

#LTSE2023

**LTSE**

**2023**

LEARNING, TEACHING &  
STUDENT EXPERIENCE

# WORKSHOP

## RESPONSIBLE MANAGEMENT EDUCATION

Nottingham Business School

**Thomas Spencer**  
Head NBS Undergraduate  
Portfolio

**Dr Rachel Welton**  
Assistant Head of NBS  
Undergraduate Portfolio

Engaging students in sustainable  
thinking through experiential  
learning: benefits and challenges



Nottingham  
Business School  
Nottingham Trent University







# Nottingham Business School

Nottingham Trent University

C.6000 UG Students

350 Academics

9 research centres

Personalised approach to learning

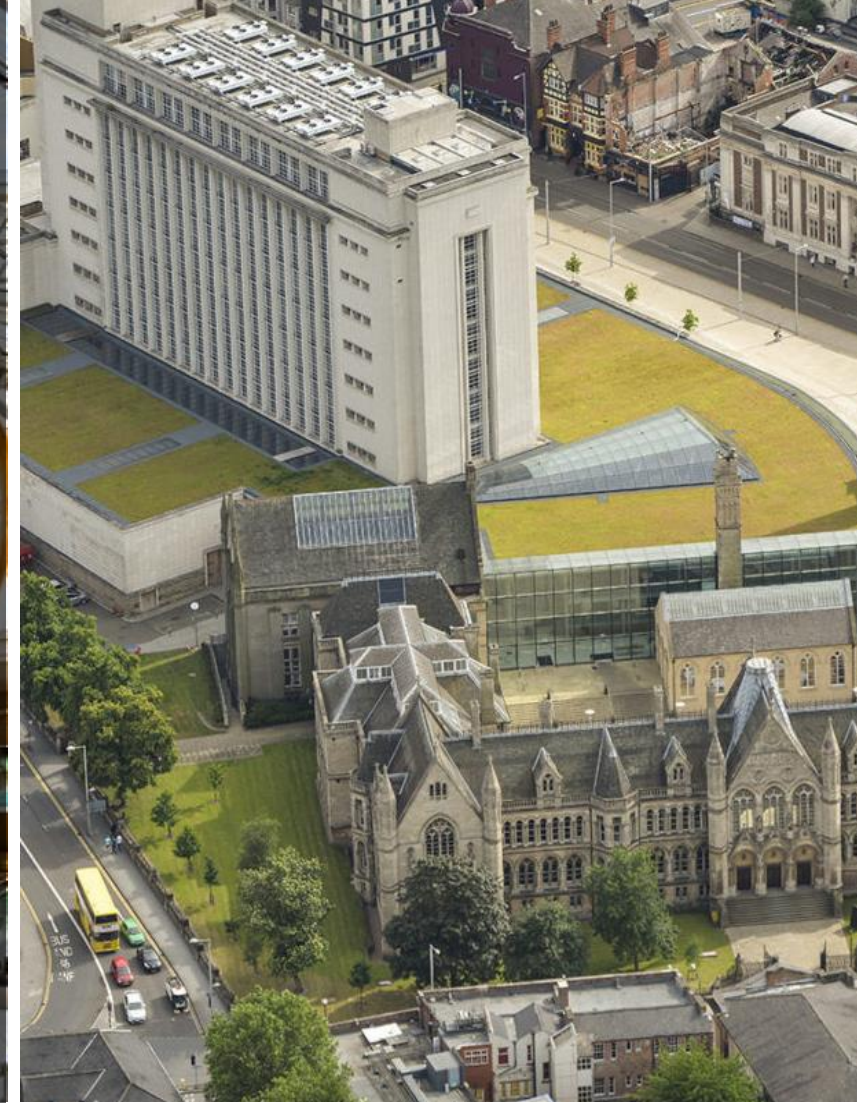
Ethics, Responsibility & Sustainability

Work Like Experience and Business

connections

PRME Champions

International Opportunities





A hand is placing a wooden block with the NTU logo on top of a stack of three wooden blocks. The stack consists of three blocks in the bottom row and two blocks in the row above. The icons on the blocks are: a hand holding leaves, a factory with a plant growing from its chimney, a globe, a cloud with CO2 and arrows pointing down, and a recycling symbol.

