

RSL Micro-Internship Report

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PRELIMINARY RESEARCH

INTRODUCTION

In late 2019, the RSL will be undergoing a major refurbishment. During this Micro-Internship, we worked with the Green Impact team to identify and suggest improvements to the design of the RSL. These measures will be suggested to the architects during the Concept Design phase, with the aim of increasing the sustainability of the RSL.

During the Micro-Internship, we researched sustainability measures implemented by other buildings. We visited the Social Sciences Library and the Blavatnik School of Government, as well as visiting the Chemistry Research Laboratory and the University Estates Services. In addition, we designed an environmental survey of the RSL. We then proceeded to use this survey to interview members of the RSL staff. In light of the suggestions of the staff, we propose some changes to be made to the RSL upon refurbishment. In addition, we carried out research into the suggested changes to establish whether they are feasible or not. As well as producing this report, we will summarise our findings in a PowerPoint presentation. This is to be delivered to RSL staff on the last day of the microinternship.

BLAVATNIK SCHOOL OF GOVERNMENT

INTRODUCTION

The Blavatnik School of Government is located in the historical Radcliffe Observatory Quarter on Woodstock road, in the North of Oxford. The architects Herzog and de Meuron were tasked with the build, which eventually cost ~£1 billion. Construction work began in October 2013 and eventually finished in 2015. The Blavatnik School offers a Masters course in Public Policy, as well as a DPhil in this same area.

SUSTAINABILITY ACHIEVEMENTS OF THE SCHOOL

The School is certified BREEAM (Building Research Establishment Environmental Assessment Method) excellent. This is a well-established framework for assessing the environmental sustainability of a building. Moreover, the building consumes 49% less energy than similar sized and purpose buildings in the UK. Similarly, the building's CO₂ emissions are 42% less than buildings of a similar size in the UK. Low carbon technologies (such as the Ground Source Heat Pump) and zero carbon technologies (Solar Panels) contribute 20% of the regulated energy demand of the building, as stipulated by Oxfordshire County Council.

EXAMPLES OF SUSTAINABILITY MEASURES

AUTOMATED NATURAL VENTILATION AND DAYTIME SOLAR BLINDS

The building has a central atrium which is used to draw up warm air through the building, thus creating a natural flow of air through the building. Sunlight sensors are used to automatically close blinds in the building in the summer to prevent it from getting too hot. The outer layer of glass in the building has gaps in it, to create a microclimate which helps heat the building. There are slots in the inner façade of glass, which allow perimeter rooms to be automatically ventilated.

GROUND SOURCE HEAT PUMP

There are 72 bore holes are located underneath the building as part of a ground source heat pump. The GSHP contributes to 15% of the energy demand of the building. The ground source heat pump is part of a larger array of heat pumps located under buildings in the Radcliffe Observatory quarter.

SOLAR PANEL ELECTRICAL SYSTEMS AND LOW ENERGY LIGHTING

The solar panels on the roof are estimated to generate 27MKWh/year which is predicted to save the grid-supplied equivalent of 14 tonnes of CO₂ a year. Lights in the building are also motion sensor based, and will turn off when the room is empty.

RAINWATER HARVESTING, GREEN ROOF AND STORM TANKS

Rainwater is collected and stored underground, then used to flush toilets. The roof also has a green patch which increases biodiversity. The building also has two storm tanks to collect water in the case of a heavy deluge. This reduces the risk of flooding to the surrounding area.

SOCIAL SCIENCES LIBRARY

INTRODUCTION

The Social Sciences library is located on Manor Road, close to New College and St. Catherine's college, and it is the main social sciences library in Oxford. It houses a wide range of books on topics such as: Criminology, Economics, International Development, as well as Politics. The library opened in October 2004 and it is the amalgamation of three smaller libraries.

SUSTAINABILITY ACHIEVEMENTS OF THE LIBRARY

The Green Impact team was set up in 2014. The work of the Green Impact team resulted in a 7% reduction in electricity use of the whole building in 2015/2016, compared to the previous year.

SUSTAINABILITY MEASURES

A selection of energy saving measures have been implemented by the SSL, as shown in the table below:

| Area managed | Measures taken? |
|---------------------------|---|
| Lighting | <ul style="list-style-type: none">• Lights are left off when not in use.• This is implemented in the Discussion Rooms, Info Skills Training Room and Graduate Study room. |
| Photocopying and printing | <ul style="list-style-type: none">• Half the copiers are switched off and unplugged during the vacation when there is less demand.• Photocopiers automatically go into low energy sleep mode.• Recycled paper used as standard.• Printers print double sided by default.• PCAS system printing is automatically double sided.• e-Reading service available - staff scan reading in once then it is available via WebLearn to all students. |

| | |
|--------------------------------|---|
| Computers | <ul style="list-style-type: none"> • Switched off overnight. • Only switch on a few PCs in the morning. • Monitors go into standby mode by default. • PC monitor brightness is as low as possible. |
| Waste recycling service | <ul style="list-style-type: none"> • KeepCups sold. • SSL cotton bags sold also. • Variety of cover sheets used by binding machine, cardboard is encouraged. • Waste points available. • Stationary sold is made from recycled materials. • Unused/unwanted books sent to Better World Books for recycling. |
| Public transport info provided | <ul style="list-style-type: none"> • Information is provided at the main desk. |
| Awareness Campaigns | <ul style="list-style-type: none"> • Save paper. • Save water. • Switch off. • Thermometers. |

Table 1 – Sustainability measures implemented by the RSL

WISHLIST OF CHANGES TO THE RSL

USE OF SPACE

INSIDE THE BUILDING

It was clear from the staff survey that the temperature inside the building varies based on which room you are in in the library. We also recognise that each person has their own opinion on the optimal temperature and most staff that took the survey would want to be able to change the temperature, whether that would be to open a window or put on a heater. Some people were also sceptical about whether Building Management Systems (BMS) work.

