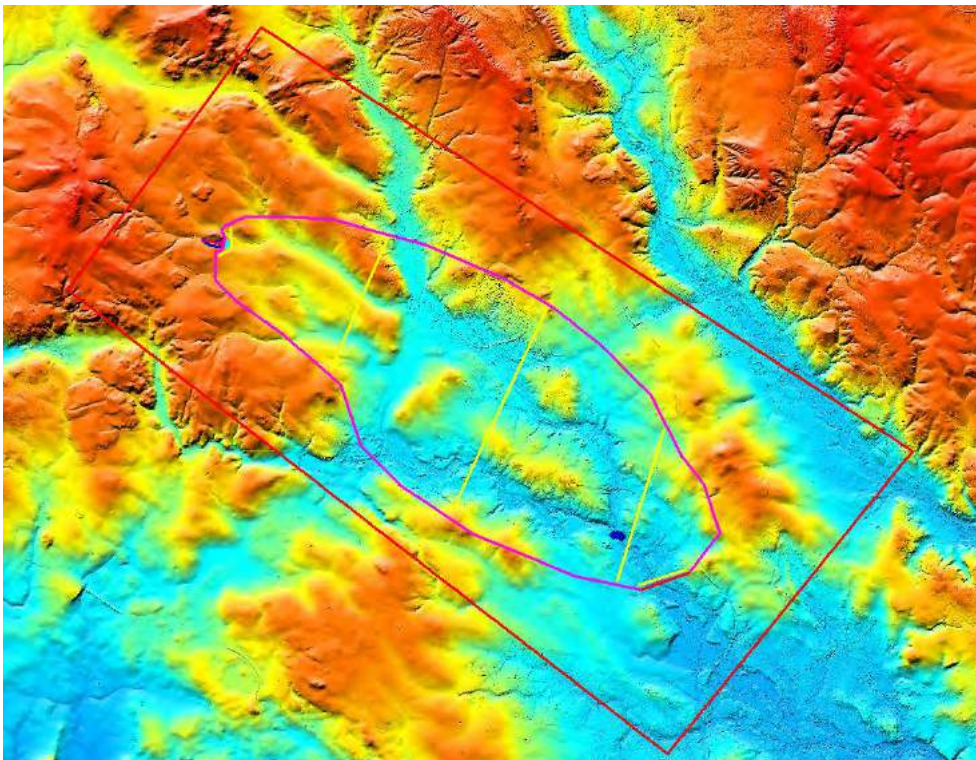


Figure 2. A hydraulic model of a reservoir breach [Source: Capita, 2013].

One of the most interesting parts of the project was looking at the results of a model run and seeing if the water had flowed where it was expected to go due to the surrounding landscape. However, sometimes I had to run the same model numerous times in order to be successful and representative of what would actually happen. A quality assurance process was used to determine the accuracy and reliability of the results produced. It is designed to highlight any errors within the modelling process, as the checks focus on all aspects of the model build and the model stability parameters. A number of line graphs were created using the model stability parameters produced and had to be compared to the actual model results. Each parameter had a specific accuracy range required; if a value was outside of the range then the model had to be re-run.

After the quality assurance checks showed the results were accurate, each individual reservoir produced a maximum flood extent, maximum velocity, maximum hazard and a maximum water depth grid, as seen in Figure 3. The red colour shows where the flow had a greater depth, and the blue colour where the shallow flows would occur. I managed to build, run and quality check approximately 30 different reservoirs, so towards the end of the project I was able, and confident, to model more complex and difficult reservoirs.

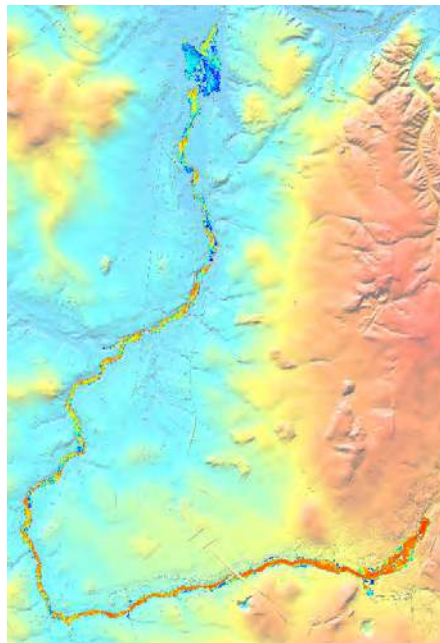


Figure 3. The maximum flood extent of a reservoir model [source: Capita, 2013]