NTU

## WORKSHOP

- To explore the way that work-like experiences can be embedded in taught modules, providing opportunities for student to engage in responsible management practices and making effective recommendations.

# SUSTAINABILITY IN ENTERPRISE PROJECT

## AIM

The aim of SiE module is to provide bespoke sustainability and carbon management consultancy to local businesses by student teams.

An optional module against the Research Project for final year undergraduate courses.

- 
- Part of a European Regional Development Fund (ERDF)
  - Run for 2 years 2021/2022 and 2022/2023
  - Total 270 NBS students participated in the consultancy project over two years. Student consultancy supported 60 businesses



# SUSTAINABILITY IN ENTERPRISE PROJECT

- Students work as a team of 4-5 across disciplines and interact with the client as well as make a site visit to complete their carbon management consultancy project.
- Outcome of the project is group-based poster which is the formative assessment in the SiE module.
- Students present their project findings and recommendations via poster to their client in a networking event and conference.
- Summative assessment 100% Individual Consultancy Report, 4,000 words, based on the group Carbon Reduction Consultancy Project

# WORKSHOP ACTIVITY

## STAKEHOLDER PERSPECTIVE

- Three groups:
- Illustrations of SiE posters, the group formative assessment in SiE module. To enable you to review impacts of the project.
- Each group adopt a different stakeholder persona (student, staff and small business). Consider their expectations, resources required, benefits and constraints:



- *What's in it for me / expectations / benefits my stakeholder group?*
- *What are the resources / constraints for my stakeholder group?*















# SiE POSTERS

## 2023

# CARBON AUDIT JANUARY 2023

STEPHEN / JAMES / JESS / AIMEE / DOBRIN



## THE COMPANY

BASED IN NOTTINGHAM CITY CENTRE SELLING SUSTAINABLE HOUSEHOLD GOODS AND ECO-FRIENDLY GIFTS.

ESTABLISHED 2018. THEY EMPLOY 2 MEMBERS OF STAFF AND STRIVE FOR PROFIT WHILE SIMULTANEOUSLY ATTEMPTING TO PROPEL PEOPLE INTO BECOMING MORE SUSTAINABLE.



## THE BRIEF

THIS PROJECT LOOKED AT REDUCING SHOP ZERO'S ELECTRICITY, WATER AND CARBON CONSUMPTION. IN OUR WRITTEN REPORT WE MAKE RECOMMENDATIONS ON HOW SHOP ZERO CAN EMBARK ON REDUCING ELECTRICITY USAGE AND MOVING WORKSHOPS ONLINE.



## THE ECO-POLICY

PRODUCING QUALITY SUSTAINABLE GOODS WITH MINIMAL PACKAGING & LOW IMPACT  
FOUNDED ON SUSTAINABILITY PRINCIPLES AND OPERATING AS A 'BUSINESS FOR GOOD'  
CAREFUL RESEARCH CARRIED OUT ON EVERY PRODUCT THAT COMES INTO THE STORE  
PLASTIC FREE PACKAGING / ETHICAL SOURCES  
BIODEGRADABLE AND COMPOSTABLE ITEMS  
LOW CARBON DELIVERIES

16.2%

OVERALL TARGET



## KGCO2E GRAPH

ELECTRICITY / TRAVEL / WATER



## COST GRAPH

ELECTRICITY / TRAVEL / WATER



## OPERATIONAL BOUNDARY

(LINGL ET AL. 2010)

### ELECTRICITY

SCOP E 1	LIGHTING BUSINESS TRAVEL
SCOP E 2	IT/EQUIP MENTNUT BUTTE R MACHINE
SCOP E 3	KITCHEN/EQ UIPMENTPRODUCT FRIDGE
	WAT ERHEATING (E ELECTRIC)