- Climate control or BMS could be used.
- Mechanical ventilation involving floor vents.
- Passive house is an accreditation which could be an aim of the refurbishment.
- The atriums get particularly warm. This air could be pumped out of the atrium and used to heat other parts of the library.
- Pumped drinking water could be used to reduce plastic waste in the RSL.

ROOF

We recognise that the roof has a large potential for improvement of the library.

- Solar panels could be installed. This would reduce the use of electricity and the carbon footprint of the library.
- Water collection could be fitted around the roof. This water could then be treated and used in the bathrooms inside the library, reducing the water consumption.
- An alternative would be to have an alpine roof garden. This would protect the library during flash rain storms, increase biodiversity and reduce the carbon content of the air.

BIODIVERSITY

The survey showed us that staff would be interested in seeing more of nature outside of the RSL.

- A wildflower garden could be created where the carpark is currently. This would increase the bee population and other insects, provide a better view and reduce the carbon content of the air.
- More bee boxes could be installed like the one in the atrium of level 4 and 5.
- More plants around the library which would improve the air quality.
- We could use this as an opportunity to help in the taking care of Oxford's Swift population. Swift nests could be created on the roof. It must be understood that this could negatively impact the Swifts if they fly into windows instead so must be looked at carefully.

CARPARK

At the moment there are a few car park spaces along with a large bike rack space.

- Some car park spaces must be kept for disabled users.
- Charging points for electric cars should be installed to join in with Oxford's plans to become a zero emission zone.
- Something should be done about flash flooding, for example Topmix concrete could be used, which can absorb a large volume of water. (<http://uk.businessinsider.com/how-magical-concrete-absorbs-water-2015-9?r=US&IR=T>)

IMPROVING EFFICIENCY

As the building of the RSL is old it is quite inefficient and is also listed which makes changes to it quite difficult.

- Heritage double glazing could be installed on all the windows. This would dramatically improve the efficiency whilst keeping the look of the windows and allowing them to still be opened.
- Insulation could be fitted in the roof of the RSL, this would also improve the efficiency of the building a great deal.

MATERIALS

The materials used in the refurbishment need to be carefully chosen to keep the heritage of the building whilst still being environmentally friendly.

- Environmentally friendly heritage paint should be used.
- Revolving doors could be installed, this would improve the efficiency of the building as it would reduce drafts and allow large groups to enter at once. The revolving doors could be transformable into a sliding door to allow disabled access.
- The carpets should be chosen to be made out of recycled materials.

BATHROOMS

The facilities in the bathrooms are not consistent, or efficient.

- Automatic taps could be used to prevent water wastage.
- Dual flushes should be installed in all toilets.
- Automatic lighting would also reduce the consumption of electricity.
- The staff survey showed us that most people preferred using paper towels to dry their hands. Although this is not the most environmentally friendly method, 100% recycled paper could be used. A separate bin could be provided for the paper towels which could then be used in a compost. If we did not provide paper towels people would use the toilet paper which would have a worse impact on the environment. Blade hand driers were also popular in the survey.

CAFÉ

We think that it is important for the contract to the café to be given to company with strong values in regards to being kind to the environment.

- Food should be sourced from local companies. Drinks should also be Fairtrade.

- At the moment there is not enough food waste from the cafés nearby for it to be taken away by the council, instead it is taken as normal waste. We could team up with these cafés to create enough waste for this service.
 - If we can't team up with other cafés, we could add food waste to the compost created by recycling paper towels.
- Giving a discount on hot drinks to customers with reusable cups would encourage using less plastic.
- Food and drink packaging should be biodegradable and recyclable.

WASTE FROM THE REFURBISHMENT

From the staff survey we found that some people were concerned about materials being thrown in a skip instead of recycled.

- WARP-it could be used to re-home usable furniture and office supplies within the university.
- Art installations could also be created from the waste products and this could be linked to public engagement.
- We must use a waste disposal company that is reliable and responsible.
- Asbestos must also be dealt with using an asbestos removals company.

CURRENT GREEN IMPACT MEASURES

The RSL is currently doing an excellent job with green impact, a lot of these things are behavioural changes. We think it is important to keep these and expand on them.

- Recycling pen station. A battery recycling station could also be helpful.
- Turing some printers and computers off during less busy opening times.
- Setting printing to double-sided by default.
- Recycling points throughout the reading rooms.
- Use of Better World Books to sell on old/surplus books.

CONCLUSIONS

In conclusion, we believe that the RSL refurbishment could lead the way for the refurbishment of more heritage buildings throughout the country. This is a real opportunity to make a difference and influence everyone's environmental awareness.

We are very grateful for the opportunity to work on the project and are excited to see the outcome. The tours have really opened our eyes to the roles of the Green Impact team and its importance in the University. We would like to thank all members of RSL staff, especially Gigi and Andy.