I was able to gain new technical skills, such as hydraulic modelling, and develop existing skills throughout my placement at Capita. As a result of the experience I gained I have got a job in flood risk management in a local authority. The mapping and model used GIS programs which I now use daily in my current role. Additionally, the knowledge and understanding of hydraulics and water management I developed has helped me to perform effectively and confidently. As well as my technical ability, my placement provided me the opportunity to use and develop my organisational skills and to see how a consultancy works. Qualities such as working towards tight deadlines and managing my time appropriately are important within the environmental consultancy sector. Overall, without my placement I would not have been offered the role I am in now. My placement provided a solid foundation and platform to move my career into the right direction.

Ian Brooks

Placement organisation: South Gloucestershire Council

Placement role: Reducing Greenhouse Gas Emissions in Schools.

Current role: Business Support Manager, Environmental iNet

LinkedIn: <http://uk.linkedin.com/in/ianmbrooks/>



Abstract

South Gloucestershire Council (SGC) has a target to “reduce Greenhouse gas (GHG) emissions across the estate and operations by 3% a year”. Schools make up 48% of SGC GHG emissions. My placement project was to identify and implement opportunities for energy demand reduction in SGC schools with a particular focus on behaviour change tools and IT power consumption.

I undertook a variety of survey and sampling techniques to understand the nature of the energy demand in four schools (three primary and one secondary) along with literature review and identifying best practices from other SGC schools.

I designed and recommended a series of demand reduction initiatives ranging from practical management routines for storage heaters through to site wide control systems changes.

Power consumption sampling of IT equipment indicated that it was responsible for about 17% of electricity consumption on school days. I recommended a set of improvements ranging from power management rules through to a lowest-GHG IT strategy.

Summary

My prior professional background was in IT, particularly Green IT with IBM and Defra. I chose the MSc Environmental Consultancy to broaden my expertise in GHG reduction outside of the IT field. This placement offered me an ideal opportunity to get to grips with the issues of energy demand reduction in physical buildings occupied by large numbers of people. I worked as part of the Sustainability team in SGC and with four schools (three primary and one secondary) in as casestudies.

SGC has a target to “reduce GHG emissions across the estate and operations by 3% a year”. Schools make up 48% of SGC GHG emissions. My placement project was to identify and implement opportunities for energy demand reduction in SGC schools with a particular focus on behaviour change tools and IT power consumption.

However, energy costs only represent about 2% of a school’s overall budget. So whilst schools are generally keen to operate in a sustainable fashion, in practice other priorities are much higher on the management agenda.

SGC was also concerned that IT power consumption was increasing rapidly as a proportion of school consumption. Carbon Trust estimates show 'office equipment' and 'other' electrical load as 3% of energy consumption in schools (Carbon Trust, 2010). Would this be the case in SGC schools?

The project consisted of the following key stages:

- Establish energy consumption baseline
- Visit Best Practice schools
- Undertake site visits
- Sample device-level energy consumption
- Holiday Shutdown actions
- IT recommendations
- Behaviour Change study
- Dissemination

I documented the project approach on a Project Initiation Document in accordance with the SGC project management guidelines.

Establish energy consumption baseline

I downloaded raw half-hourly energy consumption data from EDF EnergyView in Microsoft Excel format for two school terms. I used Excel pivot table functions to manipulate this data into a table of half-hourly average consumption for each day of the week. I plotted this as a bar chart (see example at Figure 1) and used this as the basis of discussion with the Head Teachers and Caretakers. This proved a very effective format to help occupants see how typical activities and equipment drove energy consumption.