WASTE D ISPOSALPAP ERWORK CO MMUTING

E-COMMERCE OPPORTUNIT



13 CLIMATE ACTION



## RECOMMENDATIONS

RECOMMENDATION 1  
FRIDGE REPLACEMENT

RECOMMENDATION 2  
SOLAR PANELS

THE EXISTING FRIDGE CONSUMES 730 KWH/P.A. WHICH IS 19% OF THE ENERGY CONSUMPTION.  
THE TWO NEW FRIDGES WILL CONSUME 105 KWH/P.A. WHICH IS 86% LESS.  
THE ECOLOGICAL EFFECT WILL BE 163 KGCO<sub>2</sub>E/P.A. LESS (3.915 KWH X 19% X 86% X 0.26155)  
THE COST EFFECT WILL BE £402 SAVINGS/P.A. BASED ON THE SAME ELECTRICITY CONSUMPTION BUT CALCULATED WITH THE NEW PRICE PER KWH. OR (3.915 KWH X 19% X 86% X 62.9P).  
THE COST OF THE TWO SMALL FRIDGES IS £310. SO PAYBACK PERIOD = £310/£402 = 0.77 YEARS, OR 0.77 X 12 ≈ 9 MONTHS

SUNLIGHT HOURS UK: 1487  
DAYTIME HOURS IN THE UK: 3762 (FROM SUNRISE TO SUNSET, MINUS 2 HOURS)  
DAYTIME HOURS IN THE UK (CLOUDY OR WITHOUT SUN): 2275 (3762 - 1487)  
744HRS X 100W = 74.400W (HALF OF THE SUNLIGHT HOURS. DIRECT LIGHT OR 100% CAPACITY)  
743HRS X 50W = 37.150W (HALF OF THE SUNLIGHT HOURS. INDIRECT LIGHT OR 50% CAPACITY)  
2.275HRS X 20W = 45.500W (IN CLOUDY DAYS 10% CAPACITY. SO AVERAGE 20%)  
TOTAL KWH PROJECTION: 157.050W OR 157.05KWH  
CO<sub>2</sub> SAVED: 157.05 X 0.26155/KWH = 41.08KG  
COST SAVED: 157.05 X 62.9P = £98.78 (BASED ON THE NEW TARIFF: 62.9P/KWH)  
THE COST OF THE PANELS IS £115. SO PAYBACK PERIOD: £115/£98.78 ≈ 14 MONTHS

WHERE POSSIBLE, MOVE WORKSHOPS ONLINE  
PROMOTE ONLINE SHOP  
LINK ALL ONLINE PLATFORMS TO BOOST SALES  
ONLINE WORKSHOPS WOULD REDUCE COMMUTING, AND COULD ALSO BE OFFERED TO A LARGER NUMBER OF CLIENTS AT ONCE. THIS COULD BE A WAY OF INCREASING REVENUE, WHILST ALSO LOWERING COSTS.

RECOMMENDATION 3  
ONLINE PRESENCE



## RISK ASSESSMENT

(LINGL ET AL. 2010)

RISK	TOPIC	OPPORTUNITY
RISE IN ENERGY COSTS THREAT CASH FLOW IF MEASURES IGNORED	ENERGY COSTS	IMPLEMENT MEASURES TO REDUCE ENERGY COSTS E.G. SOLAR PANELS / FRIDGES / ONLINE WORKSHOPS
AVOIDING E-COMMERCE CAPITALISATION LOSES POTENTIAL GROWTH FROM ONLINE CONSUMER	E-COMMERCE	DEMAND GREATER THAN EVER FOR E-COMMERCE. CHANCE TO CAPITALISE AND GROW BUSINESS AND CLIENTELE BASE



# CASTLE ROCK BREWERY - LOW CARBON EMISSION AUDIT

Abdullah Naseer, Claude Komen, Gerta Bara, Inaya Atarid and Mariana Vasco | January 2023



## Background

Castle Rock Brewery started as a family business in 1997 and currently owns a variety of venues across the East Midlands, including city-centre craft beer bars, traditional country pubs, and community-led pubs in the suburbs. The business brews its own craft beer in Nottingham's city centre.

## Project Brief

This project will demonstrate and identify how Castle Rock's carbon emissions can be reduced and costs can be cut through three potential recommendations.

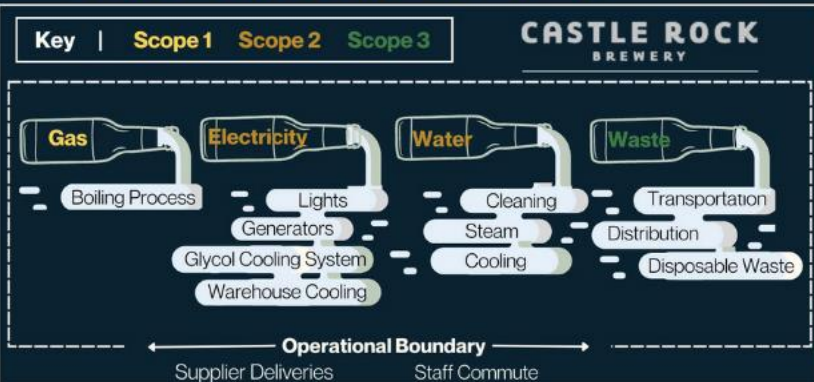
## Business Case

(Lingl et al, 2010)

Risks		Opportunities
-Continue facing high fuel and energy costs -Exposure to unstable prices making costs unpredictable	Fuel and Energy costs	Investing in GHG emissions can reduce their costs (Ostergaard et al, 2020) Can also improve their operational efficiencies
-Failing at adapting early can lead to negative press and government plans for net zero continue (GOV.UK, 2021)	Reputation	Enhance their brand image and differentiation in the market (Kong et al, 2014)
-Customers may want to switch to a more sustainable competitor (Benoit-Moreau, 2011) -Market value is threatened	Products, services, and technologies	-Take advantage of the demand of eco-friendly companies -Cost effective as they will have less energy consumption (Ostergaard et al, 2020)

## Scope & Operational Boundary

(Lingl et al, 2010)

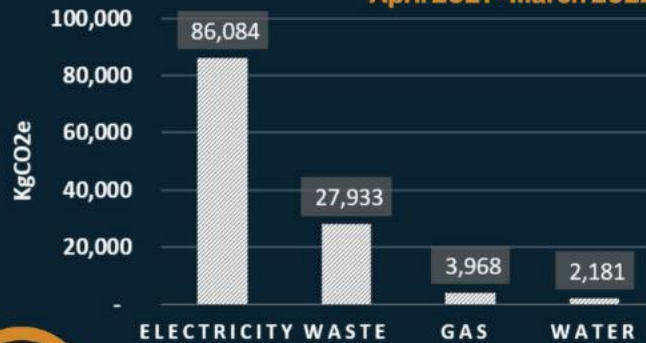


## Environmental Policy

- Meet and, where possible, exceed all environmental legislation and other requirements applicable to our organisation and its activities
- Reduce waste and prevent pollution both locally and in the wider environment
- Set targets for measurable annual improvements Make our progress available for assessment.

## Carbon Footprint (KgCO<sub>2</sub>e)

April 2021 - March 2022



## 1 Recommendations

### Replacing all lighting with LED bulbs:

Using 22W LED bulbs instead of 58W bulbs can not only reduce your Carbon Footprint but also reduce costs. Currently only half of total lights are LED.

Lighting distribution				
	USAGE %	Electricity usage	Carbon emissions	Wattage
LED	27.5	8,127 KWH	2,367 kgCO <sub>2</sub> e	22
Non-LED	72.5	21,425 KWH	6,241 kgCO <sub>2</sub> e	58

### Calculations:

Total Electricity Usage (2021-22) = 295,517 KWH  
Total Carbon Footprint (2021-2022) = 295,517 KWH \* 0.2913 = 86,084 KgCO<sub>2</sub>e  
Assumption: Lighting accounts for 10% of electricity usage (29,552 KWH)  
New (22W) / Old (58W) = **62% energy saving**  
Non-LED Carbon Footprint (6,241 KgCO<sub>2</sub>e) \* Energy Saving (0.62) = **3,869 KgCO<sub>2</sub>e (Total KgCO<sub>2</sub>e Saving)**

3,869 KgCO<sub>2</sub> / 86,084KgCO<sub>2</sub>e = **4.5% CO<sub>2</sub>e Saving**

### Cost Savings:

3,869 / 0.2913 (Carbon Factor 2021) = 13,283 KWH. Cost of Electricity per KWH = £0.1336  
13,283 KWH \* £0.1336 = **£1,775 (Annual Cost Savings)**

### Cost of Installation:

27 LED Lights \* £21 (cost per unit) = £567 Installation Cost = 27\*£30 (cost per unit) = £810

**Total Installation Cost = £1,377**

£1,377 / £1,775 = 0.76 0.76 \* 52 weeks = 40.3

**Payback Period = 41 Weeks**

## Corporate Social Responsibility

We recommend a better tracking of wastage and carbon footprint using the services of SustainIQ. Regular audits to check employees understanding of the businesses CO<sub>2</sub>e