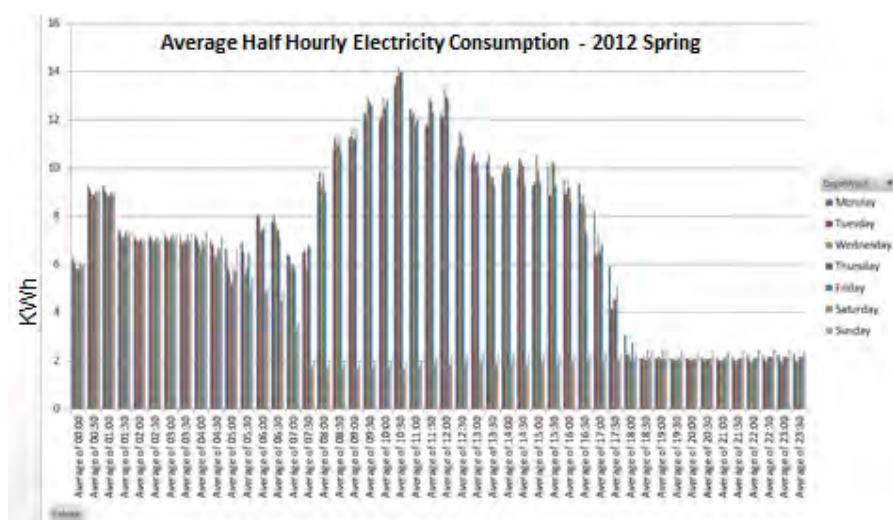


Figure 1 Electricity consumption chart

The example shown highlighted an issue with the power consumption profile of storage heaters. Together with the head teacher and caretaker, I devised a simple change to their start and end of day procedures which resulted in a 32% reduction in 'Economy Seven' electricity consumption.

Undertake site visits

I undertook site visits at each of the schools. These visits were guided by the approach in the Commercial Energy Assessor's Handbook from the Royal Institution of Chartered Surveyors (Russen, Rees and Neale, 2010). In three of the schools I used a thermal camera. The thermal camera model I used had a real-time display which made it very easy to point around a building and see energy wastage. Thermographic surveying is usually undertaken by a consultant and the results documented in a report. However the real-time display was so effective that I used it on a walk round with the building occupants. Whilst this approach is not conventional, there are some surveyors who encourage this (Smale, 2012). It highlighted the heat loss from, for example, unlagged pipe runs (Figure 2) and the energy wastage from IT equipment left on and unused (Figure 3).

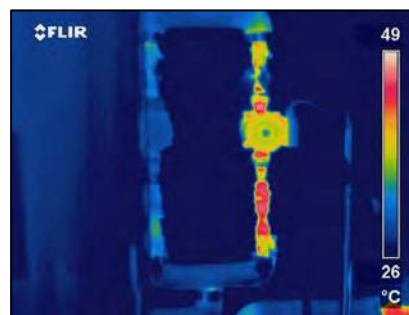


Figure 2 Thermal camera image of unlagged pipe run

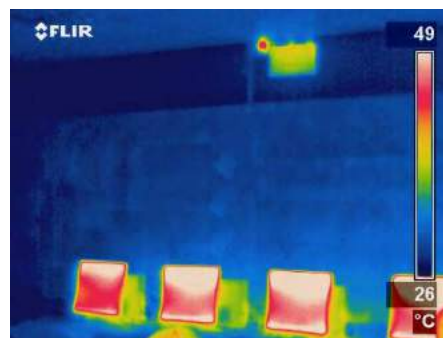


Figure 3 Thermal camera image of idle IT

During the site visits I was also able to identify quick win savings opportunities such as the opportunity to consolidate four part-empty fridges to two and switch two off.

Holiday Shutdown actions

School Holidays account for over 90 days each year. So school buildings are largely unoccupied for over 25% of the year (excluding weekends and nights). This represents the ideal time to reduce energy demand without affecting school service levels and yet the electricity consumption was frequently above the typical weekend level.

I worked with the estates manager and IT manager at the secondary school to carry out a more rigorous holiday shutdown programme for the summer holiday. As a result, both the gas and electricity consumption were around 5% lower in 2012 summer than the previous year.

IT recommendations

In addition to top-down analysis of site-level consumption from EDF EnergyView, I carried out bottom-up analysis of specific energy-using devices. Research in the United States had shown an increase in plug-load from devices in schools (Srinivasan *et al*, 2011). I used a set of plug-in electricity meters from Plugwise B.V to sample actual hourly power consumption from a range of equipment around the schools, including desktop PCs, printers, copiers, fridges etc. This highlighted issues which might otherwise have been missed, such as PCs not going into sleep mode when idle as shown in Figure 4. A relatively simple rollout of stronger power management rules across all desktops could save the school £750 annually.