## 2

### Replacing Plastic Bungs with reusable silicone bungs:

Using silicone bungs to cut down costs and reduce your Carbon Footprint as they can be reused. (Zaltman et al, 1973)

(Assuming that you can reuse the plastic bungs 20 times)

Bungs used annually	Cost (£)	Carbon factor 2021	kgCO <sub>2</sub> e	Silicone Bungs annually	Cost (£)	Carbon factor 2021	kgCO <sub>2</sub> e
57200	7722	467.046	601.09	2860	3189	467.046	70.46

### Calculations:

27933.048 kgCO<sub>2</sub>e - 70.46 kgCO<sub>2</sub>e = 27862.5 kgCO<sub>2</sub>e  
27862.5 kgCO<sub>2</sub>e / 530 (carbon saving) kgCO<sub>2</sub>e = **2% CO<sub>2</sub>e saving**



That is equivalent to

**535,241**

number of smartphones charged! (EPA 2022)



CO<sub>2</sub>e  
**4%**  
TARGET  
4.4tCO<sub>2</sub>e  
2022/2023



## Overview

Oakley Rees , Abigail Wibberley, Louis Powell, Thibaut Evans, & Rim Bourg  
January 2023

## Project Brief

- Clegg Group is a construction company which is made up of three main companies, Clegg Group, Clegg Construction, and Clegg Food Projects.
- The business of Clegg Group Limited is the development, design, and construction of retail, residential, commercial, industrial, and public sector developments within the UK.
- Clegg Group have been capturing energy data for the main office for many years and more recently included site-based operations. They have introduced initiatives and changes to the office to help reduce their carbon footprint; including LED lighting, more efficient boilers, and encourage more Teams & Zoom meetings, etc.



## Environmental Policy

Clegg Group's environmental policy was reviewed and here is our summary based on an updated policy we created as a result of our findings.

- Set objectives and targets to address environmental aspects and impacts of the company's activities, strive to reduce pollution, and review these as part of a continuous improvement process.
- Manage energy and water effectively in all operations and ensure this Policy is communicated to all staff and persons working on our behalf.
- Ensure adequate resources are available for the education and training of all relevant parties working in line with the Policy as well as support for green incentives for business travels and employee commute to reduce carbon emissions and individual carbon footprint.
- Limit waste generation, discharge and emissions and handle waste in a responsible manner, reusing and recycling materials where reasonably practicable and to minimise the need for disposal.

CO<sub>2</sub> Reduction Target

2023

8%

## Risks and Opportunities

RISKS	ISSUES	OPPORTUNITIES
The rise of fuel and energy costs have a direct effect on the cost of doing business which is a risk for Clegg Group as it can effect profitability due to increased costs.	Fuel and energy costs	Managing energy and fuel costs efficiently will save costs that can then be utilised to develop carbon reduction solutions.
Lack of education in sustainability within Clegg Group's culture will have implications on decision making on situations regarding carbon emissions.	Education	Raising awareness in the office around carbon reduction actions will inform employees on their carbon footprint and will create a positive impact on Clegg Group's decision making.
Requirements to meet energy efficiency standards for buildings and vehicles provides a risk. It is inevitable that these regulations will impact Clegg Group as they become a tier 1 company in the construction industry.	Regulation	Flexibility to choose a course of action, likely more cost-effective than waiting to be regulated, and this will allow preparation for future Clegg Group projects.

## Recommendations

### 1 - SECONDARY GLAZING INSTALLATION - 1 YEAR

By installing secondary glazing Clegg group can make savings on their energy bill of up to 60% per year.  
**Cost of installation (Including product price):** £25,500 for all 85 windows in the building. £300 per window.  
**Total Savings:** £230 per month £2,760 per year  
**Carbon savings:** 2.9 Tons of CO<sub>2</sub> yearly  
**Payback Period:** 9 years depending on how many windows are having installation.  
 This work does not need to be completed in one instalment and could be split into 2 stages.



### 2 - SOLAR PANEL INSTALLATION - 2 YEARS

Solar panels are a clean and renewable energy source which requires low maintenance and no permit required.  
**Product recommended:** 32 Solar PV System producing 11.36 kw with 10 kwh Battery Storage located on the roof.  
**Cost of installation:** £30,237 - £944.90 per unit  
**Total Savings:** £125 per month which equals £1500 per year  
**Carbon Savings:** 2.4 tons of CO<sub>2</sub> and 20% of company emissions avoided yearly  
**Payback Period:** 14 years. 20 years shows savings of up to £26,322 a year



### 3 - EDUCATION AND TRAINING - 5 YEARS

By investing in education and training in sustainability for all employees, Clegg group will create better understanding among employees of the importance of acting sustainably as well as create new behaviours which will make the business more sustainable. Imperial Sustainability Leadership is an online certificate program designed to help you create a responsible business model for lasting economic value – one that is purpose-driven to deliver positive environmental and social impact for all stakeholders.

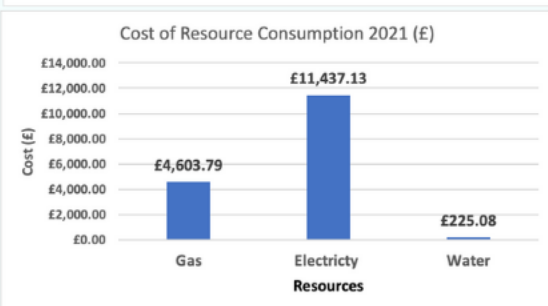
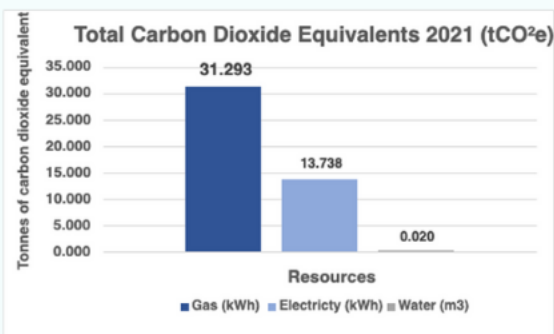
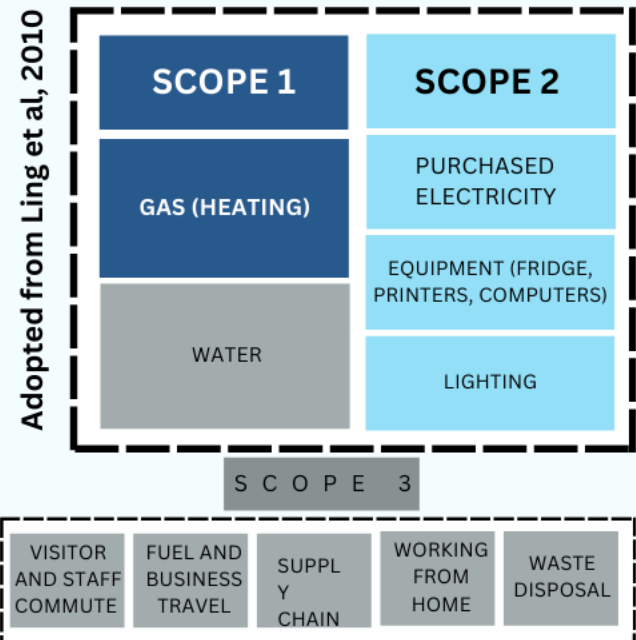
**Payback-** By the end of this 15-week online certificate program, you will be able to:  
 Develop a sustainability mindset for all employees to reduce their carbon footprint.  
 Communicate to key stakeholders the connections between economic and environmental success.

To ensure maximum advantage is achieved, Clegg group could set up a Green Rewards scheme where by employees are able to benefit from acting sustainably.  
 This incentive will provide better results for the business as employees are more likely to take part.

Programme fee- £2550.00  
 For 15 weeks 6-8 hours per week



## Scopes & Operational Boundary





## OVERVIEW:

Operating for 25 years, Office Innovations offer interior designing, fit-outs, and the redefining of workplaces. They strive to deliver spaces that enrich one's work and help them drive towards new possibilities. Operating across the UK, Office Innovations has become a leading interior design and fit-out business in the Midlands.