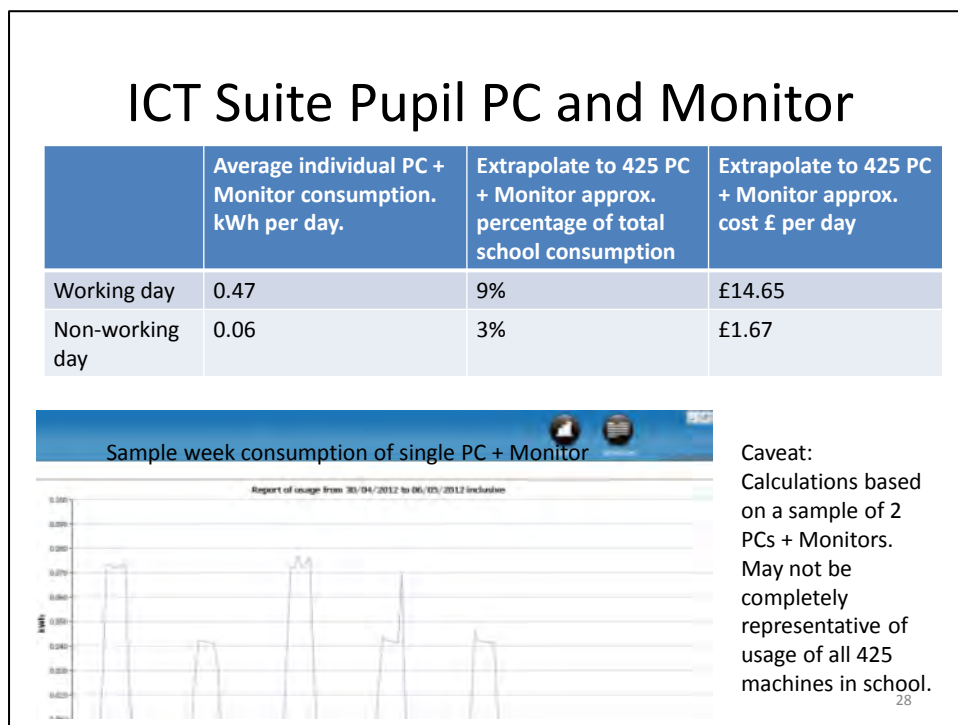


Figure 4 Analysis from device sampling

My analysis indicated that the lowest-GHG IT Model would be to use tablet computers, on a one per pupil basis with all servers virtualised and consolidated into offsite data centres. Despite the significant reduction in power consumption, this was not sufficiently large in financial terms to justify the cost of replacing desktop PCs or laptops. The behaviour change study explored some of the other drivers which might lead to implementation of tablet computers and deliver energy demand reduction as a co-benefit. These include better support for personalised & independent learning, reducing the disruption of moving pupils to and from the IT suite and releasing the IT suites back into use as general classrooms.

Benefits from placement

I benefited from the placement by developing an extensive and practical understanding of GHG reduction opportunities in the built environment. I gained hands on experience with surveying buildings, analysing energy consumption data and building the business case for specific investments. I was able to bring my Green IT experience to bear on the electricity consumption of the schools' IT. I also had the opportunity to develop behaviour change models and interventions. This breadth of experience has proven invaluable in my job as Business Support Manager for the Environmental iNet as I help a wide variety of businesses in the South West to innovate for environmental benefits.

References:

Carbon Trust (2010) *Schools. Learning to Improve Energy Efficiency*. Available from: http://www.carbontrust.com/media/39232/ctv019_schools.pdf [Accessed 1/5/2012 5:20:47 AM]. .

Russen, L., Rees, S. and Neale, S. (2010) *Commercial Energy Assessor's Handbook* [online]. London: RICS Books. [Accessed 27/11/2012 11:50:21 AM].

Smale, A. (2012) *Thermal Imaging Surveys in Hampshire*. Available from: http://expert-energy.co.uk/thermal_imaging_survey.html [Accessed 24/11/2012 4:19:55 PM].

Srinivasan, R.S., Lakshmanan, J., Santosa, E. and Srivastav, D. (2011) Plug-load densities for energy analysis: K-12 schools. *Energy and Buildings* [online]. 43 (11), pp.3289-3294. [Accessed 21/4/2012 4:43:42 PM].

Faculty of Environment and Technology

UWE, Bristol
Frenchay Campus
Coldharbour Lane
Bristol BS16 1QY

Telephone 0117 965 6261