## PROJECT BRIEF:

The project will look at reducing the business' electricity, gas, water, paper, and waste by analysing data. Providing appropriate data driven recommendations and the implementation of behavioural change management.

## ENVIRONMENTAL POLICY: KEY ISSUES

- Comply with environmental legislation that relates to the company.
- Reduce the uses of energy, water, and other resources.
- Minimize waste by reducing, reusing, or recycling resources consumed by the business.
- Promote and encourage involvement in local environmental initiatives/ schemes.

## RISK ASSESSMENT:

(Adapted from Linglet al. 2010)

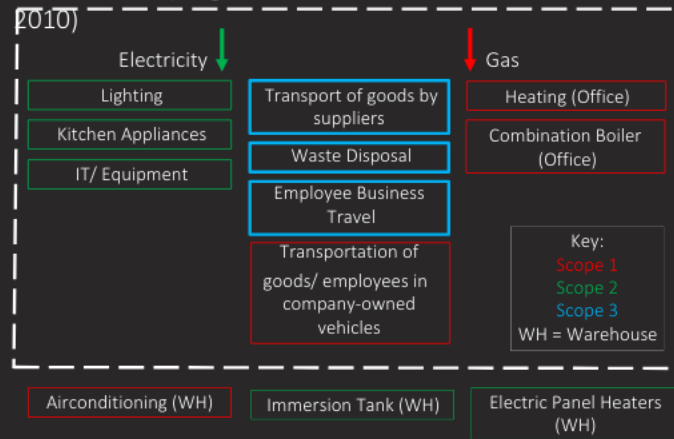
RISKS	ISSUES	OPPORTUNITIES 120
Significant fuel costs due to nationwide client coverage combined with the current cost of fuel	Fuel and Energy costs	104.58 Potential fuel cost savings from 100 better management of vehicles and improved driving styles80
Potential customers may have supplier criteria that must be met during the tender process	Reputation	Become recognised as an 60 environmentally aware business by making potential customers aware 40 of their options during the design
Lack of control over the emissions of suppliers High levels of emissions caused by delivery lorries	Supply Chain	phase 20 Working with clients to give them a range of options for the supplier of materials. Waste 0 Managing deliveries to avoid double handling of materials

## Carbon Management Audit (January 2023): Office Innovations

Max Swift, Myers Witter, Lucienne Wardlow, Faith Frank Mmbando and Pamilerin Thompson

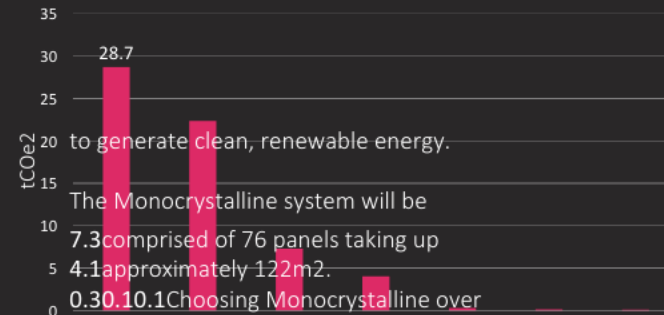
### OPERATIONAL

BOUNDARY: (Lingl et al. 2010)



### ANNUAL CARBON EMISSIONS:

(April 2021-March 2022)



## 1 RECOMMENDATION

Office Innovations should install solar panels on the roof of their warehouse

to generate clean, renewable energy.

The Monocrystalline system will be

7.3 comprised of 76 panels taking up

4.1 approximately 122m<sup>2</sup>.

0.30.10.1 Choosing Monocrystalline over

Staff owned Company Electricity Gas Water Waste Paper Polycrystalline is advantageous due to

Vehicles owned it often being more space-efficient

Vehicles Source of emissions

(Economist 2022).

## RECOMMENDATION

The only shortfall in electricity

Enrolling all employees in an Eco-driving course from IAM to

increase the efficiency of employee driving, thus reducing carbon emissions as well as fuel costs (IAM Road Smart, 2022).

production will be from December to

• Current annual fuel cost per driver: £2,232 • Initial Investment = £32,560

• Total fleet fuel spend per annum (inc. VAT): £44,634 • Annual cost saving = £3,377

• Total cost of training for all drivers (20): £1,200 • Annual carbon saving 7

• Total savings in the first year: £1,56721,025 kWh x 0.2913 kgCO<sub>2</sub>e per

• Estimated annual carbon saving: 3,162 kgCO<sub>2</sub>e kWh = 6,125 kgCO<sub>2</sub>e (84% of

• Payback period = 9.18 months electricity)

• Payback period = 9.64 years 9

years and 8 months

## RECOMMENDATION

Implementation of 'Reuse, Recycle and Rehome' scheme to reduce the amount of furniture going

directly to landfill. This will be achieved by donating used furniture to stakeholders in the local

community (charities, schools and families/households in Nottinghamshire) (Johnsons Business

Moves, 2023).

• Quarterly event for people to collect from site on specified day

• Spread awareness on social platforms to reach key stakeholders in local community (for example: Facebook community groups and marketplace)

## Strengths:

• Increase lifetime of used furniture – reduced carbon footprint of furniture items

• Have a strong presence and social responsibility in local community



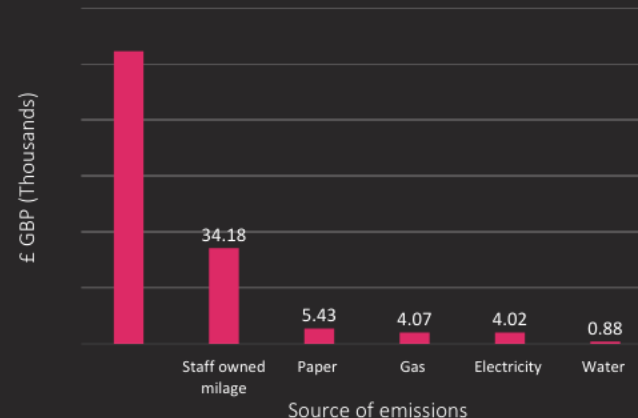
CO<sub>2</sub>e REDUCTION TARGET

15%

(9,287 kgCO<sub>2</sub>e)

### ANNUAL CARBON COST:

(April 2021-March 2022)



# STUDENT FEEDBACK



I really enjoyed the content we learnt, and the style of teaching, and felt inspired by the knowledge and passion of the subject area. As a result of the SIE module, **I have been looking for and applying for roles within the sustainability field.**



# STUDENT FEEDBACK



Knowing the importance of sustainability in business, we were all very keen to learn more about the practical application of sustainability theories to industry as well as ways in which we can **find creative and innovative solutions to real life problems.**

The Sustainability in Enterprise Project provided the perfect opportunity to do this.

As a group, we were partnered with Clegg Group- a key player in the construction industry. Clegg provided thorough data giving us a great insight into the impact of their current business activities. We had the opportunity to make a site visit and meet the team who were exceptionally kind and cooperative.

**The result of this project has been that we have learnt a huge amount about how to apply our prior knowledge to the context of business as well as developing skills in calculating carbon footprint of a business and developed innovative recommendations on how to reduce this.**

It has been an exciting and inspiring opportunity for all, and we are so grateful for everyone involved”.

# ACADEMIC FEEDBACK

- Group work dynamics
- Protecting NBS reputation
- Quality of student work
- Professionalism of students
- Future projects
- Extra workload for WLE modules
- Academic v's administrative work
- Client relationship management
- Team structure and matrix organisation
- Management of module team to ensure consistency



Experiential learning projects need full attention and ongoing work to maximise impact for the client and to produce a strong student experience.

Communication with the client and with the student team / students is critical to having a chance for success.



# CLIENT FEEDBACK

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- Innovative ideas.
- Connected us with young dynamic people.
- Project we had meant to do for a long time, this provided the trigger.
- Great networking opportunities at poster presentations.
- Good to extend my thinking and see what other practitioners are doing at the conference.
- Giving back, altruistic motivations.

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# KEY QUESTIONS

1. How can we work effectively with practitioner SMEs in an assessed final year module?
2. Can modules like this be scaled up to accommodate large numbers of student and still provide a good student experience?
3. Can an experiential consultancy project replace a traditional research project?



# LTSEE

## 2023

LEARNING, TEACHING &  
STUDENT EXPERIENCE

**THANK YOU!**



**Nottingham  
Business School**  
Nottingham Trent University